Public policy for long-term societal challenges?

The reframing of policy narratives and the ‘Roadmap to a Resource Efficient Europe’

A thesis submitted to the University of Manchester for the degree of PhD in Planning in the School of Environment, Education and Development

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Abstract

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This research examined how public policy addresses long-term societal challenges. The case study focused on policy narratives and frames of resource efficiency in the ‘Roadmap to a Resource Efficient Europe’ of the European Commission (EC).

The study followed an interpretive constructionist perspective on public policy and assumed a research strategy based on a single critical case study. The literature review examined perspectives on policy narratives, frames, knowledge and social learning in the interpretive policy analysis and organisation studies literature. Foresight and futures literature also provided insights on the use and nature of knowledge and policy learning in the process of deliberation of future visions. The empirical enquiry was based on a series of in-depth interviews with policy stakeholders, formal EU policy documents and speeches as well as participation in targeted policy events.

The thesis makes contributions in three areas. First, the study developed and applied a new conceptual and methodological approach – a policy narrative framework analysis (POLFRAME) – to examine different discursive and narrative layers of policy narratives of the resource efficiency agenda. The framework can lend itself to interrogate any policy narrative, notably ones with explicit or implicit future scenarios and vision.

Second, the policy case study contributed to knowledge on the evolving EU policy area of resource efficiency, addressing challenges of the sustainable use of natural resources. The research provided insights into how a complex societal, economic and environmental challenge of resource efficiency was understood by different stakeholders and intentionally framed in the official policy narrative. The emerging EU agenda on resource efficiency was intentionally reframed to advance a broader approach to environmental policy that moves beyond a traditional goal of environmental protection towards a systemic transition of economic system to achieve decoupling of economic growth from environmental impacts. While the study found evidence of a significant shift in scoping the challenge, the reframing has not led to radical changes in underlying normative assumptions on the relation between nature and society or on the central role of economic growth in transition.

Third, the research discussed theoretical implications of introducing a long-term challenge-driven perspective to public policy narratives. Introducing a future vision to policy narrative added a stronger normative orientation to policy argumentation. The case study demonstrated that an inclusion of a long-term societal challenge to the resource efficiency agenda influenced the selection, interpretation and use of evidence in policy narratives. The design of challenge-driven long-term policies bears a family resemblance to the perspective of post-normal science.

Finally, the thesis puts forward messages and recommendations for policy makers and practitioners interested in the process of radical policy reframing. It also suggests further research encompassing a comparative dimension and longer periods of enquiry of policy frames, which would allow for better understanding the effects of the reframing of policy on various phases of policy cycles.
Declaration

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1. Introduction

1.1. Research problématique

Public policies face increasingly complex societal, economic and environmental problems that require a long-term strategic outlook. These challenges include diverse global issues such as economic and financial crises, climate change and natural resource scarcity, or population growth and ageing. They are systemic, complex and may call for revisiting the very assumptions behind the dominant social and economic systems. The European Commission refers to these problems as ‘grand societal challenges’ (EC 2010).

The technocratic rational model of policy making may be insufficient to deal with such complex problems. The high degree of risk and uncertainty associated with the societal challenges requires taking decisions with highly imperfect knowledge and making normative choices about preferred future visions of society. The reframing of policy to embrace major societal challenges and future visions requires a profound reflection about the rationale and objectives of policy as well as about the process of policy making itself. Furthermore, changing the boundaries and time horizons of policy strategies calls for revisiting the nature of evidence used to design, plan and implement public policy.

This research presented here focuses on how the EU policy agenda embraced the challenge of ‘resource efficiency’ that emerged as one of the main societal challenges in the Europe 2020 strategy, the EU strategy for the period 2014-2020 (EC 2010). The strategy recognised the growing body of evidence suggesting that the access to natural resources and resource efficiency are amongst the key challenges facing Europe and the world. While the topic was not new to the European Commission (EC), the new strategy and political context required a renewed reflection on the frames of the issue. The arrival of grand societal challenges led to a perceived shift to the new challenge-driven or mission-led innovation policies (Gassler et al 2008, Kemp 2011). This constituted a significant policy challenge for the EC as its policies had to be realigned with the challenge-driven Europe 2020 strategy. This triggered a policy process in which new policy narratives and frames of resource efficiency emerged.

The case study looks into how problem and vision frames of resource efficiency were constructed in the case of the European Commission’s ‘Roadmap to a Resource Efficient
Europe’ with a future vision of Europe in 2050 (EC 2011). The EC Roadmap is a policy document addressing the long-term policy challenge. It introduces an explicit long-term vision. The Roadmap has a status of ‘Commission communication’, which is a consultation document of the EC. Communications do not have a direct formal power in the legislative process. They may, however, inspire legislative processes and programmes administered by the EC.

This policy process emerged as a fascinating case study to explore questions on frames and reframing of policy and implications of long-term visions for policy narrative and frames. The vision in the EU document has even more relevance given the Commission’s mission to represent European interest and be independent from particular interests in its actions. Whereas the EC’s Roadmap was the main focus of the enquiry, the boundary area of this research extended to the wider policy context of EU public discourse on resource efficiency. This included the historical developments of the EU resource policy agenda as well as policy narratives on resource efficiency emerging in the EU policy formation process. To further contextualise the formal policy narratives and frames of the EC’s Roadmap, the case study examines narratives used by different stakeholders, including policy makers, experts and business, involved in the European resource efficiency debate.

It is important to note that despite being called ‘a roadmap’, the preparation process and the final EC document did not resemble roadmaps as known in the technology roadmapping or industrial development process (see e.g. Phaal et al 2004). Even if the document is not a result of a fully-fledged roadmapping exercise, however, an explicit introduction of the 2050 time horizon and 2020 milestones into the EC document makes it a noteworthy case of policy process addressing a long-term societal challenge.

1.2. Research objectives and questions

This research investigates how public policy responds to long-term societal challenges. In particular, the study analyses how policy stakeholders frame policy narratives that explicitly address long-term societal challenges. The aim is to improve our understanding of mechanisms, determinants and implications of the process of instrumental policy reframing responding to complex future problems.

Research questions include:

A. What are the main storylines, key arguments and underlying causal assumptions of policy narratives constructed in response to a long-term societal challenge?
B. How does an inclusion of a long-term challenge and a future vision influence storylines and arguments in policy narratives?

C. How does an inclusion of a long-term challenge and a future vision relate to underlying normative assumptions of policy narratives?

D. How does an inclusion of a long-term challenge and a future vision influence the use of evidence in policy narratives?

E. How does a reframed formal policy narrative relate to other existing frames responding to the same societal challenge?

F. What are mechanisms and motivations of an instrumental reframing of policy?

G. What are anticipated effects of an instrumental reframing of policy?

This research aims to make contributions in three areas. First, it proposes and tests a new conceptual and methodological approach to critically enquire long-term challenge-driven policy narratives. Second, it contributes to the knowledge on the evolving EU resource efficiency policy agenda. Third, it tackles theoretical questions related to epistemic implications of the inclusion of a long-term challenge to public policies.

The specific objectives of this research are to:

- Contribute to the conceptual and methodological approaches in policy research by:
  - combining theoretical approaches from interpretive policy analysis, notably frames and narratives: and futures studies, notably causal layered analysis;
  - developing and demonstrating the applicability of an innovative methodology – a policy narrative framework analysis (POLFRAME) - to enable a structured enquiry into policy narratives, discursive affinity and argumentative alignment;

- Improve the understanding of frames of the EU resource efficiency agenda by:
  - analysing how ‘resource efficiency’ is framed and reframed in policy narratives;
  - interrogating whether and how a long-term normative vision in the EU policy narrative influences – or is influenced by – existing dominant policy and institutional frames;
  - studying how empirical evidence and knowledge is selected and interpreted in the long-term policy visioning process;

- Contribute to the theoretical discussion by:
  - exploring the epistemic implications of introducing a long-term challenge-driven perspective on the use of evidence in policy narrative;
  - analysing the implications of introducing a long-term policy perspective for policy frames and argumentative alignment.
1.3. Research strategy

This research draws from several traditions of policy research and practice. The study brings together concepts such as policy frames and narratives from the interpretive policy analysis, socially constructed knowledge and social learning from organisational learning literature and the layered discursive analysis approaches from foresight and futures studies. Inspired by the above approaches, this thesis proposes a novel conceptual and methodological framework to systemically analyse policy narratives of long-term societal challenges: a policy narrative framework analysis (POLFRAME).

This enquiry follows a mixed research strategy combining abductive and retroductive research strategies (Blaikie 2007). Research questions and the initial conceptual framework were put forward at the outset of the research. The framework was empirically tested and further developed based on the critical case study. This approach was chosen deliberatively to tackle specific challenges of the research problem. First, policy narratives and frames are emergent, context dependent and often implicit. Case study was selected as a research method well suited to interrogate frames and the reframing of policy.

Second, extending the scope of research to account for frames of anticipated or desired futures adds another analytical dimension. Vision frames are constructed by stakeholders based on the combination of what they know and believe about the past, and, on the other hand, on what they anticipate and desire in relation to future. As there are no empirical data from the future, constructing policy narratives for future scenarios and visions needs to extend the conventional understanding of what constitutes evidence base of policy. In the absence of empirical evidence long-term policy narratives have to rely on a blend of evidence and normative statements about the future. This may reveal underlying rationalities behind various claims as well as deeper values and beliefs held by policy actors. The research design presented here will grasp these diverse factors and analyse core arguments and the selection of evidence used in the reframing of policy. Last but not least, the enquiry had to be based on a good understanding of the problem area and factors shaping emerging policy agendas in their specific context. The research required timely access to key stakeholders and policy makers. The choice of the case study, therefore, took into account the professional experience of the author.
1.4. Structure of this thesis

This thesis comprises four parts. Part A is a comprehensive literature review including three chapters. It first introduces approaches and concepts from the interpretive policy analysis, notably policy narrative, frames, knowledge and policy learning (Chapter 2). Second, it looks at selected approaches to knowledge and collective learning in the organisational learning literature (Chapter 3). Third, the review focuses on the selected approaches and findings relevant for the long-term policies emerging in futures studies and foresight practice (Chapter 4). Each chapter features an overview of the main implications of the reviewed literature for the conceptual framework and research strategy of this study.

Part B introduces the overall conceptual framework and methodological approach to the study. It elaborates the research strategy, research questions and the conceptual framework, introducing the policy narrative framework analysis (Chapter 5). It further describes the methodology applied to selecting and conducting the case study (Chapter 6).

Part C is an empirical case study on frames and policy narratives of resource efficiency in the EC’s policy agenda and the ‘Roadmap to a Resource Efficient Europe’ (2011). It first discusses general problem frames and meta-narratives of resource efficiency in the EU public discourse (Chapter 7). It then introduces the process and policy context of the EC resource efficiency agenda (Chapter 8) and the narrative framework of the EC Roadmap itself (Chapter 9). Finally, the case study discusses the process and emerging effects of the intentional policy reframing (Chapter 10).

Part D features the discussion and reflections on the practical implications of this research. The main findings and contributions are discussed followed by reflections on individual research questions. The limitations of this research and ideas for further research are outlined (Chapter 11). The final chapter offers a policy reflection on the findings and puts forward practical implications for policy makers interested in the process of policy reframing (Chapter 12).
A. Frames, knowledge and futures in policy: insights from literature
The literature review is based on three different strands of literature selected to provide complementary insights relevant for the overall research problem and for the conceptual and methodological framework. The study is based on three research traditions including interpretive policy analysis, organisational learning as well as futures and foresight.

Chapter 2 introduces concepts from the interpretive policy analysis, notably frames, narrative, knowledge and policy learning. The focus of interpretive policy research is to analyse policy process through investigating narratives and discourses of different policy actors that are central for this study. The concepts from the interpretive policy analysis will be used in the conceptual framework of this study. Frames will be used to analyse how a policy issue is ‘problematised’ and defined by policy actors. The notion of policy narrative as ‘aggregated construct’ is a basis for constructing meta-narratives of resource efficiency. Discursive affinity and discourse coalitions will be useful in studying differences and similarities of policy narratives as well as argumentative alignment in discourse coalitions.

Chapter 3 looks at selected approaches to knowledge and collective learning in the organisational learning literature. The selected approaches to organisational learning, notably Argyris and Schön’s organisational learning and Wenger’s communities of practice, recognise that knowledge is produced in interaction between individuals and between individuals and their organisational contexts. The design of learning environments is of key relevance to understanding why certain contexts are or are not conducive to learning and change. Argyris and Schön’s logic of organisational enquiry and its emphasis on various explicit and implicit understandings of theory of change will be key for interrogating policy narratives. The above concepts are relevant for the critical analysis of the reframing of policy and argumentative alignment of stakeholders in the analysed case.

Chapter 4 focuses on the selected approaches and findings emerging in futures studies and foresight practice. Futures studies offer useful insights for any dedicated investigation of forward-looking policy process. One approach particularly relevant for this study is a layered causal analysis of Inayatullah. There is an affinity between layered causal approaches in futures studies and the interpretive policy analysis. Both approaches recognise that in order to understand an issue at stake any enquiry needs to include many analytical layers ranging from easily identifiable statements and facts to their differing interpretations and underlying assumptions. This perspective will be further developed in the conceptual framework of this study.

Each chapter features an overview of the main conceptual and theoretical implications of the reviewed literature for the research strategy and methodology of this study.
2. Frames, knowledge and policy learning in interpretive policy analysis

2.1. Introduction

The post-empiricist perspective in policy analysis emerged in the late 1980s and early 1990s as an alternative to the approaches based on a rational actor model or the ‘rationality project’ of positivism (Majone 1989; Dryzek 1990; Fischer and Forester 1993; Schön and Rein 1994; Hajer 1995; Fischer 1995). Fischer and Forester referred to this shift as an ‘argumentative turn’ in policy analysis (Fischer and Forester 1993). This change needs to be seen against the wider academic debates in humanities and social sciences that predate the above-mentioned shift. The post-empiricist approaches have grown from diverse theoretical traditions, including initially phenomenology, symbolic interaction and ethnomethodology and later poststructuralism and social constructivism emerging from sociology of science and science studies (Fischer and Gottweis 2013: 8).

Having reviewed the trends in policy analysis from the mid 1950s to early 1990s, Schön and Rein (1994: 10) argued the dominant traditions of policy analysis rested on an assumption of instrumental rationality in a sense that:

‘policy makers are rational actors who choose the means - policy positions, strategies of political action, or negotiating ploys - that they believe to be best suited to the achievement of their ends, which are rooted in their interests’ (ibid: 10).

Despite the evolution of policy research from policy science based on the rational actor model, through pluralist model viewing the policy process as a competitive struggle, to consensual dispute resolution considering policy making a mediated negotiation, the main premises of the practice of policy analysis have remained rooted in the microeconomic model of instrumental rationality (ibid: 21). The model assumes that positions and interests of stakeholders involved in policy process are ‘objective, given and constant’.

The emergence of the post-empiricist school was rooted in a wider critique of the modernist approach to social sciences, of which policy analysis is a part, that failed to develop ‘anything vaguely resembling a causal, predictive science of society’ (Fischer
Fischer (2009: 120) argues that the reliance on neo-empiricist methods in policy research is not without merits, but it hinders the deliberative function of policy studies, which he understands as ‘improving the quality of policy argumentation in public deliberation’. It was only in the late 1980s that Majone (1989) called for reinstalling argumentation at the centre of policy analysis. In the post-empiricist tradition, policy-making is ‘an ongoing discursive struggle over the definition and conceptual framing of problems, the public understanding of the issues, the shared meanings that motivate policy responses, and criteria for evaluation’ (Stone 2002, cit. in Fischer and Gottweis 2013: 7). This approach is based on the premise that ‘language does more than reflect what we take to be reality. Indeed, it is constituent of reality, shaping -and at times literally determining- what we understand to be reality’ (ibid: 8). In other words, ideas and discourse of actors are both considered ‘vehicles of change’ with ‘communicative force’ influencing what others think and do and thus make a difference (Schmidt 2012: 105).

Similarly, Hay (2002: 209-10) considers ideas to ‘provide the point of mediation between actors and their environment’. In this context, he argues, the relationship between ‘ideational’ and ‘material’ is dialectical as, on the one hand, the context influences and structures one’s ideas about it and, on the other hand, ideas may ‘exert their own effect upon the development of the context over time through the strategic action they inform’ (ibid: 214). Hay (ibid: 210-215) thus attributes ideas ‘independent causal role in political explanations’. Crucially, the transformational power of ideas and discourse has to be analysed in its institutional context (see also Beck 2009). This includes both communicative context (or ‘meaning context’) and formal institutional settings that dictate the rules of who can address who, where and when (Schmidt 2012: 105).

The objective of this chapter is introduce and review selected concepts and perspectives from interpretive policy analysis, in particular the concept of policy narratives and frames (Schön and Rein 1994), the implications of interpretive approach for the understanding of knowledge and expertise (Fischer 2003, 2007, 2009) and the concept of discourse coalitions (Hajer 1995).
2.2. Narratives and frames in critical policy studies

2.2.1. Narrative policy analysis

Bevir and Rhodes (2002: 134) argue that narratives are to political studies what theories are to the natural sciences. Narrative policy analysis has emerged as an analytical approach in the context of the ‘argumentative turn’ in policy analysis reflecting a wider postmodernist trend in humanities and social sciences (Fischer 2003, Van Eeten 2007). This shift made ‘stories’ a viable unit of policy analysis.

Fischer (2003) emphasises that narrative analysis abandons linear mechanistic understandings of causality employed by empiricist policy research:

‘Whereas the scientific mode of enquiry looks for stable empirically based causal connections between events, the narrative scheme includes the empirical but emphasises social intentions and motivations. Shaped by the contexts of time and location that envelop actors and events, narrative enquiry is thus better suited than empirical analysis to render he understanding of social change’ (Fischer 2003: 179)

The focus on narratives means recognising the role of social and cultural context, in which meanings are constructed, communicated and interpreted. Narrative policy analysis offers a critical and interpretive view on the mechanisms and (explicit and implicit) determinants of causal relations. The approach does not subscribe to any singular methodology, but it is loosely linked together by the shared unit of analysis – a narrative.

Van Eeten (2007: 251-255) reviews how different authors applying narrative policy analysis choose their research objectives and scope the unit of analysis. He noted the research objectives typically include (ibid):

− revealing hidden ideological and power structures in narratives;
− explaining multiple and conflicting perspectives held by policy actors;
− explaining implications of multiple perspectives held by policy actors;
− reframing –or recasting- the issue in order to solve the persisting conflicts.

Fischer (2003: 161) argues that policy narrative analysis can play a role in the analysis of the entire policy cycle, but it is particularly relevant for problem-definition and problem setting, both being ‘the most crucial step in analytic process’. Depending on the research
objectives the scope of the unit of analysis and methods used to reconstruct and analyse narratives differ.

As policy analysis is interested in collective processes involving many diverse actors, the enquiry needs to be based on an ‘aggregate unit of analysis’ (Van Eeten 2007: 253) that is constructed to reflect the position of a group, organisation, coalition of organisations or any other groups that share the similar reasoning or lines of argumentation. The narratives can be tracked and analysed on different levels including those of individuals, groups of individuals, organisations, groups of organisations, or even societal level (‘societal narratives’ have been analysed, for example, by Dicke 2001). Van Eeten (2007: 253) emphasises variety of approaches to reconstructing ‘aggregated’ policy narratives ranging from using explicit methods such as content analysis or actors analysis to applying more implicit methods ‘relying on the plausibility and reconcilability of the positions’ (ibid). The choice depends on the context of the studied narrative and the objective of the enquiry. Importantly, the way narratives are constructed influences how they can be analysed.

The narrative policy analysis makes use of diverse analytical methods. Most approaches originate from literary theory, notably narratology (Van Eeten 2007: 252). In this context, narrative is defined as ‘the narration of a sequence of events, where an event is defined as the transition from one state to another’ (Bal 1998, cit. in ibid: 252). The key concepts include story (events, characters, plot), narration and text. Narratives are reconstructed from various sources including formal and informal documents, reports, speeches, oral testimonies as well as nonverbal artefacts such as buildings, images or paintings (e.g. Yanow 1995).

Narrative analysis concerned with policy processes connects with social sciences where the focus is on how narratives are socially constructed in the interaction among individuals, groups and organisations and how this process relates to their strategies and actions. Considered this way, narrative policy analysis links with a number of established approaches of the post-empiricist tradition, including frame analysis (Schön and Rein 1994), deliberative policy analysis (Fischer 2003) and discourse coalitions (Hajer 1995).

2.2.2. Schön and Rein’s frames and frame reflection

Schön and Rein (1994) introduced the concept of frames and frame reflection as an alternative to policy analysis based on the rational model. They see policy making as ‘dialectic, conversation and design’ (ibid: 188) rather than mostly ‘choice, politics and negotiation’ (ibid: 37). The authors argue that instrumental rationality approaches fall short
in resolving ‘policy controversies’ that in contrast to policy disagreements are less congenial to conventional criteria of validity and rational debate. To understand controversies policy analysis cannot limit itself to empirical evidence and rational argumentation.

Schön and Rein conceptualise frames as ‘structures of belief, perception, and appreciation that underlie policy positions’ (ibid: 23). Differences in frames explain why appealing to facts of reasoned argumentation is not sufficient to resolve policy disputes. It is ‘the parties’ conflicting frames [that] determine what counts as a fact and what arguments are taken to be relevant and compelling’ (ibid: 23). Frame analysis attaches great importance to storylines – or narratives - relying on metaphors and myths that derive ‘normative force’ from culturally embedded purposes and values. Naming and framing allows to make ‘the ‘normative leap’ from data to recommendations, from fact to values, from ‘is’ to ‘ought’ (ibid: 26). The diagnosis based on frame analysis can identify generative metaphors and reduce them to a normative dualism (e.g. health versus disease, nature versus artifice etc.).

The rationale of developing frame concept is to reveal the nature of policy conflicts or - as Schön and Rein referred to them - policy controversies. Controversies are disputes among actors whose ‘problem formulation and preferred solutions are grounded in different problem-setting stories rooted in different frames that may rest, in turn, on different generative metaphors’ or in other words they ‘represent mutually incompatible ways of seeing the policy situation’ (ibid: 29). Frames are embedded in institutions that ‘sponsor conflicting frames’.

The authors distinguish between rhetorical and action frames. Rhetorical frames ‘underlie the persuasive use of story and argument in policy debate’ (ibid: 32). Action frames ‘inform policy practice’ (ibid.). Importantly, same frame can play both roles. Action frames can operate at level of policy, institutional action and meta-cultural frames. Policy frames are put forward by an institutional actor to construct the problem in relation to a specific policy situation. An institutional frame – or rather ‘families of related frames’ - are more generic action frames from which actors derive the policy frames they use to structure a range of problematic policy situations. Institutional frames can be recognised by prevailing systems of believes, routines, categorisation as well as styles of argument which characterise practices of specific actors. Meta-cultural frames are organised around generative metaphors and are ‘the root’ of both rhetorical and action frames. They are expressions of broad, culturally shared systems of belief.
Schön and Rein argue that policy analysis needs to reconstruct the frames if it is to understand and reflect on the policy conflicts and controversies. The authors are explicit about difficulties related to researching the frames. First of all, frames cannot be falsified in a traditional sense as ‘no data can be produced that would conclusively disconfirm it in the eyes of all qualified, objective observers’ (ibid: 30). Furthermore,

‘if objective means frame-neutral, there are no objective observers. There is no way of perceiving and making sense of social reality except through a frame, for the very task of making sense of complex, information-rich situations requires an operation of selectivity and organisation, which is what ‘framing’ is’ (ibid).

Interestingly, the authors relate this impossibility of objective verification to Thomas Kuhn’s notion of paradigm change in science. In times of normal science, scientists operate within a shared paradigm that dictates the norms and rules of resolving conflicts. During scientific revolutions, old shared paradigms are shattered and there is no agreed-upon framework for reaching consensus. This is compared to frame conflict. Kuhn’s arguments were generalised by Richard Rorty who put forward a distinction between normal and abnormal discourse. Normal discourse proceeds under a shared framework of rules, assumptions, criteria and beliefs that provides guidance for resolving disagreements or conflicts. Abnormal discourse occurs in situations when shared framework is absent. The notion of abnormal discourse can be paralleled to the concept of post-normal science (Funtowicz and Ravetz 1993), in which high uncertainty and high decision stakes mean that the shared framework needs to constructed within an extended peer community.

Apart from the inherent epistemological difficulty in researching frames, the authors list other challenges, including:

− Rhetorical frames can be incongruent with their patterns of action;
− The same pattern of action may be consistent with different policy frames;
− Interpretation of frames will differ at different levels of policy implementation;
− It may be difficult to distinguish between conflicts within and/or across frames;
− It may be difficult to distinguish between real and potential shifts of frame.

Despite these difficulties, frame construction can be analysed and tested against relevant data. The authors are open about not having all the answers to the challenge of frame reflection and reframing. They draw lessons from authors who divorced themselves from models based on instrumental rationality and microeconomic models of policy choice,

Schön and Rein base their assumption that different approach to resolving policy controversies is called for on the proposition that

‘human beings can reflect on and learn about the frame of policy making even as they play, and, more specifically, that they are capable of reflecting in action on the frame conflicts that underlie controversies and account for the intractability.’ (ibid: 37)

They put forward a notion of ‘design rationality’, which assumes that practitioners are capable of ‘reflective enquiry in and on the practice situation as well as on the effectiveness of their strategies of action (…)’ (ibid: 189). Design rationality means that policy practitioners become reflective enquirers themselves. This reflection could be served by a reflective policy conversation during which the participants should be able to put themselves in the frames of other actors and should ‘consider how their own action frames may contribute to the problematic situations in which they find themselves’ (ibid: 187). Such a reflective conversation may result in recognition and reframing of policy dilemmas.

In terms of implications for policy research of frame approach, authors suggest situated policy enquiry (ibid: 201). One of the key aspects of the approach is departure from the conventional model of causal inference used in normal social science based on the isolation of distinct variables, the observation of a wide range of instances of their occurrence and the elimination from the experimental setting of any confounding variables. The authors argue that the objective causal relationships between variables are not relevant for analysing strongly context-dependent policy practice.

Based on case studies, the authors argue that the validity of analysed stories was supported by a causal tracing of events and not by statistical correlations. Importantly, such approach can be tested and eventually disconfirmed if new evidence is produced. Researchers may consider alternative causal stories in order to probe the validity of their causal inferences. Crucially, this process has a closure: ‘(Policy enquirers) tend to stop enquiring, at least temporarily, when they arrive at a causal account on the basis of which they can set a policy problem that is both adequate to the facts and values they have learned to recognise in the situation and plausibly amendable to solution through the means at their disposal’ (ibid: 203). From the point of view of normal social science, these conclusions may be
dis missed as ‘anecdotal’ and ‘externally invalid’. Schön and Rein argue that such criticism misses the point of ‘the kind of generalisability appropriate to situate practice knowledge’ (ibid: 204). The authors refer to this learning process as ‘reflective transfer’:

‘the process by which patterns detected in one situation are carried over as projective models to other situations where they are used to generate new causal inferences and are subjected to new, situation-specific tests of internal validity’ (ibid: 204).

The findings from specific contexts serve as a learning resource for other reflective practitioners and enquirers (see also Flyvbjerg 2001 on benefits from case study research).

2.3. Knowledge and learning in policy process

2.3.1. Knowledge and expertise in post-empiricist policy studies

There is a vast body of literature on knowledge-policy interface. One author describes the relevant literature as ‘voluminous, eclectic and multidisciplinary’ (Freeman 2007: 368).

The focus of this review is on the role of evidence and knowledge in the post-empiricist approaches to policy analysis.

In their critique of the modernist school, Wagenaar and Cook (2003) argue that it adopted a reductionist understanding of the relation of knowledge and action, in which the latter ‘is supposed to follow logically and automatically from knowledge’. Modernists consider knowledge ‘formal, codified, inert, and easily communicable over groups and organisations’ (ibid). Their aim is thus:

‘(…) to bring the unstable, ideology-driven and conflict-ridden world of politics under the rule of rational, scientifically derived knowledge. (…) The aim of policy analysis as such a technical enterprise is to eliminate the ambiguity, uncertainty and unpredictability of the everyday world, by bringing it under the command of general, systematic, means-end, foundational knowledge’ (ibid: 139-141)

The interpretive policy analysis, on the other hand, emphasises the irrational, complex and highly context-dependent nature of the process in which evidence is constructed and mediated; evidence is not equated with scientific knowledge and is but one factor leading to action. The arguments in policy are not shaped by information and expertise alone. Argumentation and narratives are strongly influenced by cognitive boundaries, normative
assumptions, interests and value systems that all influence how discourses are framed and how meaning is attributed to information and experience. These aspects underlie the way evidence is selected, constructed and used in policy as well as influence whether policy argumentation is accepted, modified or refuted. This perspective on policy process bears a strong resemblance with post-normal science introduced by Funtowicz and Ravetz (1993).

2.3.2. Fischer’s perspective on knowledge and post-empiricist analysis

Fisher devoted much of his scholarship to developing and consolidating the post-empiricist policy analysis. Knowledge and expertise are a crucial part of his theoretical and conceptual framework (Fischer 2009). He departs from the critique of the positivist ‘rationality project’ arguing for bringing interpretive analysis of argumentation and deliberation to the centre of policy research. He advocates ‘policy epistemics’ that would focus on ‘investigating the way interpretive judgements work in the production and distribution of knowledge’ rather than only ‘advancing and assessing technical solutions’ (Fischer 2009: 165). This has fundamental implications for understanding of expertise and evidence as well as for the conceptual and methodological approaches to conducting policy analysis. Fischer links his approach to Flyvbjerg’s approach to ‘phronesis’ that connects theory to practice and action in social sciences. Phronesis calls for an assessment of problems in their particular context effectively arguing against the emphasis on generalisations in social science (see Flyvbjerg 2001, 2012).

Fischer’s concern is that deep policy questions, such as why some issues come to be considered a problem or why problems are scoped in one way and not another, are not taken up by the mainstream policy researchers who mainly focus on - or are commissioned to - providing technical input to policy process (see Fischer 1995). In setting out theoretical background of the post-empiricist approach, he emphasises that the process of knowledge generation is interactive and interpretive:

‘Anchored to an alternative epistemological orientation that understands knowledge to be the product of interaction – including conflict – among competing interpretation of a policy problem, it brings empirical and normative enquiry together in a deliberative framework’ (Fischer 2009: 120)

This resembles Majone’s approach to argument as a ‘complex blend’ of factual statements, interpretations, option and evaluation (Majone 1989). Fischer argues, however, that Majone’s input into argumentative analysis did not clarify the normative dimensions that ‘intervene between findings and conclusions’ (Fischer 2009: 124). The process of
producing knowledge, including ‘objective’ empirical evidence, is influenced by subjective and normative determinants. The often-implicit normative assumptions ‘direct our perceptual processes in pre-shaping what are otherwise generally taken to be strictly empirical facts’ (ibid: 120). This process is shaped by the deeper social and cultural factors as well as politics and power. Knowledge thus becomes ‘the outcome of negotiation between those with expert knowledge and the actors in the everyday world, in particular those with political power’ (ibid: 122). This is based on the ‘coherence theory’ of knowledge (Brown 1977, Stockman 1983: op. cit. Fischer 2003) that emphasises its finite and temporally bounded character, in contrast to ‘correspondence theory’ that sees scientific concepts to directly correspond to the empirical referents of reality (as in rational choice theory).

The key analytical implication of an interpretive approach is abandoning assumption of the separation between empirical and normative. Post-empiricist policy analysis has a role to search for ‘normative presuppositions that operate below the surface of the official arguments or definitions’ and to understand how these assumptions influence ‘understandings of policy alternatives, and thus influence the range of choice-limiting decisions’ (ibid: 121). The post-empiricist analysis is to enquire the connections between:

- empirical data;
- normative assumptions structuring our understandings of the social world;
- interpretive judgements involved in the data collection process;
- particular circumstances of a situational context (in which the findings are generated or the prescriptions applied); and
- specific conclusions.

Fischer (2003) underlines that in the policy practice the scientific acceptability of particular conclusions or recommendations depends on the connections of all these factors and not only on the empirical findings. In post-empiricist approaches that aim at grasping the connections empirical data are still collected, but they ought to be placed in the ‘interpretive framework’ that give them a situated meaning. The analyst becomes as ‘analytical mediator between the available analytical frameworks of social science and competing local perspectives’ whose work is based on a set of consensually derived criteria (ibid: 125).

In this context, Fisher (2009) turns to the discussion on the nature and role ‘expertise’ in the policy process. Just as knowledge, expertise (here: knowledge produced by experts to
inform policy decisions) is socially constructed and influenced by normative assumptions. This requires explicit recognition of these deeper determinants in both producing and analysing expertise. He argues that there is no ‘technical bridge’ that connects technical expertise and normative public decision-making.

Fischer develops his arguments critically responding to Collins and Evans (2007) who attempted to define and categorise different types of expertise in the policy. According to Fischer, they failed to recognise the epistemological challenge of ‘translating’ technical and technological expertise for the use of practical policy challenges. Such ‘translation’ is by definition a deliberative process that needs to bridge the ‘epistemological gap’ between the empirical-technical and the normative. This approach calls for a focus on ‘how people communicate across differences, the flow and transformation of ideas across borders of different fields, how different professional groups and local communicate, see and enquire differently, and the way in which differences become disputes (Willard 1996 op.cit: 164).

Fischer suggests that this challenge can be resolved by approaching expertise from the perspective of practical discourse. The latter can illuminate and facilitate the ‘epistemic translation’ insofar as making transparent how technical or empirical data is normatively situated in the social, cultural and ideological contexts in which public policy operates (ibid: 162). The processes and mechanisms of such translation could be researched by focusing on how policy communities or issue groups frame problems in their arguments, narratives and actions.

2.3.3. Hajer’s approach to discourse coalitions and policy learning

Literature on policy learning is often divided in three streams: policy transfer (or lesson drawing), collective learning and organisational learning. This section introduces perspectives on collective – or social – learning.

Richard Freeman (2007: 379) distinguishes between positivist (or mechanistic) and constructionist approach to policy learning and policy in general. He writes:

‘The first model, the positivist or mechanistic, assumes that a thing exist in time and place and is picked up and carried over-transformed-and used in another place and/or time. What matters are the vectors, levers, couplings, and communications by which this is achieved. Transfer whether of knowledge, technology, or public policy, is an act of engineering. (…)
The second model, constructionist or organic, treats policy as emergent. Policy does not exist somewhere else in finished form, ready to be looked at and learned from, but is finished or produced in the act of looking and learning. Learning is the output of a series of communications, not its input; in this sense it is generated rather than disseminated.’ (ibid)

Post-empiricist policy approaches adopt social practice as a central concept of ‘learning’ and ‘knowing’ (in an analogous way to organisational studies). Practice is seen as ‘(…) an important and distinct dimension (…), with its own logic (pragmatic, purposeful), its own standards of knowing (interpretive, holistic, more know-how than know-what), its own orientation towards the world (interactive, moral, emotional), and its own image of society (as a constellation of interdependent communities)’ (Wagenaar and Cook 2003: 141).

The focus of this section is to compare the interpretive discursive approaches rooted in the constructionist epistemology with arguably the most popular analytical framework on policy learning rooted in the modernist tradition (Advocacy Coalition Framework).

**Advocacy coalitions framework**

Probably the most influential framework to analyse learning in policy process is called the Advocacy Coalitions Framework (ACF). The ACF was introduced by Sabatier and Jenkins-Smith in the late 1980s (Sabatier and Jenkins-Smith 1993). The central questions of the ACF are about science in policy, learning, belief systems and policy change. The logic of the approach is based on five assumptions:

‘(i) a central role of scientific and technical information in policy processes; (ii) a time perspective of 10 years or more to understand policy change; (iii) policy subsystems as the primary unit of analysis; (iv) a broad set of subsystem actors that not only include more than the traditional iron triangles’ members but also officials from all levels of government, consultants, scientists, and members of the media; and (v) a perspective that policies and programs are best thought of as translations of beliefs’ (Weible at al 2009: 122)

One of the most important contributions of the ACF is differentiating between ‘policy sub-system’ and the broader political environment, and considering ‘policy sub-system’ as the major unit of analysis. Referring to Lakatos’s theory of knowledge, the ACF proposes a three-tiered model of belief systems held by actors: ‘deep core beliefs’ (the most stable normative beliefs such as e.g. liberal versus conservative etc.); ‘policy core beliefs’
Weible and colleagues analysed 80 ACF studies conducted over last two decades (Weible et al. 2009). According to the authors, the review supports the arguments that the role of scientific and technical information in the policy process is best understood in combination with the context of the policy subsystem. Writing about the influence of the level of conflict among policy subsystems, they argue that

‘in adversarial policy subsystems marked by high levels of conflict, coalitions will more likely use scientific information as political salvo against an opponent, learning will more likely occur within coalitions than between coalitions, professional forums will more likely be ineffective, and coalitions will more likely rely on different analytical disciplines in making their arguments.

In collaborative policy subsystems marked by intermediate levels of conflict, many of the expectations are reversed: coalitions will more likely use scientific and technical information for cross-coalition learning, professional forums will more likely be effective, coalitions will more likely rely on multidisciplinary sources of information, and belief change will more likely occur at both the policy core and secondary belief level. The factors that contribute to a shift from an adversarial subsystem to a collaborative policy subsystem include a hurting stalemate, external event, or both.’ (ibid: 135)

Another recent account from the ACF elaborates in a more detail on the comparison and change from adversarial to collaborative policy subsystems (Weible and Sabatier 2009). In their enquiry, Sabarier and Weible (2009:198-199) put forward two hypotheses: ‘(1) In a collaborative policy subsystem, actors from opposing advocacy coalitions will converge in policy core and secondary beliefs’ and that ‘Actors will more likely use empirical policy core beliefs and will less likely use normative policy core beliefs to formulate policy preferences in collaborative policy subsystems compared to adversarial policy subsystems.’ The findings suggest that collaborative policy subsystems are linked with convergence in some beliefs between rival coalitions. On the other hand, the authors found that policy participants in collaborative policy subsystems are no more likely to rely on science-based, empirical beliefs than in adversarial systems.
Discourse coalitions framework

Hajer (1993) proposed a ‘discourse coalition’ approach as an interpretive way – or ‘the argumentative alternative’ to the ACF (Fischer 2003) - to analyse the process of policy framing. The approach is based on social constructionist epistemology and rests on the assumption that ‘political problems are socially constructed’. The concepts central to Hajer’s approach include: discourse, discourse structuration and institutionalisation, storyline (or narrative), and discursive affinity.

Hajer defines discourse as ‘an ensemble of ideas, concepts, and categories through which meaning is given to phenomena’ (Hajer 1993). Discourses can be *structured* and *institutionalised*. Discourse *structuration* occurs when ‘a discourse starts to dominate the way a society conceptualises the world’ (ibid: 46). ‘Successful’ discourses often ‘solidify into an institution, sometimes as organisational practice, sometimes as traditional ways of reasoning’. This process is called discourse *institutionalisation* (ibid: 46). Storyline is a narrative that combines different discursive elements in a more or less coherent whole that conceals the discursive complexity. Discursive affinity holds together different arguments, which may vary in origin (e.g. scientific and moral arguments), but which have a similar way of conceptualising the world (ibid: 47).

A discourse coalition is defined as

‘the ensemble of a set of storylines, the actors that utter these story lines, and the practices that conform to these story lines, all organised around a discourse. The discourse coalition approach suggests that politics is a process in which different actors from various backgrounds form specific coalitions around specific story lines’ (ibid: 47).

The advantages of the discourse coalition approach are threefold (ibid: 48):

- it allows us to analyse specific strategic action in the wider context of specific socio-historical discourse and institutional practices;
- it does not limit itself to a reference to interests, but analyses ‘how interests are played out in the context of specific discourses and organisational practices’; and
- it helps to illuminate ‘how actors and organisational practices help to reproduce or fight a given bias without necessarily orchestrating or coordination their actions or without necessarily sharing deep values’.

The discursive coalitions approach is not looking for empirical generalisations (as the ACF does). Its explanatory power is ‘grounded in a detailed contextual examination of the
circumstances at play in specific cases’ (Fischer 2003). While refuting simplistic empirical generalisations, the interpretive approach allows to draw conclusions on both the conceptual approach to policy analysis by proposing analytical frameworks, mechanisms and parameters a situated research should enquire as well as on the policy practice by providing advice on how to critically reflect on and act in the challenging policy processes.

The ACF versus discourse coalitions

The ACF approach was a target of criticism, notably from the authors from the social constructionist epistemological tradition. One of the key criticisms was the ACF’s approach to the policy subsystem as the unit of analysis (Grin and Loeber 2007: 208-209). Critics argue that, first, policy problems often arise in the ‘inter-stitches’ between established policy subsystems and, second, the subsystems are under continuous ‘political (re)construction’. Sabatier and Jenkins (1993) acknowledge the possibility of ‘overlapping’ subsystems, but they do not adopt the claim that subsystems should be seen as continuously under construction. The ACF assumes the policy subsystem should be stable over the prolonged period (10-20 years). Grin and Loeber explain this position as follows:

‘This stance is rooted in their critical-rationalist methodological position: as a unit of analysis the subsystem is a researcher’s construct that must be held stable over the period investigated. Denying the stability of a subsystem would undermine the possibility to define, and distinguish between, the three layers of relevant policy belief systems’ (Grin and Loeber 2007: 208).

Authors like Maarten Hajer and Frank Fischer also criticise the ACF as based on individualist ontology. The social constructionist approach, they represent, rests on the contention that individuals are better characterized ‘by and through the practices they engage in’ rather than by holding stable belief systems (Grin and Loeber 2007: 208-209). Fischer underlines, for example, that ‘the same actor can in fact say very different things at different times and places’ (Fischer 2003). This notion implies that according to this approach belief systems are continuously shaped in communication practice.

Fischer (2003: 94-114) believes that one of the key shortcomings of the ACF is that it fails to explain the nature and mechanisms of policy change, being better equipped to explaining policy stability. The reason for this is that the ACF relies mostly on external events to induce changes in and among policy coalitions. This emphasis on external shocks makes Sabatier ‘neglect the role of strategies of coalition formation, including the role of rhetoric or discourse in their development’ (John 1998; op.cit. ibid: 99).
Furthermore, Fischer (2003: 99) adds that

‘Sometimes external events fail to have the expected effect on coalition formation, suggesting other possible explanations. One of them is that political elites can discursively interpret such events in way that manage and reduce public concerns, minimizing demand for policy responses’.

The ACF often suffers from the lack of relevant indicators, on which it heavily relies. Fischer argues that among the ACF proponents ‘there is no apparent recognition that the justification for eliminating or substituting various indicators raises just the kind of interpretive issues social constructionists describe as basic to the conduct of science in general. (…) What they [ACF users] fail to concede is that their own work remains as much in the realm of interpretation as in that of empirical proof’ (ibid: 100).

Fischer (ibid: 109-114) offers a constructionist critic of Sabatier’s approach. The ACF rests on the ‘technocratic conception of policy learning’ and the traditional understanding of scientific knowledge (‘normal science’) that largely neglect its social and political dimension. The ACF rests on the assumption that the scientific method is general and applicable to the same degree across different fields. The constructionist approach, on the other hand, may reveal that different scientific fields rest on different or even competing premises, which can lead to serious misunderstandings and problems in reaching the consensus. Hajer (1993) demonstrated it in his work on the acid rain controversy in the UK in the 1980s. This is in line with the approach to reframing of Schön and Rein (1994).

Interpretive approach to policy learning resonates with the discussion in science studies on the different modes of knowledge and, in particular, the shift from so-called Mode-1 towards Mode-2 of science and society (Gibbons et al. 1994). Mode-1 is rooted in modernist approach to science as rational process largely limited to ‘normal’ scientific method and laboratories. The principle assumption of Mode-2 approach is that scientific knowledge is (weakly or strongly) contextualised being produced in a co-evolutionary process between science and society, hence ‘socially robust knowledge’. The science-society takes place in the shared space called agora (Nowotny et al. 2001:201-214). The shift takes place in the context of grand societal, economic and cultural transformations of growing complexity, uncertainty and risk. Communication and ‘shared way of knowing’ between scientists and between scientists and other actors is crucial.

While social constructionists emphasise the role of trust, credibility and (political and social) acceptability in the process of public debate, the proponents rooted in modernist
approaches point to exchange and comparison of objective empirically based findings in the explanation of policy change. According to Hajer (1995; op.cit. Fischer 2003: 111) ‘learning requires the invention of new types of reflexive institutions in which various actors meet and discourses can be pitted against one another’. The ACF places emphasis on the technical ‘secondary policy learning’ that does not recognise the political and ideological dimensions of policy making (Fischer 2003: 111):

‘No amount of data, regardless of how well tested and verified it might be, will convince a person that anything important or useful has been presented if, in his or her view, the findings lead to political judgements that take him or her in the wrong direction’ (ibid: 111-112)

Fischer argues that this approach does not acknowledge that in real world linking expertise to core beliefs is exactly what is going on in professional institutes and think tanks. He believes that many of these organisations aim to generate support for core normative and empirical beliefs. Furthermore, ‘technical information is largely valued only in so far as it helps to promote particular conception of policy learning’ (ibid: 112). Learning that changes core beliefs often is ‘the stuff of history’. It is symptomatic, however, that at the end of his critic Fischer speaks about ‘political learning’ rather than ‘policy learning’. ‘Policy learning’ is in fact ‘political’.

Figure 1 presents a comparative overview of the ACF and discursive coalition framework.

**Figure 1. Comparing the ACF and Discourse Coalitions approach**

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<th>Advocacy coalition framework</th>
<th>Discursive coalition framework</th>
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<td>Individualist</td>
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<td><strong>Epistemology</strong></td>
<td>Neopositivist empiricist</td>
<td>Social constructionist</td>
</tr>
<tr>
<td><strong>Research design</strong></td>
<td>Deductive research strategy</td>
<td>Grounded approaches (abductive strategies)</td>
</tr>
<tr>
<td></td>
<td>Empirically tested hypothesis</td>
<td>Possible combination with retroductive research strategy</td>
</tr>
<tr>
<td><strong>Method of enquiry</strong></td>
<td>Quantitative Survey based</td>
<td>Qualitative discourse analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Case studies</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Empirically falsified approach to study patterns of policy change in comparative perspective; insists on time perspective of 10-20 years</td>
<td>Contextualised approach to in-depth enquiry on discourses and ‘socially constructed meanings’ shaping policy change</td>
</tr>
<tr>
<td><strong>Level of enquiry</strong></td>
<td>Advocacy coalitions (networks) in policy sub-system; recently also interfaces between subsystems</td>
<td>Discursive coalitions forming as a response to specific problems</td>
</tr>
<tr>
<td><strong>Integrating element</strong></td>
<td>Belief systems with a stable ‘deep core’ beliefs very resistant to change</td>
<td>Narrative story lines and shared meanings reflecting/redefining concerns about core believes</td>
</tr>
<tr>
<td><strong>Assumptions about change</strong></td>
<td>Mainly caused by external events</td>
<td>Negotiated through argumentative discourse</td>
</tr>
<tr>
<td><strong>Status of knowledge</strong></td>
<td>Scientific, expert based</td>
<td>Socially constructed, contextualised</td>
</tr>
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</table>

1 An interesting proposal is put forward by Nowotny et al (2001: 228), who proposed an option of creating ‘a permanent public debating space’ bringing together ‘pluri-disciplinary expert groups’ to develop ‘trans-disciplinary methods of translating knowledge into action’.
2.4. Critique of post-empiricist approaches

The post-empiricist position came under criticism from authors from the positivist tradition as well as within the interpretive paradigm (see Bevir and Rhodes 2002, Blaikie 2000, 2009). This section will present critiques and responses to several critical points on the interpretive approaches including:

- insufficient account of material reality;
- overemphasis of the role of intention, reason and motivation;
- underestimation of the role of institutions;
- limited critical power; and
- impossibility to generalise findings.

Positivists reject interpretive approaches as not adequately accounting for material reality. Social realists like Bhaskar and Outhwaite claimed that interpretivism is guilty of epistemic fallacy arguing that although interpretive processes are a significant part of social process, it is does not mean that they are all that exists or be known (1987:76, op.cit. Blaikie 2009: 188). The point holds in relation to approaches adopting naïve constructionism that indeed focuses only on socially constructed phenomena. Many constructivist approaches acknowledge or even incorporate material reality in their frameworks. The realist constructivist stance as advanced by Beck (2009), for example, does so by adopting Latour’s actor-network theory that rejects dualism of society and nature (Latour 2004) thus integrating it into his theory. Others, simply recognise that material reality can influence beliefs and perceptions as external pressure. Bevir and Rhodes (2002: 149) put it simply: ‘There is a real world ‘out there’, and while we do not have unmediated access to it, it is a source of pressures.’

Giddens (1984) argues that the central concepts of interpretivism such as intention, reason or motives can be misleading as they may imply an implicit assumption that ‘competent social actors engage in a continuous monitoring of their conduct and are thus aware of both their intentions and the reasons for their actions’ (Blaikie 2009: 188). Reflection on reasons or motivations occurs retrospectively or when actions are questioned. Giddens points to ‘routine’ as the predominant form of day-to-day social activity. Policy analysts seem to be well aware of the need to approach accounts from social actors critically. Frame analysis (Schön and Rein 1996), for example, is focused on enquiring factors underlying intentions, rationales or motives. The focus is, therefore, at what underlies the narratives. In organisational learning, Argyris and Schön’s distinguish between ‘espoused’ and ‘in-use’
theories of action: accounts from social actors need to be critically analysed or confronted with each other to reveal ‘theories in-use’ underlying processes in organisations.

Another criticism is that interpretive theory does not account for the role of institutions and institutional structures. Rex (1974, op.cit. Blaikie 2007: 188) argued that interpretive researchers should be interested in ‘actual historical structures as they appear to the sociologist and not merely the structure that actors believe to exist, or believe that they make, in the process of thinking them to exist’. Bevir and Rhodes (2002: 150) respond that interpretive approaches in fact do reflect on institutions but strongly deny their reified or essential nature. Institutions as any other social phenomena are socially constructed, reconstructed or dismantled. They are ‘sedimented products of contingent beliefs and preferences’ (ibid: 150). This is in line with Schön and Rein’s institutional frames or Beck’s approach to institutional constructivism. The latter considers the vicinity of ‘social constructs’ to institutionalised social practices as factor explaining their effects on actions or the transformation between problem and action frames.

An important point raised by critics is that due to its inherent relativity, interpretive position lacks critical power. There is no theory-free knowledge: interpretive social enquiry will always be coloured by the standpoint of a researcher. As a consequence ‘the varieties of interpretive theory inspired by post-structuralism and postmodernism can appear to lack a notion of truth by which we can condemn beliefs as false’ (Bevir and Rhodes 2002: 150). Bevir and Rhodes (2002) respond that anthropological approach to objectivity allows interpretive researchers to ‘dismiss some beliefs without appealing to some notion of absolute truth (ibid: 150). By rejecting the notion of absolute truth, they allow for a critical deconstruction of political ideologies that are based on such a premise.

The interpretive approaches abandon the mission to develop accumulative general social theory, which raised questions on how they can contribute to general knowledge. This issue is at the core of the major debate on the role of social sciences (see e.g. Flyvbjerg 2001). In general, proponents of post-empiricist policy analysis claim that their strength resides in their explicit normative orientation and embeddedness in policy practice. As Fischer and many others argued post-empiricist analysis sees policy analysis as a deliberative practice that is to provide insights for policy makers on specific problems and their constructions emerging in specific social contexts. It is to become useful and contribute to practice in policy making. Schön and Rein (1994) argued similarly that the results of a situated organisational enquiry could become a useful source for other practitioners: ‘reflective transfer’ between different social realities is possible.
2.5. Implications for this enquiry

On theoretical and epistemic perspective of policy analysis

Interpretive policy analysis is based on the social constructionist understanding of policy and scientific process. A critical researcher enquires interpretations and meanings emerging in policy narratives. This approach does not question existence of external reality independent of investigators. The focus of interpretive policy research is taking account of this reality through investigating narratives and discourses of different policy actors.

This enquiry embraces a social constructionist position. The concepts of narrative, discourse, frame and discourse coalition will be used as the conceptual framework of this study. Narratives can be studied as aggregates at different levels of enquiry, starting from individual level to ‘societal narratives’. The notion of narrative as ‘aggregated construct’ is a basis for constructing meta-narratives of resource efficiency. Frames will be central to analysing how the policy issue is ‘problematised’ and defined by policy actors and in policy documents. The approach will be extended to include ‘vision frames’ focused on how issues are problematised in prospective scenarios and visions.

The notion of discursive affinity and discourse coalitions will be useful in studying differences and similarities in narratives (e.g. internal and external narrative coherence) as well as discursive or argumentative alignment in (emerging) discourse coalitions.

Knowledge, expertise and evidence in policy

As post-empiricist approaches, this research follows social constructionist approach in understanding knowledge and social learning. My position can be paralleled with the notion of ‘realist constructivism’, close to the ‘subtle realist’ ontology, that recognises the central role of interpretation of facts and empirical evidence, but assumes that reality is out there and exists.

The notions relevant for understanding of policy evidence, which will be integrated in the conceptual design of this study, include:

- situated socially constructed character of expertise, knowledge and social learning;
- approach to policy evidence as a social construct;
- role of frames, and normative and cognitive assumptions in constructing the evidence base of policy processes; and
- role of institutions and power in constructing meanings and frames.
Research gaps

The review revealed that post-empiricist policy analysis rarely addresses policy cases centred on future visions or scenarios. The challenges and implications of constructing long-term policy visions are not tackled. There is little discussion on what are – or would be – implications for ‘policy epistemics’ in the case of extension of policy narratives to embrace long-term futures. There are unexplored theoretical and practical questions on implications of futures or long-term policy orientation on:

- policy narrative and argumentation in general;
- underlying assumptions of policy narratives and argumentation;
- policy frames and the reframing of policy;
- expertise and knowledge used to construct evidence base of policies; as well as
- process of constructing argumentative alignment among policy stakeholders.
3. Knowledge and social learning in organisational studies

3.1. Introduction

The perspectives on knowledge and learning in policy studies (as well as in futures and foresight literature) are often rooted in organisational learning and management studies. This section reviews approaches developed by Schön and Argyris (1996), Nonaka (Nonaka 1994; Nonaka et al. 2000; Nonaka and Toyama 2005) and Wenger (Lave and Wenger 1991; Wenger 1998). The purpose of the review is to see how knowledge and social learning have been approached in the organisational studies with a view of applying major concepts and findings to the present enquiry.

3.2. Knowledge and social learning in organisations

3.2.1. Argyris and Schön’s approach to organisational learning

Argyris and Schön (1996) were true pioneers of the analysis of organisational learning. Their work had a significant influence on approach to social learning in other branches of social sciences, including policy research. The focus on this short review is on their overall theoretical approach and on the famous concepts of productive learning and single- and double-loop learning. The authors approach organisational learning as ‘an organisation’s acquisition of understandings, know-how, techniques, and practices of any kind and by whatever means’ (ibid: XXI). The approach is normative, situated in a specific context and practice-oriented. It is normative in a sense that authors openly strive for learning how to change patterns of behaviour that influence productive learning. Interestingly, authors aim at both focusing on particular cases and developing a general theory of organisational learning useful for practitioners.

In order to introduce the concept of organisational learning, Argyris and Schön define organisational action, enquiry and knowledge. Enquiry intertwines thought and action that emerges from a doubt (or a problem) and gives impulse to take action to resolve the problem. Organisational enquiry takes place when it is undertaken by individuals who function as agents of an organisation (ibid: 11). Organisational enquiry may lead to ‘change in thinking and acting of an organisation which yields a change in the design of
organisational practises’ (ibid: 12). This gives rise to questions on organisational knowledge.

Organisations, according to the authors, hold environments for knowledge and directly represent knowledge. First, knowledge resides in minds of individual members as well as in artefacts and places. Second, organisations represent knowledge in a sense that they ‘embody strategies for performing complex tasks’ (ibid: 13). Knowledge is embedded in routines and practices. This knowledge – or ‘theories of action’ – can be represented as ‘systems of beliefs that underlie actions, as prototypes from which actions are derived, or as procedural prescriptions for action in the manner of a computer programme’ (ibid: 13). These ‘theories of action’ include strategies of action, the values that govern the choice of strategies and the assumptions on which they are based. The strategies can be expressed as a causal schema unveiling in a specific context:

‘We deliver a theory of action in terms of a particular situation, S, and an action strategy, A, for obtaining consequence C in situation S. The general form of a theory of action is: If you intend to produce consequence C in situation S, then do A. The further elements enter into the general schema of a theory of action: the values attributed to C that make it seem desirable as an end-in-view and the underlying assumptions, or model of the world, that make it plausible that action A will produce consequence C in situation S’ (ibid: 13).

Theories of action may be considered ‘espoused theories’ or ‘theory-in-use’. The former is instrumentally used to explain or justify a pattern of activity. The latter is often tacit and needs to be constructed from evidence gathered by observing and analysing the patterns of action in question. Based on these concepts, Argyris and Schön argue:

‘organisational learning occurs when individuals within an organisation experience a problematic situation and enquire into it on the organisation’s behalf. They experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organisation or their understanding of organisational phenomena and to restructure their activities so as to bring outcomes and expectations into line, thereby changing organisational theory-in-use.

In order to become organisational, learning that results from organisational enquiry must become embedded in the images of organisation held by its
members’ minds and/or in the epistemological artefacts (the maps, memories, and programs) embedded in the organisational environment’ (ibid: 16).

Learning products can take many forms, but they always need to lead to a change of organisational theory-in-use if they are to be bear fruits. Significantly for this research, one of the lessons from enquiry brings about a forward-looking dimension being ‘images of desirable future and invention of the means by which they may be achieved’ (ibid: 17).

Argyris and Schön notice that learning may not always be positive. They differentiate ‘instrumental learning’ that is to lead to improvement in the performance of an organisation. They then introduce an often-cited distinction between single- and double-loop learning. Single-loop learning is ‘instrumental learning that changes strategies of action or assumptions underlying strategies in ways that leave the values of a theory of action unchanged’ (ibid: 20-21). Double-loop learning is ‘learning that results in a change in the values of theory-in-use, as well as in its strategies and assumptions’ (ibid: 21). The latter implies more thorough enquiries, potential conflict as well as higher degree of risk and uncertainty. Most organisations will resist double-loop learning opting for single-loop corrective measures.

To analyse the characteristics of these two modes of learning, the authors then develop two models of theories-in-use (Model I and Model II) and models of learning systems (O-I and O-II). Model I theory-in-use encourages single-loop learning and reinforces values and strategies of the existing theory-in-use, which may inhibit double-loop learning. O-I learning system features (primary and secondary) ‘inhibitory loops’ and ‘defensive routines’ that reinforce anti-learning and change-resistant routines in the organisation. Model II theory-in-use, on the other hand, is to invite exchange and confrontation of different, often conflicting, views and to actively seek opportunities for double-loop learning in organisation enquiry. Similarly, O-II learning system is to encourage interactions, practices and routines that lead to double-loop learning. The O-II needs to provide conditions in which errors can be openly discussed, vagueness can be identified and tackled, and conflicting assumptions brought to the fore and reconciled.

Authors underlie that O-II systems are extremely rare and cannot emerge spontaneously from O-I system; the task is to develop a roadmap towards an elusive goal of O-II world. They admit self-critically that their theory of transition from one system to another is ‘extremely primitive’ and offer various case studies of the ‘beginnings’ of O-II learning systems they explored (ibid: 112).
Based on the cases, authors concluded that most actions taken to promote instrumental organisational learning actually inhibit deeper learning, even if their initiators are espoused to an ambition of double-loop learning. The self-reinforcing defensive patterns in organisations undermine single-loop learning and effectively inhibit double-loop learning (ibid: 281-282). The authors then suggest a series of steps that can be taken to support double-loop learning and a substantive future research agenda (ibid: 282-288).

Interestingly, Argyris and Schön emphasise that studying Model II and O-II systems requires self-reflective and self-critical abilities also from researchers taking on the task. In other words, skills and competences routinely used in normal social science research do not predispose researchers to study double-loop learning.

### 3.2.2. Lave and Wenger’s community of practice

Another widely recognised approach to understanding collective learning process is known as ‘community of practice’, popularised mainly through works of Lave and Wenger (Lave and Wenger 1991; Wenger 1998). Wenger subsequently applied the concept to different contexts together with other colleagues (Foote et al. 2002; Snyder et al. 2003). The approach was also applied to cross-organisational collaboration in public sector settings (Snyder et al. 2003). The concept rests on the assumption of an inherently social character of learning and knowledge. The approach belongs to the social theory of learning.

In his approach, Wenger (1998: 226-227) sees learning as:

- *Inherent in human nature*, not an activity separable from the rest of our lives;
- The ability to negotiate new meanings, including a dynamic inter-play between participation and reification;
- Creating emergent structures: communities of practice constitute elemental social learning structures;
- Experiential and social: realignment of experience and competence;
- Transforms our identities: it changes who we are, our practices and communities;
- Constituting trajectories of participation: co-evolutionary interplay between our personal and communal histories;
- Dealing with boundaries: bridges multiple forms of participation and various communities;
- A matter of social energy and power: it depends on negotiability, and shapes and is shaped by membership and ownership of meaning;
- A matter of engagement in the practices of communities
− A matter of imagination: orientation, exploration and reflection to place our identities and practice in a broader context;
− A matter of alignment: frameworks of convergence, coordination and conflict resolution determining the social effectiveness of our actions;
− Arena of interplay between the local and the global: defines global context for its own locality.

Communities of practice – ‘elemental social learning structure’ - are engaged in a process of constant interaction and fine-tuning between experience and competence and as such they are ‘not only a context for the learning of newcomers but also (…) a context for new insights to be transformed into knowledge’ (ibid: 214).

Wenger links learning to the process of acquisition and creation of knowledge:

‘On the one hand, a community of practice is a living context that can give newcomers access to competence and also invite a personal experience of engagement by which to incorporate that competence into an identity of participation. [As such] communities of practice are a privileged locus for the acquisition of knowledge.

On the other hand, a well-functioning community of practice is a good context to explore radically new insights (…). A history of mutual engagement around a joint enterprise is an ideal context for this kind of leading-edge learning, which requires a strong bond of communal competence along with a deep respect for the particularity of experience. [As such] communities of practice are a privileged locus for the creation of knowledge’ (ibid: 214)

Community of practice becomes a learning community when there is a tension between experience and competence. When the tension disappears the community may end up in stalemate. Wenger offers several insights on how to sustain this creative tension. Of particular importance in the context of learning communities are reflections about the role of identity, participation and non-participation (issues of peripherality and marginality), and reconfiguration of identification and negotiability (ibid: 215-221).

Wenger’s insights on design for learning are relevant for the reflection on learning process in the policy context. Wenger conceptualises four dimensions (dualities rather than dichotomies) and three components of the learning architecture. A design framework is created by juxtaposing the dimensions and the components of learning architectures.
The four dimensions-dualities of design include:

- **Participation versus reification**
  - Participation: ‘the social experience of living in the world in terms of membership in social communities and active involvement in social enterprises’ (ibid: 55);
  - Reification: ‘the process of giving form to our experience by producing objects’ (ibid: 58);

- **Designed versus emergent**
  - Both practices and identities are emergent; structuring interventions (or design) can influence practices (e.g. learning), but only indirectly; practice can only be a response to design;
  - Inherent uncertainly between the design and its realisation in practice;

- **Local versus global**
  - Every practice is ‘hostage’ to its own past and its own locality;
  - Practices evolve in the complex interaction between local and global;

- **Identification and negotiability**
  - Identification: ‘the process through which modes of belonging become constitutive of our identities by creating bonds or distinctions in which we become invested’ (ibid: 191);
  - Negotiability: ‘the ability, facility and legitimacy to contribute to, take responsibility for, and shape the meaning that matter within a social configuration’ (ibid: 197); ‘economies of meaning’ and ‘ownership of meaning’ relate to power and legitimacy.

The three components of design are:

- **Engagement**
  - Mutuality (interactional facilities, joint tasks, peripherality, ways of belonging);
  - Competence (initiative, accountability and tools), and
  - Continuity (reificative and participative memory);

- **Imagination**
  - Orientation (time, space, meaning, power – process transparency)
  - Reflection (patterns, comparisons with other practices)
  - Exploration (envisioning possible futures, pushing boundaries)

- **Alignment**
  - Convergence (common focus and shared understanding; leadership, allegiance)
 Coordination (standards, communication, feedback, coordination with external contexts – boundary facilities)

 Jurisdiction (policies, contracts, mediation, conflict resolution, authority).

Brown and Duguid (1991: 203), one of the leading proponents of community of practice approach, underline that the concept needs to be handled with care, in particular because of the common associations of the word ‘community’:

‘(…) much of the enthusiasm turns on the appeal of the word community, which Williams (1976) suggests can be a deceptive but ‘warmly persuasive word.’ (…) Communities of practice are, in fact, as likely to be cold as warm, may sometimes be coercive rather than persuasive, and are occasionally explosive. Nevertheless, mediating as they do between individuals and large formal and informal social structures, and between organizations and their environment, they are where a good deal of the work involved in knowledge creation and organizational learning gets done.’

The above also confirmed by Wenger (1998: 85) who underlines that ‘communities of practice’ are neither intrinsically beneficial nor harmful. These reflections will be duly taken into account in this study.

3.2.3. Nonaka’s SECI model

Nonaka’s approaches to knowledge creation are among the most often cited works on organisational learning (Nonaka 1994; Nonaka et al. 2000; Nonaka and Toyama 2005). Nonaka defines knowledge as a social creation, dynamic, and context-specific. He follows the classical division between explicit knowledge and tacit knowledge. Explicit knowledge is ‘formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals and such like. It can be processed, transmitted and stored relatively easily’ (Nonaka et al. 2000). Tacit knowledge is ‘highly personal and hard to formalise. Subjective insights, intuitions and hunches fall into this category of knowledge. Tacit knowledge is deeply rooted in action, procedures, routines, commitment, ideals, values and emotions’ (ibid).

Nonaka proposes a model of knowledge creation consisting of three interconnected elements: the SECI process, ba and knowledge assets. According to Nonaka knowledge is created ‘through interactions between tacit and explicit knowledge, rather than from tacit or explicit knowledge alone’. Nonaka and his collaborators refer to this interaction as
‘knowledge conversion’. They developed a model composed of four modes of knowledge conversion (SECI, see Figure 2). The four modes can be summarised as:

- Socialisation is the process of converting new tacit knowledge through shared experiences. Tacit knowledge can be acquired only through shared experience, such as spending time together or living in the same environment;
- Externalisation is the process of articulating tacit knowledge into explicit knowledge. When tacit knowledge is made explicit, knowledge is crystallised, thus allowing it to be shared by others, and it becomes the basis of new knowledge;
- Combination is the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge. Explicit knowledge is collected from inside or outside the organisation and then combined, edited or processed to form new knowledge;
- Internalisation is the process of embodying explicit knowledge into tacit knowledge. Through internalisation, explicit knowledge created is shared throughout an organisation and converted into tacit knowledge by individuals. Internalisation is closely related to ‘learning by doing’ (ibid).

**Figure 2. Nonaka’s SECI Model**


*Ba* is shared context in which knowledge is shared, created and utilised. The concept is based on a concept originally proposed developed by the Japanese philosopher Kitaro Nishida and developed by Shimizu. Nonaka argues that ‘knowledge is created through the interactions amongst individuals or between individuals and their environments, rather than by an individual operating alone’ (ibid: 14).

Nonaka differentiates between four types of knowledge assets: experiential, routine, conceptual and systemic. These knowledge assets form the basis of the knowledge-creating
process. They should be mapped and their interactions encouraged. ‘Experiential knowledge’ assets consist of skills and know-how that are acquired and accumulated by individuals through experiences as well as emotional knowledge, such as care, love and trust, etc. Its tacit nature is what makes experiential knowledge assets difficult-to-imitate resources.

‘Conceptual knowledge’ assets are ‘explicit knowledge articulated through images, symbols and language. They are the assets based on the concepts held by customers and members of the organisation’ (ibid: 21). They include brand equity (as perceived by customers) and concepts or designs (as perceived by the members of the organisation). Since they have tangible forms, conceptual knowledge assets are easier to grasp than experiential knowledge assets.

‘Systemic knowledge’ assets consist of ‘systematised and packaged explicit knowledge, such as explicitly stated technologies, product specifications, manuals, and documented and packaged information about customers and suppliers.’ (ibid: 21-22) Systemic knowledge assets are ‘visible’, often protected (e.g. patents and licences) and can be transferred relatively easily.

‘Routine knowledge’ assets consist of ‘the tacit knowledge that is routinised and embedded in the actions and practices of the organisation. Know-how, organisational culture and organisational routines for carrying out the day-to-day business of the organisation are examples of ‘routine knowledge assets’ (ibid: 22). Nonaka mentions the use of ‘stories’ that help to form routine knowledge.

The dynamic knowledge-creating process should be ‘energised’ by necessary conditions, such as autonomy, creative chaos, redundancy, requisite variety, and love, care, trust and commitment. These conditions, including e.g. trust, love, commitment and care, can be ‘supplied’ (sic!) by leaders (ibid: 431-433). It is difficult to imagine that trust can be ‘supplied’ rather than ‘built’ over time. It is also difficult to imagine that trust will automatically emerge in response to the specific managerial actions (compare Wenger’s ‘emergent versus designed’ above). It seems that, after all, in order to emerge as a ‘meaningful shared context’ ha needs to be based on the ‘bond’ between the participants and at least some ‘history’ (as they emerge in time) just like Wenger’s ‘community of practice’. Such a hierarchical vision of organising knowledge creation processes seems striking, and is perhaps influenced by a specific company culture and a wider cultural grounding of Nonaka.
Nonaka’s approach has been subject of the lively debate and criticism. Based on Polanyi’s seminal work on tacit knowledge, Tsoukas (2003) claims that Nonaka and Takeuchi’s interpretation of tacit knowledge awaiting conversion into explicit knowledge is erroneous. He points to the intrinsic ineffability of tacit knowledge that, because of its very nature, simply cannot be reduced to the codified form. Tsoukas argues that tacit knowledge is in fact the other side of explicit knowledge: ‘even the most explicit kind of knowledge is underlain by tacit knowledge’ (ibid: 425). What Nonaka calls ‘knowledge conversion’ is in fact ‘manifesting’ tacit knowledge in the course of the practice undertaken in social interaction. This ‘manifestation’ can be performed by making the practitioners re-view the practical activities they are involved in by drawing their attention to previously unseen connections (Tsoukas 2003: 424).

3.3. Implications for this enquiry

The approaches to organisational learning reviewed above - Argyris and Schön’s organisational learning, Wenger’s communities of practice and Nonaka’s SECI - all recognise that knowledge is produced in interaction between individuals and between individuals and their contexts. The design of learning environments is of key relevance to understanding why certain contexts are or are not conducive to learning and change. This notion will be important for analysing the reframing process and argumentative alignment. Argyris and Schön’s logic of organisational enquiry and its emphasis on various explicit and implicit understandings of theory of change (espoused theories versus theories-in-use) will be key for analysing narratives, notably their internal coherence.

The notions of knowledge and learning, which will be integrated in the conceptual design of this study, include:

- the situated and socially constructed character of knowledge and learning in relation to the policy process: this is one of the fundamental assumptions underlying the conceptual approach in this study;
- the selected dimensions of design for social learning, notably alignment, engagement, imagination and uncertainty: the role of the design of the policy learning process will be examined in the context of preparing the policy roadmap;
- the role of power and legitimacy for the ownership of meaning: this will be explored notably in the case of reframing the policy associated with introducing new terms and phrases and redefining or changing the scope of existing terms.
Research gaps

Contributing to the organisational and social learning literature is not the main objective of this research. The review, however, revealed possible research gaps in this field that are relevant to the main research problem of this enquiry.

Organisational learning studies could further explore inter-organisational or trans-organisational learning processes, especially in the context of processes involving diverse organisations from both private and public sector organisations. This could bring together organisational researchers and policy analysts to examine the dynamics and processes in policy communities or in networks emerging e.g. at the interface of science and policy.

One of the key research problems relevant for this study is a reflection on learning design – or a learning system - for inter-organisational learning and the process of change in the context of policy change and a wider societal transition required to meet societal challenges. Using insights from organisational learning one could identify specific conditions and mechanisms in policy process that enable or hamper social learning.
4. Frames, knowledge and social learning in futures and foresight

4.1. Introduction

The objective of this part of the literature review is to scan the literature in search for relevant approaches that could specifically inform the prospective dimension of the research problem addressed by this study, notably the question of frames and discourse analysis of future-oriented policy narrative and the notion of social learning and knowledge in relation to future developments. The chapter seeks insights on what distinguishes the process of thinking, knowing and deliberating longer-term futures from shorter-term policy processes. The review focuses on the writings by authors and practitioners associated with the tradition of futures and foresight studies. These areas of study and practice explicitly focus on the future (or futures) and have a long tradition of being used in the policy context.

The chapter reviews approach relevant for the concept of policy discourse and frames. It first introduces the causal layered analysis (CLA) used to analyse complex problems and to develop future scenarios based on an in-depth analysis of layered discourse (Inayatullah 1998, 2002, 2004). This is followed by a reflection on the practice of foresight seen as an analytical or intentional reframing exercise. The second part of the chapter reviews selected perspectives relevant for knowledge generation and social learning in foresight practice, including roadmapping and anticipatory action learning.

4.2. Frames and discourse analysis in futures and foresight

4.2.1. Inayatullah’s causal layered approach

one of the best-established approaches. CLA has been proposed and developed by Soheil Inayatullah since the 1990s as a research theory and method (1998, 2002, 2004). The approach draws from poststructuralism, macrohistory and postcolonial multicultural theory (Inayatullah 2004: 8). Inayatullah saw his work influenced by Johan Galtung’s deep civilisational codes, Foucault’s epistemes and discursive analysis as well as Sarkar’s philosophy. He also acknowledges influence of complexity theory, considering futures as both patterned and chaotic, which, according to Inayatullah, allows us to reconcile classical dichotomies such as agency and structure. Complexity theory suggests that to understand futures, research and discovery process should include many different ways of knowing rather than a single theory of everything (ibid). The CLA theory is to integrate empiricist, interpretive, critical and action learning modes of knowing. As a method, its ambition is to develop ‘transformative spaces for the creation of alternative futures’ (ibid: 8).

The central premise of the CLA approach is that understanding problems requires an in-depth enquiry of various layers of meaning that range from the official unquestioned view of reality to deep myths underlying the understanding of the problem. Inayatullah (1998, 2002, 2004: 16-19) distinguishes between four levels of analysis: litany, systemic causes, discourse/worldview and metaphor/myth. The author describes the mechanism of the CLA enquiry as follows: ‘CLA has a fact basis, which is framed by history, which is then contextualised within a discourse or worldview, which is then located in pre- and post-rational ways of knowing, in myth and metaphor.’ (Inayatullah 2004: 19).

‘Litany’ is the most obvious level of enquiry; it refers to quantitative trends, problems or issues appearing in the public discourse. The events, trends or issues may appear discontinuous and are often exaggerated by the mass media (ibid: 16). They are often used for political processes. The second level refers to ‘systemic causes, including social, technological, economic, environmental, political and historical factors’ (ibid: 17). Interpretation is based on quantitative data. The level is informed by technical or academic analysis. The data is often questioned, but the criticism focuses on the methods or data rather than on the paradigm within which the issues is framed.

The third level is deeper and focuses on discourse/worldview ‘that supports and legitimates it’ (ibid: 17). The task here is to ‘find deeper social, linguistic and cultural processes that are actor-invariant (…) and to some extent system-invariant’. This level is about enquiring deeper assumptions behind the issue and how different discourses are constructing the problem. Depending on the context, Inayatullah suggests a possibility to focus on various levels – or analytical dimensions - within discourse/worldview analysis, namely: the
stakeholder (e.g. actors), ideological (e.g. neo-Marxism versus neoliberal), civilisational (e.g. Islamic, Confucian) and epistemic (e.g. modern, postmodern) levels.

The fourth layer is at the level of metaphor or myth. These are ‘collective archetypes’ revealing ‘the unconscious and often emotive dimensions of the problem’ (ibid: 17). This level is to question the deeper assumptions about the future, including the deep beliefs about the nature of the future itself (e.g. deterministic versus promethean approaches).

Inayatullah suggests that the layered approach ‘largely resolves the classic contests of empirical versus theoretical, scientific versus non-scientific, leadership versus participation and qualitative versus quantitative’ (Inayatullah 2002: 490). He notes that different layered approaches that emerged in futures studies are closely related and their variations are superficial (ibid: 479).

In general, the layered approaches (ibid: 490):

− Construct problems through context;
− See context at multiple levels;
− Allow for moving up and down layers, rethinking the implied future at each level;
− Allow for creating authentic alternative scenarios based on ‘changed and self-challenging context’.

The CLA is used in futures visioning workshops providing the basis for developing visions and preferred futures and as well as steps needed to create the future. Inayatullah has linked it to his concept of Anticipatory Action Learning (AAL) focused instigating collective learning about future (see section on policy learning in foresight below).

4.2.2. Foresight practice as an instrumental framing exercise

Foresight can offer relevant perspectives and lessons for any future-related policy exercise. This study focuses on the approach to foresight considered as an applied policy tool used to assist the process of designing long-term strategies and policies. Foresight methods, along with evaluation, impact assessment and benchmarking, are included in the set of so-called ‘policy intelligence tools’ that enable public sector organisations to better anticipate future trends and adapt their policies (Kuhlmann et al. 1999; Tubke et al. 2001).

One of the most widely quoted definitions of foresight was proposed in the framework of the EU-funded project FOREN (Gavigan et al. 2001), which considers foresight:
‘a systemic, participatory, future intelligence gathering and medium-to-long vision-building process aimed at present-day decisions and mobilising joint actions’.

The FOREN guide (Gavigan et al 2001: 4, emphasis originally introduced by authors) introduces five main elements constituting foresight approach:

- **Structured anticipation and projections** of long-term social, economic and technological developments and needs.

- **Interactive and participative methods** of exploratory debate, analysis and study, involving a wide variety of stakeholders, are also characteristic of Foresight (as opposed to many traditional futures studies that tend to be the preserve of experts).

- **These interactive approaches involve forging new social networks.** Emphasis on the networking role varies across Foresight programmes. It is often taken to be equally, if not more, important than the more formal products such as reports and lists of action.

- **The formal products of Foresight go beyond the presentation of scenarios (however stimulating these may be), and beyond the preparation of plans.** What is crucial is the elaboration of a guiding strategic vision, to which there can be a shared sense of commitment (achieved, in part, through the networking processes).

- **This shared vision is not a utopia.** There has to be explicit recognition and explication of the implications for present day decisions and actions.

Barré and Keenan (2006: 3) argue that the purpose of foresight² is

‘to allow for a better accounting of the long term in decision making process and to allow for collective process of identification and debate of alternative strategies (…) [Its] ambition is, in other words, to improve the two way linkage between knowledge and the building of a ‘common world’’. 

Taking stock of various traditions and definitions of foresight, technology foresight in particular, Miles et al (2008) list four key features characterising foresight programmes:

- **Long-term orientation,** aimed at informing on-going decision-making in the present (especially research and innovation policy decisions), and grounded in the assumption that the future is in many ways open and can be shaped by improved understanding of opportunities and threats, driving forces and underlying processes of change;

- **Use of range of formal tools and techniques** for long-term analyses;

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² In the cited paper the authors talk about future-oriented technology analysis (FTA), which will nevertheless be referred to as ‘foresight’ in the following paragraphs as the remarks are fully applicable to foresight.
Involvement of a wide pool of expertise, and often of stakeholders more generally, to access relevant knowledge, to engage more participants in the policy process, and to establish networks for ongoing coordination of action and sharing of information;

Crossing disciplinary boundaries and professional compartments, to be able to address emerging real-world problems that know nothing of these impediments. This often requires extensive ‘translation’ and fusion of knowledge from different sources.

These accounts place more explicit emphasis on the role of foresight in ‘knowledge generation’ by ‘fusing’ and ‘translating’ different knowledges coming from different disciplines. Inevitably these processes have to involve a degree of knowledge sharing and collective learning between different participants. Interestingly, these approaches openly state their ontological and epistemological positions towards future. Future is seen as something ‘open’ that can be actively shaped – or socially constructed - thanks to better understanding of prospective trends and emerging opportunities and threats.

To sum up, the review of the above and other relevant approaches (Barré 2001; Langenhove et al. 2002; Miles 2004; Loveridge 2008; Miles et al. 2008) to defining foresight allows for distilling five key elements shared by most definitions, that is:

- prospective orientation;
- multidisciplinary systemic enquiry;
- participatory process;
- shared visions of possible futures; and
- action and policy orientation.

**Analytical dimensions of foresight**

This section presents an overview of selected works introducing different analytical dimensions on foresight including notably the notions of participation, knowledge and learning, and power. These dimensions are relevant for the discursive analysis of the prospective policy narratives.

Barré (2001) proposes a two-dimensional typology of foresight taking into account its ‘extensiveness’ and ‘intensiveness’. ‘Extensiveness’ refers to the participation in the foresight exercise that is ‘the number and variety of persons or the experts involved’. Three ‘classes’ of ‘extensiveness’ include ‘classical scientific study’ (I - low), ‘collective process’ (II - medium); and ‘societal process’ (III - high).
‘Intensiveness’ refers to the outcomes of foresight in terms of ‘quality (completeness) of the learning cycles’. The analysis of ‘completeness’ includes assessment of: the kind of work being performed; the substance of the activities taking place; what is produced, how and by which methods; and the results and impacts on the participants.

Barré (2001:76) proposes three classes of ‘intensiveness’ of foresight:

- Opinion exchanges, occasional knowledge production (I - low);
- Pragmatic process, ad-hoc knowledge production and collective learning (II - medium);
- Intensive, systematic knowledge production and collective learning process (III - high).

The proposed dimensions allow for positioning foresight exercises on the graph where classes of intensiveness and extensiveness are represented on the two axes (see Figure 3).

**Figure 3. Positioning foresight exercises using Barré’s typology**

![Figure 3](image-url)

Source: (Barré 2001:79)

Such mapping allows for delineating two basic models and four types of foresight. Based on the analysis of the selected foresight exercises, Barré (2001: 78) distinguishes between two models of foresight as ‘social process’ and ‘professional-analytic’. The ‘social process’ model is then divided into ‘societal foresight’ and ‘the collective learning and knowledge production’ group whereas ‘professional-analytic’ model comprises ‘the strategic scenario building’ and ‘the key-technologies/industry-oriented’ groups.

‘Professional-analytic’ exercises are policy-oriented studies. They have limited participation (low ‘extensiveness’), but rank high on the ‘intensiveness’ axis (more effective in terms of learning and knowledge production). ‘Social process’ foresight is a ‘socio-political’ process characterised by medium to high ‘extensiveness’ (wide social
participation, networking) and medium to low ‘intensiveness’ (limited learning and knowledge production).

Barré (2001: 81-83) then focuses on the role, and benefits and risks related to ‘social foresight’. The role of such exercise is

‘to ensure interactions and exchanges of ideas in the arena where industry, academia, government and social actors meet [and to] aim at setting up hybrid networking and overcoming established boundaries, going far in the real interactions and debates among the social actors.’

The benefits include, on the one hand, ‘an early indication of the attitudes of the users and of the citizens regarding both the demand and the social acceptability related to the technologies under discussion’ and, on the other hand, ‘a sort of negotiation on the technologies, which would orient them at an early stage towards areas where the demand and the acceptability are strong’. The risks or drawbacks of ‘social foresight’ are threefold:

− overestimation of the role of users (‘the notion of ‘expert’ gets lost, in the sense that all opinions are legitimate, which increases the risks of inconsistency and factual errors);
− biased participation (‘danger of becoming a playground for lobbies, leaving out less organised interests’);
− difficulty in dealing with conflicting views.

Despite underlining that there should be no hierarchy between the two proposed models of foresight (their use and adequacy being dependent on the particular social and political context), Barré seems to be giving his preference to the ‘professional analytic’ model, which needs, however, to do for its limited ‘extensiveness’. Limited participation, he argues, offers greater chance of the process being more rational and expert knowledge-oriented while opening the process to the wider participation risks diluting the focus.

The model has some explanatory limitations and questionable underlying assumptions. The approach does not acknowledge, for instance, that ‘professional analytic’ foresight approach can suffer from the same risks as the ‘social model’. The former can overestimate the role of (some) experts (who are also ‘users’ of foresight holding different view and values). The approach can also suffer from biased participation (for the same reasons ‘social foresight’ does) and it certainly has to deal with conflicting views.

Barré acknowledges that his approach does not give a dynamic overview of the foresight process: the same foresight exercise may be very exclusive or open for a wide participation
in different phases. Last but not least, when he is referring to knowledge, Barré seems to have in mind mostly ‘rational, scientific, exert-derived’ type of knowledge. He does not focus on other types of knowledge, in particular the socially robust knowledge built at the interface of science and society (Gibbons et al. 1994; Nowotny et al. 2001).

Participation versus power and responsibility

Barré points to the inevitable trade-off between the two dimensions (‘extensiveness’ versus ‘intensiveness’), which strongly resembles a classical ‘equity’ versus ‘efficiency’ dilemma. Bedsted et al (2007) and Rask (2008) looked in a greater detail at the related trade-offs in the context of foresight analysis. Bedsted et al (2007) investigate ‘width’ of involvement (equivalent of Barré’s ‘extensiveness’) and ‘depth’ of participation in foresight exercises. The term ‘depth of participation’ refers to the level of influence and responsibility given to stakeholders. Relating ‘depth’ to the notion of power differs from Barré’s approach (Barré 2001) who approached ‘depth’ (or in his case ‘intensiveness’) from the point of view of ‘collective learning’ and ‘knowledge production’.

Bedsted (Bedsted et al. 2007) and Rask (Rask 2008) looked in a greater detail at the related trade-offs in the context of foresight analysis. The studies were conducted in the framework of a EU FP6 ERA-Net project ForSociety. A useful contribution of the ForSociety project was that it analysed ‘depth’ and ‘width’ aspects at different stages of the foresight process. Rask (2008: 1163) identified a tendency in the analysed foresight processes to have an ‘inclusive middle stage’ when large variety of societal actors were involved. This ‘middle stage’ is an exception to the ‘core-perimeter constellation’ that is a pattern to concentrate most foresight activities around a core group of key actors that takes place typically at the beginning and at the end of the process. The author underlines that more critical decisions seem to be made in these phases. Another important element of the ForSociety approach was to include ‘frame conditions’ (context) of the foresight programmes in the analysis as an important factor that influences organisation of foresight. The third aspect of the research related to the analysis of motivations for involving different stakeholders in foresight process.

The ForSociety approach takes one step ahead in comparison to Barré in a sense that it offers an (limited) analytical account of changing dynamics of participation at the different phases of foresight. On the other hand, it neither gives a comprehensive answer to what are possible consequences of (intended or unintended) shifts in ‘width’ and ‘depth’ of participation, nor does it offer a way to understand the mechanisms leading to desired outcomes of foresight.
Participation versus efficiency

Rask (2008) took the ForSociety approach further by analysing the trade-off between ‘requisite variety’ and ‘productive convergence’ of the foresight processes seen as a ‘science-society’ dialogue. Following Rip et al (2004; op. cit. Rask 2008) ‘requisite variety’ refers to ‘the degree of the heterogeneity of the outside world is captured in the set-up of a ‘hybrid forum’, or ‘microcosm’ such as foresight.

The level of inclusiveness of the exercise in terms of participation is key for assuring heterogeneity. Rip et al argue that heterogeneity is needed to make any project ‘robust and sufficiently articulate’. Excessive heterogeneity, however, can impede reaching the delivery stages (or ‘temporary closures’). Therefore, there is a trade-off between the degree of heterogeneity and efficiency. Rask (2008: 1158) claims that inclusive foresight processes suffer from the same trade-off. He identifies two sub-categories of trade-offs linked to the requisite variety – productive convergence dilemma:

- ‘Involvement’ versus ‘instrumentality’: the compromise between broad involvement of actors and efficient and effective policy process (Renn 2006; op.cit. Rask 2008);
- ‘Creativity’ versus ‘stakeholding’: Creativity and insight benefits of foresight can be compromised by the need to achieve consensus between diverse stakeholders (Georghiou and Keenan 2006).

Although trade-offs exist, Rask argues they can be partially reconciled by including specific counterbalancing mechanisms to the foresight planning and implementation. The areas of actions include: increasing motivation to participate of all involved stakeholders; actions to spur creativity and innovativeness; improving ‘instrumentality’ (providing mechanisms for consensus and priority-setting; increasing process efficacy; strengthening an orientation towards implementation); including mechanisms for validation of foresight results and balancing representation, interests etc. Importantly, the author underlines that finding an ‘optimal’ balance between variety and convergence is highly contextual and as such should not be based on ready-made solutions.

Analysing effects of foresight exercises

Despite the proliferation of foresight as a policy tool, notably in science, technology and innovation (STI) policies, many authors underline that the efforts to understand its aggregate effects have been relatively limited (Gavigan et al. 2001; Keenan and Uyarra 2002; Georghiou and Keenan 2006; Keenan and Barré 2006; Bedsted et al. 2007). The professional and academic publications appear to focus mostly on describing the design,
implementation process and immediate outputs of the exercise. There are, however, a number of evaluations and impact assessments of individual foresight exercises (see, for example, Meulen 1999; Cuhls and Georghiou 2004; Decker M, 2004; Harper and Georghiou 2005; Georghiou and Keenan 2006, 2008).

Whereas outputs or immediate results of foresight exercises are easy to monitor and generally well documented, the systematic analysis of their wider effects, especially long-term outcomes, is more challenging. Barend van der Meulen (2007) argues:

‘The main impact [of foresight exercises - MM] is to be expected in the acceptance that the foresighted areas are indeed of importance and that some sort of action is needed. This may take several years as, usually, real impacts need to wait until there are windows of opportunities within the policy process.’

Barré and Keenan (2006) list a number of challenges of foresight evaluation:

- The objectives set for foresights are often wide-ranging and vague, making them problematic starting points for evaluation;
- The intangible benefits that are said to accrue from foresights are difficult to assess;
- The complexity of cause–effect relationships, which cannot be handled by the often overly simplistic models;
- The systemic and distributed nature of foresight means that benefits are likely to be dispersed making attempts to account for effects very difficult;
- Many expected impacts of foresight take years to materialise, and when they do, they are often dependent on other factors, leading to attribution problems;
- There are so many different methodologies and settings for foresight that it is difficult to arrive at standardised evaluation approaches;
- The costs associated with evaluating foresight activities.

One of the contributions of this study is to offer a discursive approach to evaluating the process and effects of policy processes including long-term scenarios and vision.

### 4.3. Knowledge and learning in foresight

The perception of foresight as a social learning process is widely shared among foresight practitioners (e.g. Gavigan et al. 2001, Langenhove et al. 2002; Miles 2004; Eerola et al. 2004; Loveridge 2008; Eerola and Jorgensen 2008, Miles et al. 2008). This section reviews selected perspectives on knowledge and learning in foresight literature.
4.3.1. **Post-normal science and foresight knowledge**

In the early 1990s, Silvio Funtowicz and Jerome Ravetz coined the term ‘post-normal science’ to denote science emerging in response to the complex problems involving high system uncertainty or high decision stakes (Funtowicz and Ravetz 1993). The authors argued that faced with major challenges ‘normal science’ is not likely to bring effective solutions. ‘Normal science’ is not predisposed to discuss foundational systemic problems, to focus on and manage uncertainty or to explicitly recognise the importance of different values in the system. The post-normal approach is thus called for ‘where facts are uncertain, values in dispute, stakes high and decisions urgent (Funtowicz and Ravetz 1993: 744). In other words, this is an approach in which ‘uncertainty is not banished but is managed, and values are not presupposed but are made explicit (ibid: 740).

The authors illustrate the positioning of post-normal science in relation to more traditional strategies of ‘applied science’ and ‘professional consultancy’ by the use of the two-dimensional figure (ibid: 745; see Figure 4). The axes denote varying levels of ‘systems uncertainties’ and ‘decision stakes’. ‘System uncertainties’ relate to the level of understanding and management capacity of an inherently complex reality. ‘Decision stakes’ concern various costs, benefits, and value commitments of various stakeholders. When both uncertainty and stake are low, problems can be resolved by ‘normal’ science, where routine techniques and expertise are fully effective. When either dimension is medium, the application of routine methods of applied science is not enough. ‘Professional consultancy’ brings in expert judgement, the capacity to take risky decisions as well as to take reasonability for their outcome (e.g. surgeon or senior engineer).

**Figure 4. The post-normal science diagram**
When both systemic uncertainty and decision stakes are high, however, neither the applied science nor the expert judgements suffice. The uncertainties in this case relate to fundamental epistemological and ethical issues whilst the decision stakes reflect conflicting positions among stakeholders (ibid: 750). The complexities of causal inferences linked to the problem mean that better understanding will not be granted by more data or more computing power. Funtowicz and Ravetz argue that due to the high uncertainty in knowledge, the problem solving activity of post-normal science not only inverts the traditional dominance of ‘hard facts’ over ‘soft values’, but also makes the two categories difficult to separate (ibid: 751). The authors point to the intimate connection between uncertainties in knowledge and in ethics (e.g. human development versus the loss of biodiversity and extinction of species). This strongly resonates with interpretative approaches in policy research, in which arguments are paralleled to a ‘complex blend’ of evidence, value systems and normative claims.

In post-normal science, the scientific argument is constructed in the process of ‘interactive dialogue’ rather than by a ‘formalised deduction’ (ibid: 740). One of the core elements of the post-normal science process is the direct involvement of the ‘extended peer community’ who can evaluate scientific inputs in the decision making process. This ‘extension of legitimacy’ to all stakeholders is based on the mutual respect among various perspectives and ‘forms of knowing’. The approach is considered a social deliberation that can contribute to development of ‘genuine and effective democratic element in the life of science’ (ibid: 741).³

³Ravetz argues that ‘post-normal science’ differs from the Mode-2 knowledge generation (Gibbons et al 1994), the latter being close to “professional consultancy” (Ravetz 2006: 277). In contrast to post-normal science, Mode-2 neither explicitly discusses the quality of knowledge nor it gives the voice to the extended peer community (ibid: 277).

In what builds on post-normal science approach, Von Schomberg, Guimarães and Funtowicz (Von Schomberg et al. 2005, Guimarães et al 2008) focused on knowledge produced in the course of foresight processes i.e. ‘foresight knowledge’. The main attributes of foresight knowledge strongly resonate with post-normal science.

Its main characteristics include (Von Schomberg et al 2005: 14):

1. Non-verifiability: it is non-verifiable in nature since it does not give a representation of an empirical reality. The quality of foresight knowledge is discussed in terms of its plausibility rather than in terms how accurate it is in terms of the predictability;

2. Uncertainty and complexity: it has a high degree of uncertainty and complexity whereby uncertainties concern in particular causal relationships and their relevance for the issue;
3. Coherent vision: it usually includes a coherent vision whereby relevant knowledge includes an anticipation of ‘the unknown’;

4. Action-oriented: it has an action-oriented perspective (identification of ‘threats/challenges/opportunities and the relevance of knowledge for a particular issue);

5. Interpretive: it shares a hermeneutic dimension of the social sciences, whereby the available knowledge is subject to continuous interpretation;

6. Normative: it is more than research as it combines normative (transformable) targets with socio-economic feasibility and scientific plausibility;

7. Multidisciplinary: it is per definition multi-disciplinary in nature and often combines the insights of the social and natural sciences.

In order to be able to assess the quality of foresight knowledge, the authors propose to identify different knowledge forms and types of arguments used while deliberating foresight knowledge. It is proposed that quality of ‘foresight knowledge’ should be assessed by relating the analysis of the substance of the arguments to the deliberation process and to the type of policy discourse employed.

**Figure 5. Argumentation forms of foresight knowledge and ‘normal science’**

<table>
<thead>
<tr>
<th>SCIENTIFIC KNOWLEDGE BASE</th>
<th>Argumentation Forms based on knowledge input</th>
<th>Argumentation/Problem focus</th>
<th>Policy Discourse</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORESIGHT KNOWLEDGE</td>
<td>PLAUSIBILITY CLAIMS (such as arguments by analogy and counterfactuals)</td>
<td>PROBLEM DEFINING/EXPLORING</td>
<td>POLICY DEFINING</td>
</tr>
<tr>
<td>NORMAL SCIENCE</td>
<td>PREDICTABILITY CLAIMS</td>
<td>PROBLEM SOLVING</td>
<td>POLICY EVALUATING</td>
</tr>
</tbody>
</table>

Source: Von Schomberg et al. 2005

Traditionally, the quality would be assessed based on the analysis of the substance of the arguments (ibid: 14-15). The authors differentiate between two policy discourses: policy defining and policy evaluating. Policy-defining discourse of agenda setting identifies and defines problems. Policy-evaluating discourse is used to evaluate policy options in terms of their effectiveness in problem solving. According to authors foresight ‘naturally’ relates to the policy-defining discourse.

Von Schomberg et al (2005) characterise the policy-defining discourse as involving:
- agenda setting and identification of agenda setters in society;
learning with an action orientation, but without fixed problem definitions: definitions shift in time as knowledge accumulates or new perspectives enter the debate;

- discussion on ‘framing’ of the policy problem;
- mapping problem-definitions and their potential for societal consensus or dissent;
- integrating different (sometimes perceived as incompatible!) demands;
- assessing knowledge policies and the use of particular knowledge types, and the acquisition of new knowledge.

The elements of policy-defining discourse contain the guidelines for the potential assessment of the foresight knowledge requirements. Discussing foresight as an interface between science, society and policy, the authors indicate the need to assess the quality of the knowledge flows between these three spheres ‘ideally by engaging an extended peer community’ (ibid: 20), which is similar to the approach of post-normal science.

Foresight may lead to ‘knowledge divides’ that appear due to, on the one hand, the quality of knowledge and, on the other, ‘conviviality of knowledge’. The knowledge production divide relates to ‘aspects of availability, accessibility, relevance, fitness for purpose and legitimacy, i.e. the pedigree of information used’. The knowledge usage divide appears due to the fact that foresight knowledge is co-produced by various scientific and societal actors, who hold ‘[diverse] interpretations inherent to diverse value systems and existing platforms for understanding, sharing, learning and communicating’ and, thus, need to create ‘shared understanding and language’ (ibid: 21). These observations strongly resonate with post-normal science discussion as well as with previously introduced policy frames of Schön and Rein (1994) and discourse coalition approach of Hajer (1995). It could be questioned, however, if a strongly situated nature of ‘foresight knowledge’ allows for the use of normalised set of assessment criteria and whether the approach could benefit from a more explicit recognition of the role of power (e.g. Fischer 2009) and wider institutional frames for the prospective policy deliberation (Schön and Rein 1994).

4.3.2. Social and organisation learning in foresight

Organisational sciences, in particular organisational learning and knowledge management, form one of the most often referred to social science fields in foresight analysis. In fact, some authors approach foresight looking through the lenses of the organisational learning literature. Inspired by Nonaka’s SECI model, Keenan and Barré (2006) argue foresight is:

‘a process by which professional communities interact and exchange both codified and tacit knowledge in the sequence where knowledge is transformed
from the (initial) tacit state into codified knowledge (through organised interactions among participants) and, after proper ‘treatments’, which is feasible with such codified knowledge, transformed back into tacit knowledge through appropriation by the participants.

References to Nonaka’s work can be also found in writings of Eerola and colleagues (Eerola et al. 2004; Eerola and Jorgensen 2008). Following the SECI model, Eerola and Jorgensen (2008) argue that ‘knowledge of future technological developments is a result of a dynamic interaction process where not only facts, but also well-grounded views and opinions, should be treated as important ingredients’ (ibid: 204). SECI can be used to analyse foresight as ‘shared knowledge creation’ defined by as:

‘generation of new knowledge that people and communities can share, without necessarily agreeing about the exact meaning when applying it to specific problems and goals collectively or individually. It is thus an essentially different concept than ‘knowledge sharing’, ‘consensus building’ or ‘learning’, although these concepts partially overlap’ (ibid: 203).

Eerola and Jorgensen (2008: 204-205) argue SECI model both helped to understand the dynamics of knowledge conversion and served as a tool to design a foresight exercise. SECI offered a framework to understand the complementary nature of the various foresight tools and methods in terms of finding the balance between qualitative and quantitative elements of the process. The authors also point to the need of taking into account the context and professional backgrounds and nationalities of involved stakeholders.

Salo (2001) used Nonaka’s model in the analysis of incentives to participate in technology foresight. Salo saw a possibility to engage in learning as one of the principal incentives mobilising stakeholders in technology foresight.

The main incentives included (ibid: 699):

- Exert influence (decision making in other organisations);
- Engage in learning (decision making in own organisation);
- Develop contacts (networking);
- Demonstrate compliance (reputation);
- Receive compensation (economic gain).

In order to use learning incentives, foresight organisers should (1) recognise the specific types of expertise of the stakeholders; (2) analyse what knowledge they would appreciate
acquiring, and (3) apply fit-for-purpose tools and methods to support required knowledge exchanges (Salo 2001: 701).

An interesting perspective is the comparison between two key incentives to participate in foresight that is between foresight considered (a) a process positioned as a collective activity in knowledge sharing (i.e. engage in learning) or (b) activity aimed specifically at priority setting (i.e. exerting influence). The former downplays the role of priority setting as an independent activity ‘in realisation that unless priorities are preceded by a learning process, the stakeholders are unlikely to become committed to their implementation’ (ibid:700). The latter approach, on the other hand, subordinates foresight to the objective of agenda setting and inevitably influences the process and the way stakeholders relate to each other. According to the author ‘the need to consider incentives is greatest when the exercise lacks strong support by leading authorities and is geared towards a collective learning experience rather than priority-setting’ (ibid: 700). Salo (ibid: 701-705) underlines the need to be aware of the motivations of stakeholders to anticipate possible tensions in the process and to better organise foresight process (e.g. select appropriate methods).

Keenan and Barré (2006) propose that we consider foresight as a double-loop learning process (Argyris and Schön 1996):

’a double loop learning procedure: the collective search for ‘drivers’ of the system, the debates on the possible evolution of such drivers, the conception of scenarios or visions of possible future states of the system – all of these are typically collective interactions involving codified and tacit knowledge.’ (Keenan and Barré 2006).

The authors state, however, that relatively little practical evidence has been gathered so far to support or to disqualify their claim. One of the reasons was that the scope and methods used for evaluation were not set to account for this type of effects.

4.3.3. Technology roadmapping

Foresight emerged as a support to the strategic planning process in the industrial context following the Second World War. Pioneers include the RAND Corporation, which since the 1940s has been tasked with connecting long-range R&D planning with the US military strategy. Others include large corporations such as General Electric and Royal Dutch Schell, which introduced foresight techniques in their corporate planning in the 1960s. The application of various foresight techniques in business has since become more widespread, including the use of scenarios, horizon scanning and technology roadmapping (see e.g.

Phaal et al (2004: 9) defines roadmapping as ‘a powerful technique for supporting technology management and planning, especially for exploring and communicating the dynamic linkages between technological resources, organizational objectives and the changing environment’. The distinctive feature of the concept is ‘the use of a time-based structured (and often graphical) framework to develop, represent and communicate strategic plans, in terms of the coevolution and development of technology, products and markets.’ (ibid: 10). Despite being associated with business, the roadmapping technique is pervasive and can be applied to many topics and in many organisational contexts.

Roadmapping can refer to many related techniques and approaches. There is no a single blueprint or protocol for the methodology or format of the roadmapping process. The roadmaps have multiple uses and formats. Phaal (ibid: 11-14) introduces the following uses of roadmapping: product planning, service/capability planning, strategic planning, long-range planning, knowledge asset planning, program planning, process planning and integration planning. Long-range planning has longer time horizons and is often performed on the level of sector or country. Given the complexity involved, the roadmaps are often represented in the graphical format including flowcharts, single- or multi-layer representations, bars, graphs or creative images selected to visualise the process. Some roadmaps are fully or partly text-based (ibid: 15).

Despite the diverse approaches and contexts in which roadmaps are implements they usually include several common elements (see e.g. Phaal and Muller 2009). First, roadmaps need to have an explicit purpose usually expressed as a vision and strategic priorities (i.e. respond to the question ‘where do we want to go?’). Second, the process needs a reflection on the current state of development or a baseline (i.e. ‘where are we now?’). Third, the roadmap includes an explicit perspective of time horizon and timelines illustrating the process of getting to the vision. The latter includes explicit time horizon presented with the use of scales and intervals (i.e. ‘how to get there?’). Fourth, many roadmaps opt for presenting the transition towards the vision on various inter-related layers (e.g. product, sector etc.). The latter is to allow for being able to anticipate and possibly manage the factors that may enable or hamper the transition process.

Finally, the process of roadmapping is considered key for the effectiveness of the exercise (Phaal et al 2004, Phaal and Muller 2009). The development of roadmaps requires an active involvement of key stakeholders. The process can benefit from diverse inputs in
terms of disciplines, functions, levels within or from across various organisations, including external perspectives where feasible (Phaal and Muller 2009: 41). Whether the process is intra- or inter-organisational, the discussions and debates should be seen as a learning and knowledge sharing exercise as well as an approach to creating shared visions. This notion strongly resonates with insights and recommendations related to organisational learning (e.g. Wenger’s communities of practice) and the overall approach to foresight.

4.3.4. Inayatullah’s Anticipatory Action Learning

Inayatullah (2006) introduced a concept of anticipatory action learning (AAL), which combines perspectives from action learning, action research traditions and futures studies. The AAL differs from typical action learning process as it adds to it anticipatory dimension; it is distinct from traditionally understood futures studies as it is collaborative (see Figure 6). This can be seen as an applied approach to stimulate social learning.

Figure 6. Anticipatory Action Learning by Inayatullah

Source: Inayatullah (2006: 657)

Inayatullah (2006: 656) differentiates AAL from futures studies arguing AAL is:
- Less expert and forecast driven, but more open for ‘participatory learning processes’, especially ‘questioning’;
- ‘future’ is not a priori given, but emerges through questioning process (based on ‘the knowing categories’ of participants);
- the critical character of AAL draws from the actors’ own epistemological categories, rather than from any particular tradition of critical theory.

The author (ibid: 657-658) emphasises four points AAL builds on:
- Learning as ‘programmed knowledge plus questioning of the future’ (anticipatory dimension is added to action learning);
- Questioning the futures as the process of (a) understanding the default future we are given, challenge it and (b) creating desired futures;
- The future that is questioned has varied dimensions. These include the exploration of possible (the full range of agency and imagination), probable (likely given historical structures) and preferred (where we seek to go) futures;
- Anticipatory action learning straddles the boundary between the content of the future (uncertain and contingent alternatives) and the process of discovery of the future—both are in dialectical tension and relationship.

Inayatullah underlines highly contextual nature of AAL process (ibid: 658-659). The group discourse on what is future and how it is being constructed is self-referential in a sense that it makes sense only to particular epistemic communities and the metaphors used are not universal. This is closely related to the issue of ‘ownership’ of both the currently dominating (or ‘official futures’) and of those newly created. AAL looks into the genealogy of the discourses used by different actors that influenced different metaphors.

AAL requires sensitivity to ‘the Other’. ‘Is this the future of others?’ is the question in this context. It is argued that adding ‘the Other’ to the futures discourse is to explicitly tackle the unknowable (uncertainty). Conventional questioning and ‘programmed knowledge’ is not predisposed for this type of questioning. It is the ‘epistemological rupture’ that can liberate the participants both from conventional and used futures and ‘from the intellect that creates this questioning’. Inayatullah argues:

‘By moving out of conventional frames of reference, both approaches allow enquiry to move from litany, immediate concerns and epistemological assumptions to deeper causal, structural, worldview and myth levels. Other ways of knowing - the multicultural turn—can thus naturally find space to be expressed’ (Inayatullah 2006: 659)

Based on the experience from futures workshops undertaken by himself, Inayatullah (ibid: 661-666) proposes five main points of AAL:

1. Sensitivity to the social environment;
2. AAL can lead to uncomfortable areas of enquiry for the organisation;
3. ALL can be ‘appropriated’ by power (by ‘official futures’);
4. ALL should be open and transparent;
5. The future is deepened by authentic understanding of the Other.

As such, the approach is to support creation of ‘real’ alternative futures through ‘deepening’ of understanding of what ‘future’ is, how is it constructed and perceived by different actors, whose ‘voice’ matters etc. The process, the author argues, ‘can certainly
assist in individual and in organisational change’ as it is not about forecasting, but ‘creating confidence in individuals’ and systems’ abilities to creatively adapt to new challenges’. The AAL approach is in fact a proposal to add a deep discursive dimension to futures deliberations and foresight practice. This approach bears similarities to the interpretive approaches in policy analysis, e.g. to the four-level post-empiricist policy evaluation proposed by Fischer (Fischer and Black 1995; Fischer 2003).

4.4. Implications for this enquiry

In terms of theoretical and epistemological approaches, the aforementioned literature explicitly or implicitly resides in the social constructionist paradigm. There are few original theoretical and epistemological aspects that foresight can contribute to this research. Authors and practitioners of foresight rather than building theories of its own most often explicitly or (most often) implicitly position themselves within existing theories.

Combining futures and foresight with interpretive policy analysis

One of the key contributions of this research is combining interpretive policy analysis with specific perspectives introduced in futures and foresight literature and practice. While being rather distinct traditions of research and practice, these traditions have some prominent similarities and can complement each other.

There is an affinity between layered causal approaches in futures studies (Inayatullah 1998) and the previously reviewed interpretive approaches to policy analysis, including narrative policy analysis and frames (Schön and Rein 1994). Both traditions attempt to provide an alternative to modernist approaches to explaining social phenomena dominating their fields in the preceding decades. Both have a premise of social construction of reality and recognise that in order to understand an issue at stake any enquiry needs to include many layers of analysis. The layers or dimensions are different, yet they both approaches include both range from empirical to the level of metaphor and myth. Finally, they both pay attention to the role of discourse and interpretation and recognise the same issue may be understood differently by different actors.

One of the obvious differences between the two traditions is a different purpose and a different temporal scope of the analysis. Futures and foresight have an explicit emphasis on the future. Interpretive policy analysis is mostly focused on improving understanding of policy process and explaining existing controversies. Frame reflection is implicitly
concerned with what lies ahead, as it aims at resolving the controversies, but the notions of a shared long-term vision or prospective scenarios have not been at its core. The notion of future is implicit and limits itself to a pragmatic objective of resolving the differences between conflicting frames.

Futures studies and foresight offer useful insights for a dedicated investigation of forward-looking perspectives in policy narratives. The intention is to make the frame reflection future-proof. This study integrates the following notions from the prospective studies:

- Foresight as a social deliberative process constructing scenarios and visions of future;
- Foresight as a social learning process converting ‘subjective anticipatory knowledge’ into ‘validated shared knowledge’ relevant for policy (evidence base);
- The implications of inclusiveness and positioning in the policy process of foresight process for the outcomes of the exercise;
- The implications of the design and the use of specific tools in the foresight exercise.

Post-normal science and foresight knowledge

The notion of post-normal science and the related view on ‘foresight knowledge’ are strongly related to the central research problem of this research. I argue that policy-making processes set to tackle long-term complex societal challenges fall into post-normal science paradigm. They involve both high systemic uncertainty and the prospect of high decision stakes. The research will examine how ‘soft values’ and ‘hard facts’ interrelate in the policy discourse framing long-term societal challenges. The analysis of the case study will take into account the attributes and implications of post-normal science as well as the issues related to deliberating foresight knowledge.

Key features of the roadmapping process

The section introduced main features of the roadmapping technique in order to provide the context for the analysis of the EC process and document named ‘a roadmap’. Since the use of roadmaps is not main topic of this research and given the EC process did not follow an explicit roadmapping technique, the analysis of the case study will not feature a detailed analysis of the policy document as a roadmap. The insights on the main features of the technology roadmaps (i.e. vision, baseline, timeline and layers) and the roadmapping process will be taken into account in the reflection on the EC Roadmap document.
Research gaps

The review of literature on foresight and futures revealed several research gaps. First of all, foresight and futures could further embrace interpretive approaches developed and tested in policy analysis, notably the insights on frames and discourse coalitions. Just as policy analysis often lacks the explicit focus on the future, foresight is rather ‘shallow’ in its interpretive approach. Causal Layered Analysis (CLA) of Inayatullah and other discursive analysis approaches are a welcome development, but they need further conceptualisation and practical application. This research proposes to combine approaches of interpretive policy analysis with insights gained in the field of futures studies and foresight.

Second, foresight and futures have typically focused on conducting and (more seldom) analysing stand-alone exercises often removed from the policy process, but there has been limited analytical attention towards future-related exercises taking place within policy process and organised internally by public administration. This study contributes an in-depth perspective on an attempt to integrate a prospective dimension to public policy in the case of the selected EC’s policy roadmap. The research offers a critical perspective on how a future vision and the notion of long-term future has been approached and framed in the EC policy narrative.
B. Conceptual framework and methodology

‘There is no essentially privileged perspective on a system, as each subsystem has its own characteristics of scale, rate of change, and fineness of perception, along with value-determined aspects of perception’ (Jerome Ravetz 2007)
5. Research strategy and conceptual framework

5.1. Research strategy and theoretical background

5.1.1. Theoretical background

This research is based mainly on interpretive theories in policy analysis and social sciences in general. The interpretive paradigm in policy research emerged in the late 1980s and early 1990s as an alternative to the approaches based on a rational actor model or the ‘rationality project’ (Majone 1989; Dryzek 1990; Fischer and Forester 1993; Schön and Rein 1994; Hajer 1995; Fischer 2003). It is often referred to as anti-foundationalist position (Blaikie 2007: 23). This approach has been influenced by the social constructionist epistemology in sociology and philosophy of science as well as by poststructuralism and postmodernism. One of the central premises of this research is that reality is socially constructed in that ‘claims about the world are constructed in relation to a range of partial perspectives, problematic assumptions, and determinate interests’ (Hawkesworth 2012: 118). The role of researcher is to analyse how social phenomena are interpreted – or framed – in discourses emerging at a certain time, in a certain place and in the specific context, as well as how they are reflected in decisions and actions.

In terms of ontological position, this approach comes close to a subtle realist ontology recognising that although all knowledge is a human construction based on assumptions and purposes, the material reality exists and is knowable (Blaikie 2007: 101). As such it distances itself from idealism. Connecting social constructionism with subtle realism is close to what Beck calls ‘realist constructionism’ (Beck 2009). Beck criticises ‘naïve constructivism’ as it can ‘lose sight of the difference between destruction as event and discourse concerning this event’ and ‘underestimates the materiality of the ‘natural’, scientifically diagnosed inherent constraints of global threats, which are by no means inferior to the materiality of economic constraints’ (ibid: 89). In ‘realist constructivist’ approach ‘the essentialist meaning content of discourse concerning ‘nature’ and the ‘destruction of nature’ is replaced by expert and anti-expert knowledge’ (ibid: 89) as in Hajer’s ‘discourse coalitions’ focused on the action-related theory of actors and institutions (Hajer 1995, 2003).
Beck proposes an ‘institutional constructivism’ approach that, apart from the focus on social construction of reality, enquires how ‘reality in itself’ is (re)produced through discourse politics and coalitions within institutional contexts of decision, action and work and ‘in the conflict between cognitive actors’ (Beck 2009: 90; emphasis added). Beck argues that the more aligned ‘constructions of reality’ are with institutions (here ‘institutionalisations of social practice’), the more powerful and closer to decision and action they are.

5.1.2. Overall research strategy

This enquiry combines the abductive research strategy with the elements of the constructivist retroduction. Abduction involves constructing theories derived from social actors’ language, meanings and accounts in the context of everyday activities (Blaikie 2007: 89). This strategy is most often associated with social constructionism. The retroduction research strategy involves building and testing hypothetical models of structures and mechanisms in order to explain empirical phenomena (ibid: 83). Both strategies are based on cyclic or spiral processes, rather than on the linear logic of induction and deduction (Blaikie 2007). Connecting elements of both strategies is an established practice in social sciences (ibid: 82-105).

Why elements of both strategies, then? Being largely inspired by the interpretive approach to policy analysis, the research aims at collecting and interrogating concepts and meanings used by policy stakeholders (abductive strategy). The overall problématique and the tentative conceptual framework were, however, proposed at the outset of the empirical enquiry based on the literature review (retroduction strategy). This framework was confronted with and adapted to reflect understandings used by social actors (abductive strategy). The benefit of the (evolving) conceptual framework was that it suggested layers to the problem, which interviewed social actors might have not been aware of (ibid: 102).

The conceptual model was gradually elaborated in the course of the empirical enquiry (in-depth interviews and participation) and the reduction of empirical material. The early versions of visualisations of the conceptual framework were used during the interviews to introduce the questions on the role of evidence for constructing long-term visions. The current version of the conceptual framework and the policy narrative framework analysis are thus both an element of research strategy and a product of this research. The combination of retductive and abductive logic made this research a reflexive and iterative process in which both bottom-up approach and top-down frameworks were
combined to best respond to the research questions and to contribute to the broader understanding of the research problem.

5.1.3. Case study approach

The research is based on a single critical case study. This section provides general arguments for selecting the case study for this enquiry and introduces the justification of focusing on a single critical case for this enquiry.

Creswell (2007) defines case study as ‘qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information and reports’. According to Flyvbjerg (2001) ‘the case study can close in on real-life situations and test views directly in relation to phenomena as they unfold in practice’. Swanborn (2010: 41) argues case studies suit well both descriptive and explanatory research questions, which require clarification about ‘the intricate web of social relations, perceptions, opinions, attitudes and behaviour’. It is a strategy suitable for situation in which ‘we have little knowledge of the phenomenon’ and specifically interested in the ways social actors interact with each other and interpret each other’s behaviour (ibid: 41).

Swanborn (2010: 34-44) argues case study is an appropriate research strategy under one or more of the following conditions:

− impossibility to isolate or simulate the phenomenon;
− rarity of the phenomenon;
− design problems;
− intention to combine research and action;
− feasibility (pragmatic grounds).

The research problem addressed by this enquiry resonates with all the above points:

− Impossibility to isolate or stimulate the phenomenon: the study focuses on how public policy responds to long-term societal challenges. Given the situated and dynamic nature of any policy process, the phenomenon in question cannot be isolated and simulated in experimental or quasi-experimental settings.
− Rarity of the phenomenon: the process of deliberation of long-term visions in response to a long-term societal challenge was (and still is) a relatively rare phenomenon in the EC policy process.
Design problems: the dynamic process in which the reframing of policy takes place offers a good opportunity to develop and test novel conceptual approaches and methods to enquire emerging policy narratives and frames.

Combining research and action: the overall aim of this research is to improve policy practice and to put forward policy recommendations.

Feasibility concerns: the problem area and the policy process of the selected case study are well known and relatively easily accessible to this researcher.4

This research is based on an in-depth enquiry of a critical case with ‘strategic importance in relation to the general problem’ (Flyvbjerg 2001: 78). The latter permits logical deductions for other cases related to the general problem such as ‘if the is (not) valid for this case then it applies to all (no) cases’ (ibid: 79). These deductions relate to analytical or conceptual generalisations on dynamics of processes, mechanisms and structures in the problem area rather than to generalisations on the average frequency of occurrence of a problem that can be drawn from representative samples.

The critical case study approach follows an information-oriented – or purposeful – selection of cases. Such a strategic selection can be conducive to improving generalisability of case studies (ibid: 77). This is because critical cases are selected to yield the biggest amount of information and insights on a studied phenomenon; a randomly selected or a typical case will not be as rich in information. A critical case focuses on enquiring ‘the deeper causes behind a given problem and its consequences rather than to describe the symptoms of the problem and how frequently they occur’ (ibid: 78). The research problem of this study requires deep insights and rich information on actors and mechanisms of the policy process.

Case studies have advantages and disadvantages as a research strategy. Flyvbjerg (2001: 66-87; 2006) offers a particularly elaborated response to the critique – or ‘misunderstandings’ - of case studies he considers essential for development of social science. Flyvbjerg responds to the following common criticism of case studies:

- Theoretical knowledge is more valuable than practical knowledge;
- One cannot generalise from a single case, therefore the single case study cannot contribute to scientific development;

4 Among other projects, I have coordinated the Eco-Innovation Observatory (2009-2012 and 2013-2014). The project funded by DG Environment of the European Commission had a focus on eco-innovation that reduces use of natural resources and decreases the release of harmful substances across the whole life-cycle. Resource efficiency was one of the key focal points of the project.
− The case study is most useful for generating hypotheses, while other methods are more suitable for hypotheses testing and theory building;

− The case study contains a bias toward verification;

− It is often difficult to summarise specific case studies.

Flyvbjerg’s response to the first point is linked with a broader critic of positivist science, which is in line with authors from interpretive post-empiricist policy analysis. As predictive theories cannot be established in social sciences, ‘concrete, context-dependent knowledge’ is more valuable (Flyvbjerg 2001: 73).

The reaction to the second criticism is particularly relevant for this research. Flyvbjerg argues that case study, especially a critical case, can be the central or supportive method of generalisation and theory building. Similarly to Flyvbjerg, Yin (1994: 10) argues that case studies can support generalisations but to theoretical propositions (‘analytic generalisation’) and not to populations. Third critical point is thus corrected as critical case studies can contribute to many research activities from descriptive data gathering to theory building.

The verification bias, the fourth point, is understood as ‘a tendency to confirm the researcher’s preconceived notions, so that the study therefore becomes of doubtful scientific value’ (Flyvbjerg 2001: 81). This criticism is based on the assumption that deductive methods are less prone to verification bias. According to Flyvbjerg the case study is as prone to verification – or subjectivity – bias as any research method. On the other hand, it contains a bias towards falsification as researcher does not extend their theory without testing it in new contexts or dimensions.

Finally, case studies are based on often complex and lengthy narratives as in the case of this research, which are difficult to summarise. Flyvbjerg considers such ‘thick’ narratives an advantage rather than a weakness, especially when it comes to accounts of processes. They explain phenomena first hand rather than present ‘maps of them’ (ibid: 85). He argues that case studies are more apt to reflect ‘real expertise’ which cannot be abridged as it may lose insight. It is, therefore, not always desirable to summarise or generalise case studies.

Authors from the post-empiricist tradition of policy analysis as well as from organisational learning would add that understanding – or ‘situated practice knowledge’ in words of Schön and Rein (1996: 204) - generated in case studies can be subject of ‘reflective transfer’. In other words, case studies allow practitioners to learn from their own and
other’s experience. Given the above deliberations, the aim of this research is twofold. On the one hand, it attempts to generate knowledge that can contribute to the theoretical and conceptual approaches in policy research, which can be then verified in other contexts. On the other hand, it is to contribute to the situated knowledge of the specific policy area that can be useful for policy practitioners.

5.2. Key terms and conceptual framework


POLFRAME allows to reconstruct policy storylines and to analyse different dimensions and causal assumptions underlying frames of policy problems. This chapter first introduces the key terms used in the conceptual framework. Second, a policy narrative framework analysis is introduced.

5.2.1. Discourse and policy narrative

Understanding how and why various actors frame issues is fundamental for finding out what makes them think what they think, what makes them do what they do and what may motivate them to change their understanding and action. Interpretive policy analysis recognises this challenge and considers discourse and narrative key to understand factors underlying understandings, strategic positions and actions of policy actors (Fischer 2003; Hajer and Wagenaar 2003).

Discourse is understood as ‘a shared way of apprehending the world’ (Dryzek 2005). Fischer (2003: 9) emphasises: ‘each discourse rests of assumptions, judgements, and contentions that provide basic terms for analysis, debates, agreements and disagreements’.

Policy discourse is approached in this research as ‘the communicative interactions among political actors that translate problems into policy issues’ (Fischer 2003). The process of ‘translation’ is central to understanding mechanisms of how policy storylines and
argumentation are constructed. Discourse analysis reveals how and why actors, people or organisations, frame and reframe problems.

This research enquires whether and how the inclusion of an explicit long-term vision to the policy narrative influences policy discourse. The analysis critically enquires whether and to what extent a ‘temporal extension’ of policy narrative to include a long-term vision influences ‘the translation of problems into policy issues’. One dimension of the investigation is on whether and how it can reveal implicit latent discursive layers such as normative assumptions underlying problem frames. A more challenging question is on whether adding a prospective dimension changes the very nature of the policy problem by shifting the frames of discourse.

A narrative is the main unit of analysis used to analyse policy discourses. Following post-empiricist approach, this research assumes that policy narratives are constructed by policy stakeholders in specific contexts for specific purposes. They consist of stories, arguments and metaphors making use of combinations of empirical evidence and normative claims. The narratives can be thus reconstructed from various sources including formal and informal documents, reports, speeches and oral testimonies. A narrative thus becomes an ‘aggregate unit of analysis’ (Van Eeten 2007: 253). It can be tracked and analysed on different levels including those of individuals, groups of individuals, organisations, groups of organisations, or even societal level (‘societal narratives’ have been analysed, for example, by Dicke 2001). The notion of narrative as ‘aggregated construct’ is the basis for reconstructing and analysing narratives shared by groups of stakeholders or organisations. These narratives are referred to as ‘meta-narratives’ in the case study conducted for this research.

Following Fischer (2003: 161) the study assumes that policy narrative analysis plays a role in the analysis of the entire policy cycle, but it is particularly relevant in the phase of policy design, including problem-definition and problem setting. There are many co-existing and co-evolving frames in the policy process. Basing policy analysis (or policy decisions) on a singular ‘frame’ without a due reflection on other understandings may thus lead to wrongly posed questions or faulty foundations of policy strategies and decisions.

5.2.2. Frames and reframing

Frames are conceptualised as evolving structures and boundaries of discourse on a policy problem. This understanding follows the definition of frames of Schön and Rein (1994: 23) who defined them as ‘structures of belief, perception, and appreciation that underlie policy
positions’. The authors distinguish between rhetorical and action frames. Rhetorical frames ‘underlie the persuasive use of story and argument in policy debate’ (ibid: 32) whereas action frames ‘inform policy practice’ (ibid.). Importantly, rhetorical and action frames are not mutually exclusive; rhetorical frames can be action frames and the other way round. This is not always a clear-cut distinction in practice. Indeed, virtually all action frames will have an element of rhetoric used in the policy documents, legislation, codes of conduct or other official written documentation. On the other hand, one may argue that the persuasive use of stories and arguments in policy debate, even if not codified in policy documents, is also done with a view to (eventually) inform policy choice and practice.

For the matter of simplicity, this study will refer to rhetorical frames when critically interrogating storylines and arguments used in analysed policy narratives. The term action frames will be used when the analyses turn to exploring implications of particular framing for policy choices and action, that is whenever there is evidence that frames do (or may) influence policy practice.

Action frames can operate at level of policy, institutional action and meta-cultural frames (Schön and Rein 1994). Policy frames are proposed by an institutional actor to construct the problem in relation to a specific policy situation. This is an intentional act of an actor done with a specific purpose.

An institutional frame – or rather ‘families of related frames’ - are more generic action frames from which actors derive the policy frames they use to structure a range of problematic policy situations. Institutional frames can be recognised by prevailing systems of believes, routines, categorisations, perceptions of power relations as well as styles of argument which characterise practices of specific actors. This study will consider a specific organisational culture as an important component of institutional frames. Meta-cultural frames are organised around generative metaphors and are ‘the deep root’ of both rhetorical and action frames. They are expressions of broad, culturally shared systems of belief and value systems.

This study adds a notion of vision frames focused on how issues are problematised and structured in discourses of long-term policy scenarios and visions. Vision frames complement the above set of concepts by explicitly introducing a notion of frames of desired or feared futures. Enquiring vision frames is about how emerging and future problems are apprehended and structured by policy actors.
An instrumental reframing of policy is an act of intentional change of formal policy frames by policy actors. The study assumes that different policy actors (agency) frame and reframe problems differently depending on their beliefs, perceptions and understanding of what constitutes a problem in a specific context. Frames will depend on the relation of stakeholders to the problem that can explain motivations and incentives behind advancing specific policy discourses. Importantly, frames reveal not only understanding of an issue but also appreciation of the wider system in which the problem emerges. Frames will be central for this research in analysing how a policy issue is problematised by various policy actors and in formal policy documents.

The focus of the study will be on new frames emerging in official policy narratives expressed in the policy documents, speeches and interviews with policy makers as well as in narratives used by different stakeholders or groups of stakeholders in their positions towards the policy problem.

Frames are a relevant perspective in analysing processes and mechanisms of selection, interpretation and ‘translation’ of evidence used in the public policy. Differences in frames may explain why appealing to facts of reasoned argumentation is not sufficient to understand and resolve policy disputes. Naming and framing allows to make ‘the normative leap’ from data to recommendations, from fact to values, from ‘is’ to ‘ought’ (Schön and Rein 1994: 26). As Stirling suggested: ‘even in the most technical and sophisticated forms of analysis, it seems that the answer you get depends on the way you frame the question’ (Stirling 1997).

The enquiry proposes that this ‘argumentative interpretation’ of knowledge and expertise used for policy may differ depending on the time horizon of policy narrative. In the long-term policies including a normative vision, the nature, use and interpretation of evidence may be different due to the deliberative nature of the vision as well as due to the inherent uncertainties related to future. ‘Foresight knowledge’ is thus socially constructed and based on both interpretations of empirical evidence and imagination used to construct anticipated and desired future.

### 5.2.3. Discourse affinity and argumentative alignment

Based on frame analysis, discursive affinity of different frames can be analysed. While discourse affinity indicates similarities and difference of frames, argumentative alignment denotes the intended adaptation of frames and narratives by policy stakeholders
to align with other frames. This dimension of analysis will build mainly on the discourse coalition approach (Hajer 1995, 2003; Fischer 2003).

Argumentative alignment may occur in *discursive space* in which stakeholders operate. In this context, the reframing of policy that aims at alignment will search or construct (through new interpretations or emphasis) discursive spaces, in which commonalities of worldviews, problem frames or visions can be established. Extending frames to include a longer-term future, as in the visioning process, may reveal new discursive spaces and allow policy stakeholders to (re)negotiate discursive alignments.

The process of creating argumentative alignment can be paralleled to policy learning understood as the collective ability to learn, share and create knowledge. In terms of processes that seek to change existing policy frames, the alignment could be paralleled with Argyris and Schön’s notion of single- and double-loop learning (Argyris and Schön 1996). We could speak of a single-loop reframing in cases where frames are adapted to accommodate first-order problems. When systemic deficiencies and worldviews underlying narratives are questioned, one may speak of double loop -or radical- reframing.

### 5.2.4. The concept of a policy narrative framework (POLFRAME)

In order to integrate main concepts into one cohesive conceptual framework, this study introduces a *policy narrative framework analysis (POLFRAME)*. The framework offers a systemic approach to interrogating complex challenge-driven narratives by combining:

- a structured enquiry into *policy narratives*, including historical and prospective storylines and argumentation, constructed around a specific policy challenge; and
- an *in-depth layered analysis* of policy narratives, including the use and interpretation of evidence, explicit and implicit causal inferences in policy narratives as well as the underlying normative and cognitive assumptions of policy frames.

The approach explicitly acknowledges the varying temporal scope of policy narratives by distinguishing between *historical* and *prospective* elements of storylines. It maps and investigates storylines ranging from historical perspectives on origins of today’s problems to future visions on how to resolve them.

Following the reconstruction of storylines in policy narratives the enquiry continues with a series of analytical steps that gradually build the depth of the investigation. The analysis starts from identifying and analysing the main arguments and facts used in policy narratives. This allows for examining explicit or implicit causal assumptions in policy
storylines that reveal underlying normative and cognitive assumptions of the analysed policy frame. The interpretive layers and associated questions in the policy narrative framework analysis help to ponder both explicit or implicit assumptions behind policy narratives that may reveal motivations and incentives driving policy reframing. The systemic approach to studying policy frames may also point to intended or unintended gaps in policy narratives ranging from factual omissions to gaps or inconsistencies in causal assumptions. Figure 7 introduces the main dimensions of the POLFRAME approach.

**Figure 7. Introducing the policy narrative framework analysis (POLFRAME)**

The **vertical dimension** in the POLFRAME matrix relates to the timeline of storylines emerging in policy narratives. The main building blocks of storylines originally proposed in this study include: first-order problems, systemic deficiencies, scenarios of change and future vision. POLFRAME provides a simple structure to (de)construct policy narratives emerging from the testimonies of policy actors and policy documents. The emphasis on storylines and argumentation in policy analysis is inspired mainly by the previously discussed approaches to narrative policy analysis (Fischer and Forester 1993, Schön and Rein 1994, 2003, Fischer 2003, 2007, Van Eeten 2007, Fischer and Gottweis 2012). ‘First-order problems’ and ‘systemic deficiencies’ refer to the historical dimension whereas ‘scenarios of change’ and ‘future vision’ allow for analysing the prospective dimensions of
policy narratives. The distinctive analytical focus on different building blocks of a storyline is an original contribution of this study.

The **horizontal dimension** of the matrix adds analytical layers to the enquiry. The layers reflect research questions of this research and, although inspired by various existing approaches to layered analysis (notably Inayatullah 1998), are as such first proposed in this research. The first layer – ‘facts and evidence’ – depicts factual statements and evidence base employed by stakeholders to support storylines and arguments. Depending on a policy process and stakeholders, these can range from scientific studies, expert knowledge, anecdotal evidence to, although rarely, an absence of empirical evidence. The focus on how knowledge is used and interpreted to support policy argumentation follows Fischer’s ‘policy epistemics’ that focus on ‘investigating the way interpretive judgements work in the production and distribution of knowledge’ (Fischer 2009).

The framework introduces an explicit differentiation between evidence used to support the historical and, on the other hand, prospective dimensions of policy narratives. The notion of varying uses and *nature* of knowledge used to support policy processes tackling complex, long-term challenges draws on the concepts of post-normal science (Funtowicz and Ravetz 1993) and ‘foresight knowledge’ (Schomberg et al 2005, Guimarães et al 2008). The distinction prepares a ground for the reflection on epistemological implications of introducing long-term challenge-driven vision to policy narratives.

The second layer depicts ‘causal assumptions’ in policy narratives. The emphasis on causal inferences in narratives relates to Argyris and Schön’s (1996) theories of change and ‘situated causal enquiry’ used to map and verify the cause-effect assumptions in theories of change used by social actors. This layer is focused on identifying and interpreting explicit or implicit causal assumptions in policy narratives.

The third layer focuses on deeper, often implicit, ‘normative and cognitive determinants’ underlying policy narratives. This layer builds on interpretive policy analysis (Schön and Rein 1994, Fischer 2003, 2009), organisational learning (Schön and Agryris 1996, Wenger 1998) as well as on the causal layered analysis of Inayatullah (1998). The layer includes analysis of institutional and meta-cultural frames of Schön and Rein and the dimension of ideology and power underlying policy narratives (Fischer 2003, Van Eeten 2007). The deeper discursive analysis can be seen as an equivalent of ‘worldview’ and ‘metaphor or myth’ in the layered causal analysis of Inayatullah (1998). The lessons from organisational learning are relevant here as they suggest various cognitive and organisational determinants of social learning and organisational change processes.
The POLFRAME matrix is both a ‘conceptual device’ structuring this research as well as a practical research method guiding data collection and reduction in the case study analysis. POLFRAME is introduced in further detail as a practical analytical tool in Chapter 6.

5.3. Research questions

The main motivation of this research is to improve our understanding of mechanisms, determinants and implications of the reframing of policy responding to long-term societal challenges. This study aims to, first, gain an in-depth understanding of how different stakeholders, notably policy makers, frame the issue at stake; second, how evidence supporting specific frames is constructed and interpreted, and, third, to analyse to what extent and how policy narrative aligns or conflicts with different narratives emerging in the public discourse.

The specific research questions include:

A. What are the main storylines, key arguments and underlying causal assumptions of policy narratives constructed as a response to a long-term societal challenge?

B. How does an inclusion of the long-term challenge and vision influence the storylines and argumentation in a policy narrative?

C. How does an inclusion of the long-term challenge and vision relate to the underlying normative assumptions of a policy narrative?

D. How does an inclusion of the long-term challenge and vision influence the use of evidence in a policy narrative?

E. How does the reframed policy narrative relate to the existing problem frames responding to the same challenge?

F. What are the mechanisms and motivations of an instrumental reframing of policy?

G. What are the anticipated effects of an instrumental reframing of policy?

The questions will be further elaborated and discussed in the specific context of the case study. The questions are briefly discussed below.

A. What are the main storylines, key arguments and underlying causal assumptions of policy narratives constructed as a response to a long-term societal challenge?

The research will map and analyse policy narratives responding to long-term societal challenges using the policy narrative framework analysis (POLFRAME). First, the framework will be used to map and structure policy narratives of a policy challenge by
reconstructing storylines, identifying main arguments and analysing explicit and implicit assumptions behind specific positions held within policy discourse. Second, the POLFRAME approach will be used to analyse the process of selection, construction and interpretation of facts, scientific evidence and expert knowledge used to support narratives. The focus will be on how evidence is selected and interpreted in areas with conflicting or limited knowledge or how arguments are built concerning areas of uncertainty and risk. An extensive POLFRAME analysis is undertaken in Chapters 7-9.

B. How does an inclusion of the long-term challenge and vision influence the storylines and argumentation in a policy narrative?

The question is on how and to what extent adding a long-term challenge and future vision to the policy narrative influences policy discourse. A prospective narrative may introduce new or modified interpretations of data, policy arguments or metaphors with an explicit reference to future opportunities and threats. The research will, first map and analyse a selected policy process and, second, enquire whether and how an inclusion of the long-term challenge and vision to policy narrative affects existing policy discourse. The empirical material gathered to respond to the question is analysed in Chapters 7 and 9.

C. How does an inclusion of the long-term challenge and vision relate to the normative assumptions of policy narratives?

This question focuses on the layer of the underlying cognitive and normative assumptions of the policy narrative. The reflection will be on what is the influence of the extended temporal scope of the narrative on the underlying assumptions. It can be argued the inherent uncertainty and the lack of empirical evidence about the future may bring the underlying normative assumptions and beliefs about the policy problems closer to the ‘narrative surface’. Explicit statements about the preferred future expressed in the policy narrative may unmask underlying assumptions held by various stakeholders. Based on the assumption that policy stakeholders are not rational agents, this question resides on an assumption that narrative frameworks and policy argumentation ought not to be expected to follow one mechanistic linear rationality. Policy narratives are not rational constructs. They may almost certainly reveal internal inconsistencies and gaps. The research will explore whether and how the normative dimension enters policy discourse when a long-term perspective is introduced to the policy narrative. The empirical material gathered to respond to the question is analysed in Chapters 7 and 9.
D. How does an inclusion of the long-term challenge and vision influence the use of evidence in a policy narrative?

This question explores whether and how the reframing of policy influences the process of selection, construction and interpretation of evidence used to support the reframed policy. In particular, it will be explored whether and to what extent the introduction of a long-term challenge-driven perspective to policy narratives has a specific influence on constructing the evidence base of policy argumentation. The empirical material gathered to respond to the question is analysed in Chapters 7.4 and 10.3.

E. How does the reframed policy narrative relate to the existing problem frames responding to the same challenge?

This question aims at comparing the reframed formal policy narrative with other existing frames of the problem in the public discourse (discursive affinity). The study will investigate whether and to what extent policy arguments align or diverge with understandings and meanings underlying main policy narratives. The empirical material gathered to respond to the question is analysed in Chapter 9.3.

F. What are the mechanisms and motivations of an instrumental reframing of policy?

This question explores the process of the reframing of policy with a focus on mechanisms and motivations of policy makers who intentionally reframe policy argumentation in order to align it with the targeted audience. The intentional change may influence the process of selection and interpretation of evidence and the use of normative arguments in the narrative in order to make it persuasive. In emerging policy areas new argumentation may be intentionally vague to avoid explicit reference to potentially conflicting or divisive issues. The research will be based on stakeholder interviews and document analysis. The empirical material gathered to respond to the question is analysed in Chapters 8 and 10.

G. What are effects of an instrumental reframing of policy?

An instrumental reframing attempts to change policy frames of the problem and, in a longer term, influence actions of actors. Changing rhetorical frames, however, may fail to mobilise sufficient support from policy actors and may not lead to lasting changes in policy practice. Given the limited timeframe of the research process, this study focuses on investigating anticipated effects of reframing based on interviews with the policy makers and stakeholders, notably whether and to what extent the reframing may contribute to the emergence of argumentative alignment between policy makers and targeted stakeholders. The empirical material gathered to respond to the question is analysed in Chapter 10.
6. Methodology

6.1. Case study selection

The purpose of this investigation is to gain better understanding on how public policy can respond to long-term societal challenges. The emerging EU resource efficiency policy, and the EC’s ‘Roadmap to a Resource Efficient Europe’, was one of the policy agendas explicitly responding to one of the grand societal challenges brought up the Europe 2020 strategy (EC 2010). The case of resource efficiency and the EC’s Roadmap was considered a critical case as it could offer rich information on the evolving problem and deep insights on policy actors and policy mechanisms relevant for studying public policy responding to long-term societal challenges. The case study was thus selected as a particularity symptomatic case for the overall research problem. The focus on one of the key policy areas responding to societal challenges is expected to yield relevant insights also for other policy areas undergoing similar reframing processes.

The case study is situated in a specific context of the EC policy process. As a result some specific insights, notably related to the issues of internal organisation and governance of the EC, may be of particular relevance for the EU policy-making context. Since addressing long-term societal challenges is relevant for any public policy organisation, the findings and reflections on the reframing of policy and its implications for the use of evidence will be of interest to any policy maker or researcher concerned with the public policy’s response to the future problems.

6.2. Policy narrative framework analysis (POLFRAME)

6.2.1. Reconstructing policy narratives

The POLFRAME framework was designed to explicitly distinguish between historical and prospective dimension of policy narratives. It suggests restructuring the narrative into a simple storyline starting from the perceived roots of the problem and ending with the long-term vision of the future, in which the problem is expected to be resolved. In reality, the storylines rarely form a full and coherent narrative. By providing a very simple structure to
reconstruct narratives, however, the framework systemises the policy narrative analysis. The simplicity of the framework is intended to cater for diverse policy narratives.

The narrative layers of POLFRAME were adapted to reflect the core problem area of the case study, that is ‘resource efficiency’:

- First-order problems: what are the current problems linked to resource efficiency and the use of natural resources (e.g. prices of commodities, environmental impacts)?
- Systemic deficiencies: what are the ‘roots’ or systemic deficiencies underlying these problems (e.g. economic system, inappropriate technology)?
- Scenarios of change: what are the optimal solutions and strategic actions to overcome problems and systemic deficiencies of resource efficiency? (e.g. technological innovation, new business models, regulatory intervention);
- Future vision: how should humankind approach the use of natural resources in the future? (e.g. changing basic relationships, new technologies).

The first-order problems are difficulties or issues directly experienced or currently considered most relevant by stakeholders. For example, limited access or high prices of raw materials can be a problem for companies depending on materials in their production process. They may be also referred as symptoms of deeper systemic problems.

The underlying systemic deficiencies – or ‘roots’ of the problem – are what actors consider the main causes of first-order problems. For example, companies suffering from high prices of raw materials may believe the prices are caused by inefficient extraction practices or by trade restrictions. Understanding of what ‘root problems’ are is likely to differ between different actors: it can go all the way the focus on technological deficiencies (e.g. ‘our technology is still too inefficient’ to questioning deep beliefs underlying social and economic systems (e.g. ‘our approach to natural resources is not sustainable’).

Furthermore, depending on how the problem is framed or what the perceived problem boundaries are, what may seem a systemic deficiency for one stakeholder may appear to be just a symptom for another. The assumptions about causal relations between first-order problems and systemic deficiencies are one of the core elements of how problems are framed. In the proposed conceptual framework, the understanding of first-order problem and systemic deficiencies constitute problem frames.

The identification of first-order problems and systemic deficiencies is followed by suggestions of change processes or future pathways (scenarios of change) leading to a desired alternative future (vision of future). Analysis of how these future-oriented elements
of the narrative framework are understood can reveal ‘vision frames’. Actors may have a
generic or very concrete scenarios and visions of change depending on the directedness of
their relationship with the issue and their strategy. The scenario is usually associated with
suggestions of specific means and agents of change.

Below I will illustrate the logic of these narrative layers with two simplified narratives
presenting different ways of looking at the issue of resource efficiency:

We live on the planet with finite natural resources (systemic deficiency or root of
the problem). We may not be facing geological scarcity yet, but the low grades
and increasingly difficult access to remaining resources will cause de facto
scarcity in the near future (first-order problem). In the last century, our
exploitation of natural resources became excessive leading to many negative
environmental impacts (first-order problems). This is caused by our economies
being based on the ever-growing production of material goods and by the
consumption-oriented culture (systemic deficiency). We need to change the
overall production and consumption model as well as our relationship to nature
(future vision). This can be done by promoting business models based on
collaborative consumption (scenarios of change).

Here is another take on the resource issue:

We live on the planet with finite natural resources (systemic deficiency), but there
are many regions that still can be exploited for fossil fuels and minerals (future
vision). Of course, we will explore new opportunities with the technologies
guaranteeing lowest possible environmental impact (scenario of change). In the
last decades, we experienced some difficulties in accessing raw materials (first-
order problems). These problems have been caused by economic and geopolitical
issues (systemic deficiency) rather than by actual geological scarcity (first-order
problems). Our economies can still grow (future vision), but we need to radically
improve our production system and develop new resource-efficient technologies
and products (scenario of change).

These two hypothetical, yet plausible, narratives present very different views on what
resource efficiency is and how it should be addressed. The narratives differ substantially in
how they interpret both the scope and urgency of the problem, even if they depart from a
similar view on systemic conditions. The case study will collect empirical accounts on the
resource issue from different policy stakeholders and construct aggregated meta-narratives
that share the understanding of boundaries of the problem as well as feature common arguments, perceptions and assumptions.

6.2.2. Performing layered analysis of policy narratives

The interpretive layers in POLFRAME provide space for investigating different understandings and assumptions underlying policy narratives. The framework includes:

- Facts and empirical evidence: meanings attributed to facts and events, empirical evidence as well as anticipated events and trends;
- Causal assumptions: assumptions and claims on causal relations and mechanisms;
- Underlying cognitive and normative determinants: interpretation of cognitive and normative assumptions underlying arguments, causal claims and evidence.

The analysis starts with mapping of basic elements of storylines used in the policy narrative (e.g. arguments, metaphors). The analysis then shifts to analysing the selection and interpretation of empirical evidence and facts used in the policy argumentation in the narrative. The use of evidence can be analysed in relation to each narrative layer. The reflection continues with the identification and analysis of explicit and implicit causal inferences in the policy narrative. The narratives are analysed with a focus to identify the ‘cause and effect’ statements as well as to indicate possible gaps in the storylines. The framework can reveal whether and how different types of evidence are used to support causal assumptions in the narrative.

The analytical effort then moves to exploring underlying rationales, motivations and interests as well as values, beliefs, ideologies or even myths that explicitly or implicitly underlie assumptions and choices emerging in the policy narrative. The latter includes a reflection on deeply rooted, often implicit, assumptions about ‘underlying structures’, dependencies and mechanisms that allow one to understand how and why different actors perceive and draw different boundaries of the problem area. This reflection can include investigation on, for example, the assumptions about ‘natural relationships between different entities’ (Dryzek 2005), which include relations between human beings, between humans and technology, humans and nature, technology and nature etc.

The process of the selection, use and interpretation of evidence in policy narratives is understood as a social learning influenced by cognitive and normative assumptions, standpoints and incentives driven by various interests, institutional aspects and power relations.
The framework proposes that policy for which evidence is sought may itself influence the process of interpretation. The direction of relations between policy narrative and evidence should not be considered as a one-way process whereas knowledge is ‘translated’ into evidence informing policy. Evidence may be interpreted (thus ‘translated’ for the policy use) differently depending on the level risk and uncertainty. Whether short- or long-term oriented, this argumentative interpretation is always normative in a sense that it is taking place in the context of more or less imminent policy decision, often linked to the political choice. The longer is the time horizon of the policy, this research proposes, the more likely it is that the policy narrative is based on the collective interpretations of what is desired by stakeholders and deemed plausible by them.

Figure 8 presents an annotated POLFRAME matrix with the main dimensions of the policy narrative framework. The matrix is used to structure, map, analyse and compare data in the case study conducted for this research. The framework can be used to analyse narratives at different levels of aggregation. The case study features both an in-depth analysis of a single policy document as well as analyses aggregated meta-narratives constructed based on stakeholder interviews and policy documents.

Figure 8. Analysing policy narratives with POLFRAME
6.2.3. Analysing the reframing of policy

The reframing of policy refers to changes in a policy narrative framework. The POLFRAME model is used to capture and explain changes in a policy narrative by performing comparisons of policy narrative frameworks emerging from stakeholder interviews and formal policy documents. The focus of this research is on the instrumental or intentional reframing of policy, in which the reframing is an intended action of policy makers. The new frames are often introduced in a policy document or in speech. The analysis of reframing may reveal different degrees of reconfigurations in policy storylines ranging from radical shifts to minor changes occurring in the established storylines or/and in the meanings attached to policy arguments.

Figure 9 illustrates the main areas of enquiry in which wider changes in the formal policy narrative can be investigated.

Figure 9. Analysing the reframing of policy using POLFRAME

6.2.4. Understanding wider effects of the process of policy reframing

The effects of reframing are understood as changes that can be attributed to the reframing of policy. In simple terms, the effects can be sought in four dimensions:

- rhetorical changes of storylines and arguments;
- understandings and meanings underlying storylines, including discursive alignment;
- action and practices influenced by reframing, including coalition building; as well as
- institutional and meta-cultural frames co-evolving with new policy frames.
The potential effects of reframing can be investigated in many dimensions and on different levels. They can be identified on the level of individual stakeholders or on the level of social groups or networks of organisations. The effects can be investigated in relation to the external audience targeted by the new policy narrative as well as in relation to the very organisation behind the reframing process. The POLFRAME approach will be used to analyse changes triggered by the reframing of policy that could result in wider changes. The changes in storylines, meanings and institutional frames underlying the narratives can be mapped and investigated using the matrix. This analysis will further contribute to developing a model of the process of policy reframing also taking into account the dimension of (actual or anticipated) changes in action and practices.

6.3. Practical organisation of research

Data sources and data collection

The analysis has been based on both primary and secondary information sources. Desk research was based on various data sources including formal policy documents, speeches, expert reports and positions as well as academic literature. The empirical enquiry comprised a series of semi-structured in-depth interviews with 42 stakeholders involved in the research efficiency debate and/or consultations related to the EC’s ‘Roadmap to a Resource Efficient Europe’. Figure 10 overviews data sources used in the case study.

Figure 10. Sources of data for case studies

<table>
<thead>
<tr>
<th>Type of stakeholder</th>
<th>Secondary data sources (desk research)</th>
<th>Primary data sources (empirical enquiry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy practitioners</td>
<td>Policy documents (EC Communications)</td>
<td>Interviews with representatives of the EC and selected representatives of national governments</td>
</tr>
<tr>
<td></td>
<td>Policy evaluations</td>
<td>Participation in events at the European Commission and other events with EC presence (e.g. conferences)</td>
</tr>
<tr>
<td>Business</td>
<td>Consultancy reports</td>
<td>Interviews with selected companies</td>
</tr>
<tr>
<td></td>
<td>Business association reports (WBCSD)</td>
<td>Interviews with business associations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participation in events (e.g. conferences)</td>
</tr>
<tr>
<td>Academics and researchers</td>
<td>Academic publications and reports</td>
<td>Interviews with selected experts and researchers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participation in events (e.g. conferences)</td>
</tr>
<tr>
<td>NGOs and think tanks</td>
<td>Reports and websites</td>
<td>Interviews with NGOs and consumer associations in the field</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participation in events</td>
</tr>
<tr>
<td>Politicians</td>
<td>Political speeches</td>
<td>Interviews with MEPs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participation in events</td>
</tr>
<tr>
<td>International organisations</td>
<td>Official publications and reports</td>
<td>Interviews with representatives of international organisations</td>
</tr>
</tbody>
</table>
The selection of respondents for in-depth interviews was based on a purposeful sampling technique. The main group included policy makers (European Commission and national policy makers), politicians (members of the European Parliament), business and EU level business associations, experts and researchers, NGOs as well as international organisations (see Figure 11 for details). The interviews had been conducted in May-December 2012, notably in May-June 2012. An average duration of interviews was about one hour, ranging from 30-minute exchanges to three-hour sessions. The fieldwork also included active participation in a number of events related to the main topics of the EU ‘resource efficiency’ agenda. Most events took place in Brussels as well as in Berlin (European Resource Forum) and Davos (World Resource Forum).

Figure 11. Types and groups of interviewed stakeholders

<table>
<thead>
<tr>
<th>Type</th>
<th>Group</th>
<th>Interviews</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy practitioners</td>
<td>European Commission and EU agencies</td>
<td>12</td>
<td>Officials from DG Environment, DG Enterprise, DG Research and Innovation, Joint Research Centre and European Environmental Agency and EACI</td>
</tr>
<tr>
<td></td>
<td>European Parliament</td>
<td>3</td>
<td>Two Members of the European Parliament (MEP) (and one MEP’s assistant)</td>
</tr>
<tr>
<td></td>
<td>Ministries from the selected EU member states</td>
<td>5</td>
<td>Germany, Austria (2), Netherlands, Belgium</td>
</tr>
<tr>
<td>Business</td>
<td>European level business associations</td>
<td>4</td>
<td>Including sectoral and horizontal associations</td>
</tr>
<tr>
<td></td>
<td>Companies</td>
<td>3</td>
<td>International companies active in resource efficiency debate</td>
</tr>
<tr>
<td>Experts</td>
<td>Prominent academics and researchers involved in the debate or/and whose work is relevant for the process</td>
<td>10</td>
<td>Researchers from universities and research institutes as well as independent experts with recognised expertise</td>
</tr>
<tr>
<td>NGOs</td>
<td>Environmental and consumer affairs NGOs</td>
<td>3</td>
<td>NGOs with Brussels representation that took position towards the Roadmap</td>
</tr>
<tr>
<td>International organisations</td>
<td>UNEP and OECD</td>
<td>2</td>
<td>Representatives of two key international organisations actively involved in shaping resource efficiency debate</td>
</tr>
</tbody>
</table>

The leading interview questions were directly linked with the conceptual framework. They were adapted to the specific context of the interview (e.g. type of the stakeholder, duration of the interview etc.). All respondents received a two-page brief about the research along with the invitation. Each interview started with a short introduction and, whenever needed, clarification of the research agenda.
The lead questions typically included:

- What is ‘resource efficiency’ for you? How do you understand this concept?
- What do we know about ‘resource efficiency’? What is the most relevant evidence that supports main arguments behind this agenda?
- What are the main uncertainties and knowledge gaps in the agenda, especially taking into account its general call for innovation and a systemic change of production and consumption patterns by 2050?
- How significant are these uncertainties and knowledge gaps in the context of taking business and policy decisions?
- What is your view on the European Commission’s ‘Roadmap to Resource Efficient Europe’, its vision, scope and objectives?
- How does the Roadmap relate to your views on resource efficiency?
- What is your opinion on the way the Roadmap was consulted with stakeholders?
- What are your expectations concerning results and wider outcomes of the Roadmap?
- If you could advise the EC, what would you recommend it does to organise the process of gathering evidence and building vision for such a long-term policy?

39 out of 42 interviews were documented in a written form. Notes were communicated to interviewees for validation. The notes included transcriptions of key statements as well as summary notes outlining stakeholders’ views. Out of 39 respondents contacted, 37 explicitly validated the notes. Two respondents did not reply. At a request of respondents, three interviews had a character of informal conversations without formal notes.

**Data reduction and analysis**

The interview notes have been coded in order to prepare thematically organised excerpts. The codes were set up to cover main questions and topics of the study in line with the information requirements of the policy narrative framework analysis (POLFRAME).

The process of coding and excerpting was aided by the online software Dedoose (www.dedoose.com). This allowed for exporting excerpts organised by topic and descriptor data (i.e. key words, type of stakeholders). The views expressed in the interviews were not attributed to individuals or specific organisations if the latter can reveal the identity of the respondent. The citations used in the text are selected as illustrations for specific narratives, lines of argumentation or framing of a problem or policy issue. While they are valid for analysing the specific policy context or a particular narrative, they should not be regarded as representative for the specific stakeholder groups.
or organisations. As a general rule, citations are anonymised in the text. They have been, however, attributed to the concrete interviews. The first section of References explains how citations were organised and referred to in the text. Figure 12 lists analytical questions and primary and secondary evidence used in the case study.

Figure 12. Main questions and evidence informing the case study

<table>
<thead>
<tr>
<th>Main area</th>
<th>Sub-area</th>
<th>Analytical questions</th>
<th>Evidence</th>
</tr>
</thead>
</table>
| Problem and vision frames | Resource efficiency in EU public discourse (meta-narratives) | – What are narratives and frames of ‘resource efficiency’ agenda?  
– What are perceived first-order problems and systemic conditions of resource efficiency?  
– What are scenarios and visions of future?  
– Do different understandings of the problem relate to the specific visions of society and economy?  
– What types of evidence are used and how are they interpreted?  
– Have any risks and uncertainties been recognised? | Stakeholder interviews  
Participation in conferences and stakeholder events  
Literature review |
| Resource efficiency in the EC Roadmap (official narrative and frames) | Process and policy context | – What was the rationale of the roadmap?  
– What were key events and external trends that influenced the Roadmap?  
– How has the Roadmap related to other EU policy processes?  
– How was the process organised?  
– Who has been engaged in the process? What were the forms of engagement?  
– What were main motivations/incentives of external stakeholders and internal EC actors?  
– What was the role of internal actors and external stakeholders in providing and interpreting evidence used in the Roadmap? | EC documents (EC roadmap and staff working paper)  
Stakeholder interviews |
| Narratives and frames | – What are narratives and general frames of ‘resource efficiency’ agenda?  
– What are perceived first-order problems and systemic conditions of resource efficiency?  
– What are scenarios and visions of future?  
– Does understanding of the problem relate to the specific visions of society and economy?  
– What types of evidence are used and how they are interpreted?  
– Have any risks and uncertainties been recognised? | Stakeholder interviews  
Participation in conferences and stakeholder events |
| Discursive affinity and discursive alignment | Comparative analysis of narratives and frames | – Have any similarities or differences in scoping and understanding of resource efficiency occurred?  
– Do different scopes and understandings of ‘resource efficiency’ converge or diverge? | Stakeholder interviews  
Participation in events |
| Argumentative alignment | – Did the Roadmap intend to align with specific narratives?  
– Does the Roadmap have any impact on public debate and understanding of the issue?  
– Did differences in opinions emerge and how were they dealt with?  
– Have the gaps in evidence led to instigating new processes of building more robust evidence?  
– Have the activities within the Roadmap process informed policy beyond the Communication? How much has the Roadmap influenced policy agenda? | Stakeholder interviews  
Participation in conferences and stakeholder events |
| Stakeholder mobilisation | – Has the Roadmap mobilised stakeholders? Have any coalitions or groups emerged in the process?  
– Can we talk about emergence of ‘discourse coalitions’ or policy networks’ (alignment)? | Stakeholder interviews  
Participation in events |
C. Frames, narratives and evidence on resource efficiency in the EU policy
Part C of the thesis consists of four chapters introducing empirical evidence and analysis of the selected case study on frames and policy narratives of resource efficiency emerging in the EC’s policy agenda and the ‘Roadmap to a Resource Efficient Europe’ (2011).

Chapter 7 discusses predominant frames and narratives of resource efficiency in the EU public discourse. The chapter maps main storylines, arguments and underlying causal assumptions of policy narratives constructed as a response to a challenge of resource efficiency by various stakeholders (Research question A). The analysis is based on the empirical material gathered during fieldwork and on the selected literature. The POLFRAME approach is used to reconstruct and compare main meta-narratives present in the discourse. The chapter prepares the background for the more in-depth analysis of the EU policy process analysed in the case study.

Chapter 8 moves on to the main developments of the formal EU resource efficiency policy agenda prior to the publication of the EU Roadmap towards a Resource Efficient Europe in 2011. The chapter introduces a policy narrative framework analysis of the 2005 EU Thematic Strategy on Sustainable Use of Natural Resources (EC 2005) that preceded the Roadmap.

Chapter 9 introduces an in-depth policy narrative framework analysis of the Roadmap. The analysis depicts the dominant storylines, key arguments and underlying causal assumptions of the formal policy narrative emerging from the policy document (Question A). The chapter analyses internal coherence of the narrative framework of the Roadmap and reflects on how the policy narrative in the Roadmap relates to the meta-narratives (Research question E). The chapter reflects on the reframing of policy narrative by comparing policy narrative frameworks the Roadmap to the 2005 EU Thematic Strategy.

Chapter 10 focuses on the political process and emerging effects of the intentional policy reframing attempted with the publication of the Roadmap. The analysis focuses on the mechanisms and motivations of an instrumental reframing of policy (Research question F) and the anticipated effects of an instrumental reframing (Research question G). The chapter includes a discussion on how an inclusion of the long-term challenge and vision influences the storylines and argumentation in a policy narrative (Research question B), how it relates to the normative assumptions of a policy narrative (Research question C) and how it influences the use of evidence in a policy narrative (Research question D).
7. Frames and narratives of resource efficiency in the EU public discourse

This chapter explores different ways of framing ‘resource efficiency’ in the EU policy agenda by analysing frames and layers of discourse in the testimonies of the European Commission (EC) officials and policy stakeholders as well as in the selected EC policy documents, speeches and the literature on the subject.

7.1. Problem boundaries of resource efficiency

Relevance and centrality of ‘resource efficiency’

Most stakeholders consider ‘resource efficiency’ a rather obscure term that ‘does not speak for itself’. Stakeholders described the term as ‘purposely vague’ (EI2 2012) or even ‘less clear than sustainable development’ (EI7 2012). Several policy reports indicated that the term has different meanings attributed by different organisations and is interpreted differently in different government departments and countries in Europe (see, for example, EEA 2011, EIO 2012).

The term is known and used especially by the EU and national policy officials and experts. Many stakeholders, especially business and business associations, tend to speak about ‘sustainability’ rather than ‘resource efficiency’. The problems related to the use of natural resources fall within their overall ‘sustainability strategy’. Business and NGOs, for example, were also more likely to connect ‘resource efficiency’ with climate change and energy agenda, whereas most policy officials considered these topics separately as dealt with by different departments and/or ministries.

The topic of resource efficiency was considered relevant by a vast majority of respondents. It was not, however, the prime concern for several respondents. One of the horizontal business associations, for example, admitted that resource efficiency (and sustainability in general) is far from being the key issue for most of their members, consisting mostly of SME associations. They argue small enterprises are mostly concerned with economic crisis, which they do not connect with resource-related problems (BIZ6 2012).
One academic respondent pointed out that ‘resource efficiency’ is not a prime concern for majority of environmental economists, let alone mainstream economists (EXP9 2012). ‘Resource efficiency’ as a research field in economics is considered new with ‘climate change’ and ‘energy’ remaining key topics for most environmental economists.

**Scope and boundaries of the agenda**

Various stakeholders have different understandings about how broad and deep should the ‘resource efficiency’ agenda be. Stakeholders ponder what are and what should be the boundaries of ‘resource efficiency’ agenda in relation to environmental, economic and social issues. Majority of stakeholders consider the agenda as one **combining both economic and environmental dimensions**. One of the academic respondents saw it as a ‘bridge between environment and economy’ seeing using markets as the only way to guarantee effective environmental protection (EXP3 2012). Similarly, another expert connects ‘resource efficiency’ to the broader ‘green growth’ discourse:

> ‘The environmental agenda would be completely dead now if it weren’t for both ‘green growth’ and the thought that this may be another wave of economic success. (…) There is currently no space at all for environmental agenda outside ‘green growth’ agenda. In 2005, for example, there was more space for straight environmental arguments as those were the times prior to economic crisis’ 

(EXP4 2012).

One of the policy makers notices a similar trend ‘to bring environment to the market place’ and that resource efficiency allows for bundling many issues together (EI4 2012). Overwhelming majority sees the combination of economic and environmental rationales as a major advantage of resource efficiency as a policy agenda. There are also voices expressing concern about the balance between the two dimensions and the actual benefits – or value added- for *either* side. The nature and dynamics of the ‘marriage’ of environment and economy *in practice* is thus less clear. This resembles problems discussed within the broad sustainability debate.

Most policy makers, academics as well as NGO representatives interviewed for this study consider resource efficiency an agenda driven mostly by economic motives. One of the interviewed environmental policy makers pointed out to the realisation of the implications higher prices of resources had on environment (e.g. depletion, deep mining, off-shore drilling, searching for new resources in the environmentally sensitive areas).
One of the EC officials underlined that limiting resource efficiency to the simple input-output logic of material efficiency can sideline the environmental dimension of the agenda:

‘It is economic and industrial agenda implying using less material resources or simply ‘doing more with less’. This understanding follows a ‘factory logic’ suggesting that process has a clear input and output. As such it is linked to industrial policy, as well as raw materials, and is pushed by industry and business rather than by environmental considerations.’ (EI4 2012)

Some European politicians place the debate on resource efficiency at a heart of a broad societal discussion on sustainability with a global outlook:

‘Resource efficiency is as much an economic and industrial policy topic as it is environmental and sustainability topic. It is also a part of a broader lifestyle debate that is how to transform our lifestyles to help accomplish a global sustainability target that no one has been able to describe in practical terms yet’ (EI10 2012).

An important broader issue in this context is the systemic relation between the limits of natural resources, growth and wellbeing. The perspectives linking wellbeing with material growth often clash with the views supporting existence of planetary boundaries. Conversely, admitting the limits to the use of resources inevitably brings about the discussion on redefining the material basis of wellbeing. These broad frameworks influence the way different stakeholders frame resource efficiency ‘problems’ as well as how they approach the issue of change and future vision.

One of the academic respondents argued resource efficiency should be considered as a means to achieving wellbeing:

‘Resource efficiency should eventually contribute to wellbeing. I advocate seeing resource efficiency agenda in the broader sustainability context rather just technical efficiency. The efficiency is to be understood as a means to a goal – the goal of sustainable development’ (EXP6 2012)

Another researcher expressed similar view, arguing that the current policies seldom follow such reasoning:

‘Resource efficiency is meant to help satisfy human needs with minimal environmental impacts (e.g. resource use, waste, pollution). This broad
understanding is rarely followed up by policies, which emphasise economic trends expressed in material productivity related to GDP.’ (EXP10 2012)

The relevance of these general distinctions is crucial in understanding what different actors consider as main challenges of resource efficiency and how (and at what ‘level’) they want to address them. Distinguishing between economic and environmental dimension of resource efficiency should not mislead the reader; the frames of the issue are more complex and can be placed on a number of discursive axes.

7.2. Mapping an overall narrative framework of resource efficiency

This section maps and analyses resource efficiency narratives emerging in EU agenda focussing on main arguments and claims related to problem frames (first-order problems and systemic deficiencies) and vision frames (scenarios of change and visions) of the issue.

First-order problems and systemic deficiencies

Economic concerns were considered the main drivers of the resource efficiency agenda. An overwhelming majority of interviewed stakeholders most often referred to growing prices of resources as the key first-order problem driving the policy agenda. High prices of commodities were often mentioned along with the problems of actual and anticipated scarcity of some (critical) resources, notably materials, water and land.

What were the systemic deficiencies or roots of the problems indicated by the respondents? The understanding of systemic roots depended on the boundaries of the problem. The boundaries range from entire economic and societal models to specific sub-systems (e.g. material efficiency in manufacturing). Actors holding predominately economic frames of resource efficiency do not prioritise environmental problems, but focus on systemic problems with the economy. The primary concern is economic growth rather than limited stocks of resources. Economic frames of the issue are very different reflecting diverse visions on how an overall economic system should function. They range from fixes to the current production system to a systemic rethink of economic and business models (as in circular economy approach).

The conservative economic frames are often based on the market-based understanding of the problem. One of the academic respondents suggested, for example, that scarcity issues should not be considered a first priority problem as from the economic point view ‘when resource prices rise there will always be new suppliers of raw materials’. The associated environmental impact can be solved by means of better technologies and regulation.
Alternative frames, including the notion of wider social and cultural frameworks, point to deeper problems within economic model and the way societies function. These are based on the notion of imminent resource scarcity and the growing environmental pressures related to the resource use. The latter requires rethinking the current production and consumption systems. This understanding is based on different underlying assumptions: pointing to the need of systemic change of production and consumption patterns is based on an assumption that resource scarcity is an actual issue whereas an emphasis on market mechanisms finding new suppliers of raw materials indicates that the resource limits are not an immediate problem.

The basic question here is how much resources do we have on the planet and how much resources can be sustainably used. Information and knowledge needed to provide answers to these quests come from many scientific disciplines and areas. The data on stocks of primary and secondary resources are fragmented, incomplete and often based on rough estimations. Furthermore, as the issue of access to natural resources is and have always been an area of political and economic competition, vested interests and conflict, one can logically deduce that maintaining information asymmetry or even manipulating the information about the reserves and use of natural resources is an intentional strategy of many stakeholders.

The question whether we have enough resources on the planet has become a highly contentious and controversial topic. The standpoints oscillate between ‘imminent scarcity of resources’ and ‘abundance of supply’. Accepting the notion of ‘absolute scarcity’ can result in calling for the ‘limited use’ or, more recently, a ‘safe operating space’ based on the notion of the limited carrying capacity of the global eco-system. Some policy makers and NGOs considered this very notion of ‘living on a limited planet’ a basis for their arguments for changing the current economic model (see the following sections). The notion of ‘abundance of supply’, on the other hand, is linked with a contention that the earth can supply any amount of resources needed by economy and society.

Abundance of supply is not always seen in contradiction with the notion of ‘limits’ as some stakeholders argue that the problem of limits is an issue of a distant future, which leaves enough time for humanity to solve the problem before limits become an actual problem. In this view, any limits are there to be overcome by innovative technology. The latter may imply the belief in technology solutions and in a substitutability of natural resources.
The abundance of supply position can be linked with the ‘weak sustainability’ position which, contrary to ‘strong sustainability’, argues that natural resources, services and amenities delivered by eco-system are essentially substitutable with those made by humans (Perman et al. 2011). ‘Soft sustainability’ discourse often underlies claims that problems can be solved thanks to *inter alia* innovative technologies. This relates to the interpretation of what is the *first-order problem* of resource use i.e. inefficient use rather than non-sustainable levels of consumption. Clearly, in reality these extremes are less pronounced. The ‘scarcity-abundance’ discourse differs depending on the type of resource in question (e.g. the debate on water is very different from the debate on industrial minerals).

The overwhelming majority of interviewed experts and policy makers explicitly or implicitly pointed to the growing acceptance of the limits of the planetary system. The existence of ‘planetary boundaries’ has not been questioned. It should be mentioned, however, that the science on how to calculate and set ‘planetary boundaries’ is the subject of an animated scientific debate. Despite emergence of some more or less complex approaches to estimating the boundaries, there is no broad scientific consensus on how to go about it (Biermann 2012). Accepting the notion of ‘absolute scarcity’ may result in calling for the ‘limited use’ or, more recently, establishing the ‘safe operating space’ for humanity based on the notion of the limited carrying capacity of the global eco-system. Some policy makers and NGOs considered the very notion of ‘living on a limited planet’ a basis for framing resource efficiency and future vision.

The deep underlying assumptions of *systemic deficiencies* of the use of natural resources can be analysed from a perspective of the fundamental relations of humans with nature. This relationship could be summarised as an opposition between views holding that ‘nature is as a subordinate of human development’ and position that ‘nature is a fundamental basis of existence of humankind’. This difference in fundamental assumption about the relation influences the views and decisions on how humans should deal with natural resources. This could be compared with Dryzek’s (2005) distinction between ‘Prometheans’ and ‘Survivalists’, where former believe in the possibility of endless material growth (largely disregarding the ‘limits to growth’ argument) whereas latter subscribe to the view of limited carrying capacity of the planet and, therefore, ‘limits to growth’.

**Visions and scenarios of change**

The analysis now turns to exploring the views on changes needed to solve the resource efficiency problem or to the question: ‘what and why do we want to change?’ Depending on the perception of the *locus* of the problem, the proposed vision frames range from the
ambitious ‘systemic transition’ in socio-economic metabolisms (e.g. absolute decoupling) to the adaptation of the current system (e.g. better material efficiency). Further, the analysis explores the views on specific scenarios of change that accompany the generic vision. The different approaches can range from radical ‘systemic innovation’ involving a set of both technological and non-technological changes to incremental technical fixes improving efficiency of the production process.

The general future vision shared by most stakeholders is that societies have to become less reliable on primary resources. The evidence on growing consumption of natural resources is recognised and in general not questioned by policy, business or NGOs. All interviewed policy makers and NGOs have explicitly expressed support for the objective of ‘absolute decoupling’ whereas business stakeholders have not explicitly expressed this goal indicating that the ‘absolute decoupling’ should not be a goal on its own.

The need to rethink the notion of ever-expanding civilisation was referred to by many respondents. The overall challenge is to ‘turn the model around toward resource efficient model (i.e. decoupling)’ to avoid ‘hitting critical points’ (EI12 2012). The notion of ‘critical points’ is a reference to scientific findings of resource scarcities and systemic overshoot. Supporters of a more radical revisiting of the current system often refer to the scientific evidence backing this vision. One of the academics described the vision of future as a wider ‘cultural shift’ based on scientific evidence that emerges from a ‘fundamental battle among worldviews’:

‘It is a future when humans have learned to recognise the limits of their habitat. This is in stark conflict with a lot of the dominant myths of our time such as progress, ‘superman’ and a belief that humans are able to transcend natural barriers. This is very strongly driven by the very powerful vision that has driven western culture over the last two hundred years, in which humans don’t allow nature to get in their way. It is a fundamental battle among worldviews. It is very a different clash than the capitalist–communist battle in a sense that it has a clear scientific backing’ (EXP4 2012)

The reference to ‘scientific backing’ positions this particular vision as a rational and reflective choice rather than only ethical or moral choice. Interestingly, the interviews revealed stark differences in expectations towards the role of science for the policy agenda. One politician considered basing the argumentation for transition mainly on scientific findings as a political weakness of the climate change agenda. From a political point of view, they argued, an issue should be framed mainly as economic and social opportunity in
order to win support for the proposed changes. Scientific evidence used in political argumentation is crucial for recognising the nature of the problem, but it fails in suggesting the solutions and mobilising the process of social change. Many of the above-mentioned arguments on problems and systemic deficiencies underlying resources efficiency agenda became the basis of the instrumental reframing of the Roadmap.

Figure 13 summarises recurring arguments and claims in resource efficiency narratives.

**Figure 13. Recurring arguments and claims in resource efficiency narratives**

<table>
<thead>
<tr>
<th>Problem frames</th>
<th>First-order problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>High prices of commodities</td>
<td>High environmental pressures and impacts</td>
</tr>
<tr>
<td>Limited access to resources (scarcity)</td>
<td>Dependency on imported materials as a threat to competitiveness</td>
</tr>
<tr>
<td>High environmental pressures and impacts</td>
<td>Excessive consumption and mismanagement of natural resources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Systemic deficiencies</th>
<th>Underlying assumption: earth’s natural resources are abundant / earth’s resources have absolute limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of access to resources (political and economic problem) / Resource intensive technologies, products, services as well as production processes and infrastructures / Deficiencies in the current economic model / Deficiencies in the current social and value system</td>
<td>Path-dependencies created by the current model (e.g. infrastructural and institutional lock-ins)</td>
</tr>
<tr>
<td>Global trends: population growth, economic growth in the developing world leading to higher demand for resources (neo-Malthusian argument)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vision frames</th>
<th>Scenarios of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring access to resources / Changing production and consumption models</td>
<td>Innovate technologies to get access to resources / Innovate production process and products / Innovative business models / Innovate systems</td>
</tr>
<tr>
<td>Innovate production process and products / Innovative business models / Innovate systems</td>
<td>Policy to provide incentives for a desired pathway: intervention from encouraging efficiency to imposing absolute limits; instruments: market-based solutions, command and control, research and innovation, education and changing behaviour;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Future vision</th>
<th>Material growth / dematerialised growth / de-growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapted existing economic model / new economic model / new social models and cultural shift</td>
<td>Humankind exploits nature efficiently / Humankind and nature part of the same system (the Gaian vision)</td>
</tr>
</tbody>
</table>

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5 Based on stakeholder interviews conducted in May-June 2012.
7.3. Meta-narratives of resource efficiency

The purpose of constructing meta-narratives is twofold. First, they allow for structuring seemingly chaotic discursive space into a stylised narrative landscape. Second, they provide a reference for comparisons with formal narratives in policy documents or in positions of stakeholders. In this study, the meta-narratives will be used to position the formal policy narrative in the EC Roadmap in the wider EU discourse on resource efficiency.

In order to construct meta-narratives one has to single out key dimensions in the analysed discourses. The challenge is to pick those dimensions that illustrate main differences and similarities in analysed discourses and that can be further elaborated in the analysis. Based on the empirical material gathered during interviews, I suggest outlining the meta-narratives of resource efficiency using two dimensions. The first dimension illustrates differing problem boundaries associated with the challenge of resource efficiency. The scope may range from the focus on process-oriented technologies, through a broadly understood production system up to a wider socio-economic model of production and consumption. The second dimension reflects diverse objectives behind narratives. They range from improving access to natural resources, through improving material efficiency up to the notion of resource sufficiency, implying an absolute reduction of resource use.

The views of interviewed stakeholders covered the whole narrative spectrum confirming different understandings of the issue of resource efficiency (see e.g. EEA 2010). In terms of problem boundaries, business, several experts (notably economists) as well as economic policy stakeholders, focus mainly on a production system, and the perspective of supply and value chains. This implies the focus on resources is mostly on materials and other resources used in the production process. On the other hand, many stakeholders consider ‘resource efficiency’ a topic that should be approached from a broader socio-economic systemic point of view. This approach addresses the general problem of relation between humankind and nature and takes into account virtually all natural resources (including intangible eco-system services and biodiversity as well as public good resources like air).

The second dimension concerns the views on the needed change required to improve the current situation. All stakeholders expressed the need to change the current system. The views on how urgent and significant this change should be, ranges from incremental adaptation to a systemic change. The adaptation perspectives stress the role of efficiency improvements of the current system. The views calling for a radical shift demand systemic
changes resulting in redesigning the current models of using natural resources: they are referred to as ‘sufficiency’ oriented discourses to underline their primary concern with reducing absolute level of material or resource consumption.

Figure 14 visualises the main focus of four main meta-narratives emerging from the analysis of stakeholder interviews and selected literature. They include: Resource-Intensive Economy, Material-Efficient Economy, Circular Economy and Sufficiency Economy. The meta-narratives overlap with one another. One policy narrative may contain arguments used in several meta-narratives. Despite these overlaps, the narratives have fundamental differences in their worldviews and how they frame problems and future visions.

Figure 14. Mapping meta-narratives of resource efficiency

Figure 15 presents storylines and recurring arguments in the four meta-narratives following the structured approach of POLFRAME. The detailed tables depicting the policy narrative frameworks of meta-narratives can be found in Annex I. The overviews are presented using the POLFRAME matrix, including storylines and argumentation, facts and empirical evidence, causal assumptions as well as underlying rationales and normative assumptions in the narratives.

The following sections introduce concise analyses of the main storyline, arguments and assumptions of the four meta-narratives.
**Figure 15. Storylines and argumentation in four meta-narratives**

<table>
<thead>
<tr>
<th>Resource-intensive economy</th>
<th>Material-efficient economy</th>
<th>Circular economy</th>
<th>Sufficiency economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-order problems</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key resources available mainly in developing and emerging countries. Environmental protection is too stringent given extraction technologies are clean and safe. Technologies not sufficiently developed to extract feasible resources. Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources.</td>
<td>Production systems based on the inefficient model of resource-intensive processes and products Inefficient infrastructures, technologies, products as well as business models and management practices. Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources.</td>
<td>Economic systems based on the linear model of unsustainable resource-intensive growth Mismanaged material flows, inefficient business models and value chains as well as poor infrastructures, technologies, products. Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources.</td>
<td>Social and economic systems based on the model of unsustainable growth and consumption-based culture. Market has failed to account for negative environmental effects (‘externalities’) of this model. Population growth, growing affluence and economic development in emerging countries creates additional pressures and impacts on environment.</td>
</tr>
<tr>
<td><strong>Systemic deficiencies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need to innovate technologies to get access to so far unexplored resources and territories. Policies to support better access to resources and frame economic relations with resource-rich countries to allow access to resources. Secondary and renewable resources may be an alternative but only in a longer term.</td>
<td>Mix of incremental (but widely diffused) and radical technological and non-technological innovations More radical innovations substituting critical materials Policies to support development and diffusion of innovative technologies and to influence resource pricing (market-based mechanisms)</td>
<td>System innovation to support performance-oriented business models and closed-loop systems of production and consumption (need for both technological and non-technological innovations). Policies to support system innovation and to influence resource pricing (market-based mechanisms)</td>
<td>Social innovation to support sustainable lifestyles and limited consumption. System innovation to support performance-oriented business models and closed-loop systems of production and consumption. Policies (including resource targets) to support social innovation and system innovation to influence resource pricing</td>
</tr>
<tr>
<td><strong>Scenarios of change</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology-based economy and society. Technological innovation ensures that problems related to access to resources and energy and associated environmental impacts are resolved. Benefits from efficient extraction allow to withstand global competition and to test alternative technologies and resources, notably to substitute fossil fuels. Material growth: economy based on material growth and consumption.</td>
<td>Technology-based economy and society. Technological and non-technological innovations ensure that problems related to inefficient use of resources are resolved. Growth: relative decoupling thanks to high resource productivity.</td>
<td>Economy and society re-organised to close the loops of material flows. Zero waste. Resource restoration. Technological and non-technological innovations ensure that problems related to inefficient use of resources are resolved. Dematerialised growth: absolute decoupling thanks to system innovation.</td>
<td>Humanity uses resources only to satisfy human needs. Key role of local decentralised economic and social models based on self-sufficiency. No material growth: society and economy in a dynamic balance.</td>
</tr>
<tr>
<td><strong>Future vision</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High prices of commodities Difficult access to resources and dependency on imported materials</td>
<td>High prices of commodities High share of material cost in the operating cost Low material productivity Dependency on imported materials Environmental impacts</td>
<td>High prices of resources Environmental impacts Difficult access to resources and dependency on imported materials</td>
<td>Excessive consumption Environmental impacts</td>
</tr>
</tbody>
</table>

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7.3.1. Resource-intensive economy – resource wars

The ‘Resource-intensive economy’ narrative is concerned mainly with ensuring access to natural resources for growing economy and society. Unsurprisingly, the explicit support for the intensive use of natural resources is nowhere to be found in the EU policy discourse on resource efficiency but it is present in the neighbouring policy debates on access to raw materials and criticality.

This narrative is often ‘an elephant in the room’ in the debates on resource efficiency as it represents a dominating line of reasoning and action of many powerful economic and political actors. The current industrial machinery is dependent on raw materials. Many academic and industrial stakeholders argue that even if efficiency or circular models become leading, the rising consumption will mean that raw materials will still be extracted. One of the interviewed policy makers referred to this as the ‘deep deeper’ strategy that relies on technological advances:

‘Another challenge is to get over the notion that the can ‘dig deeper’. The role of technology is crucial, but the approach to it has to be rethought. There has been always a feeling that we can get ‘one step further’. Especially for non-renewable resource our approach has to change. Of course, there is a realisation that urban mining can have a role, but there is still a risk that ‘dig deeper’ approach will come back.’ (EI12 2012)

The first-order problems in this narrative are fluctuating and growing prices of materials and difficult access to resources. These problems destabilise economies and undermine competitive position of manufacturers and – as seen from the European industry point of view – may strengthen the trend of relocating manufacturing to regions endowed with resources. The systemic deficiencies underlying the first-order problems include technological limitations to exploring so-far unreachable deposits (e.g. ocean beds), regulatory limits to exploring protected areas (e.g. Greenland or Arctic) as well as geopolitical barriers to resources often concentrated in countries with unstable or undemocratic systems. Access to resources means competitive advantage and political and economic power. Consumption patterns are not questioned in this narrative.

The ‘resources’ in this narrative are most often limited to tradable commodities as well as increasingly land, water and carbon. The ‘efficiency’ in this narrative is mainly to support better access to resources in order to ensure that demand for resources is met. Production system and society needs secure access to resources; technological progress has a crucial
role to play in future pathways. Technology is to transcend barriers by discovering and ensuring better than ever access to resources (e.g. discovering new deposits, getting access to so-far inaccessible resources, etc.). Technology and market-based regulatory mechanisms are to ensure that environmental impacts of extraction or the use of environmentally harmful resources are minimised. The future vision of this narrative is not dramatically different from the current socio-economic model, except that technological progress is to ensure that the environmental impacts of the use of resources are minimal. The narrative is often overlapping with other resource efficiency narratives that are to be developed in parallel or in the future.

In the European context the narrative often includes arguments of reconsidering abandoned extraction activity or rare earth mining in Europe. In an interview with the industry representative, this position was supported by an explicit ethical argument (BIZ4 2012). There is no scarcity of rare earths in Europe or US. Due to regulatory and social (NIMBY) barriers the production of rare earths is now concentrated in China that ‘pays high social and environmental cost’ linked to this activity. Meanwhile, European and American consumers benefit from the products depending on rare earths. The environmental and social burden is thus exported. According to the respondent, this demonstrates the hypocrisy of the current system. The solution could be bringing the extraction back to Europe, making sure that it is done with the use of the most innovative technologies to ensure efficiency and minimal environmental impacts. Another solution would be to ban products containing environmentally harmful materials from EU market (ibid.).

The underlying assumption of this narrative is perception of abundance of resources; scarcities are temporary and may become a problem only in long term. The deeper belief is in the human ingenuity and technological advance that will ‘overcome’ the challenges posed by nature. The frame is based on the assumption of a hierarchical relation between humankind and nature; humankind is to exploit the ‘gifts of nature’ to ensure prosperity. Humankind is separate and superior to nature.

The argument of bringing extraction back to Europe is to support a broader vision of re-industrialising Europe and is often framed to align with ‘green growth’ agenda and the resource efficient economy as extraction and production are to be ‘clean’ thanks to the sophisticated technological solutions. There is an interesting link with the circular economy model here where the argumentation of ensuring and competing for access to raw materials is transposed to the debate on access to secondary materials.
7.3.2. Material efficiency – more from less

The ‘Material-efficient economy’ focuses mainly on the technical and technological aspects of ‘resource efficiency’ agenda. It is based on the linear input-output understanding of efficiency often expressed as maximising economic output per unit of material input. It is often framed as a simple ratio of GDP over material input, most commonly DMC (Domestic Material Consumption). Efficiency in this frame is to ensure growth and competitiveness as well as economic resilience in the face of possible scarcity and fluctuating prices. The ‘resources’ in this narrative are most often limited to tradable commodities as well as increasingly land, water and carbon. This narrative is not primarily concerned with the overall decrease of consumption of natural resources. It aims at ‘relative decoupling’ and focuses on modernising the production systems to increase the productivity (see EIO 2012: 9-31 for the review of literature on material efficiency).

The first-order problems are fluctuating and growing prices of materials, difficult access to resources as well as inefficiency production process, mainly in manufacturing. The mega-driver underling these problems are growing population and consumption of materials. These problems destabilise economies and undermine competitive position of manufacturers. The systemic deficiencies underlying the first-order problems include path-dependencies in using inefficient technologies and regulatory failures in pricing materials. Access to resources combined with resource-efficient technologies means competitive advantage and political and economic power. The narrative includes the notion of limiting energy and material intensity of product but consumption patterns themselves are not questioned.

The vision frame is mainly concerned with technological and technical advances that are to improve resource productivity. Innovation, also organisational improvement, is to ensure shift to a more rational use of materials and energy in the future. Technology development improving efficiency of production system and policy mix directly supporting innovation and improving level playing field (e.g. discontinuing subsidies to fossil fuels and internalising externalities in resource prices) are the main features of future pathways. The future vision of this narrative is based mainly on the highly efficient production system that due to efficiency improvements and substitutions of critical materials is to ensure growth. This approach could be paralleled with the ‘weak’ ecological modernisation (Christof 1996, op cit: Dryzek 2005).
As in the case of resource-intensive economy, the worldview underlying the narrative considers nature subordinate to humankind. On the other hand, the environmental arguments are often used to support this narrative. This is based on the assumption that efficiency and better management of resources will lead to at least relative decoupling. The agenda is framed as a ‘win-win’ approach. The evidence on positive environmental impacts of material efficiency is often questioned. Experts point to the risk of the Jevons paradox popularly known as the rebound effect. The rebound effect is when the relative improvements of resource efficiency lead to the growth of absolute consumption of resources (Polimeni et al 2009).

The European Commission, many national governments as well as businesses increasingly support ‘material efficiency’ narrative. The ‘win-win’ argument goes hand in hand with ‘green economy’ of UNEP (2011) and ‘green growth’ agenda of the OECD (2011) and other international organisations. The narrative is considered ‘safe’ as it is perceived to rely on a sound economic rationale and has a link to environmental dimension by calling for relative decoupling. The relatively narrow scope and focus on technological innovation makes the frame easy to align with other pro-growth narratives and frames. Some stakeholders consider it an intermediary step towards more ambitious narratives whereas others combine it with frames dominated by the problem of access to raw materials.

### 7.3.3. Circular economy – towards zero waste

The ‘Circular economy’ narrative calls for a radical overhaul of the production system and underlying business models to revolutionise the flow of resources through the economic system. Proponents of this model consider it ‘an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models’ (Ellen McArthur Foundation 2012: 3; see also Figure 16).

The first-order problems are typically growing prices of materials, difficult access to natural resources as well as inefficiency of currently dominant business models. The mega-driver underling these problems are growing population and consumption of materials. These problems destabilise economies. The main systemic deficiency underlying the first-order problems is persistence of the take-make-dispose model of economy. The focus is on inefficient business models and systems (value chains and material flows). The regulatory
failure is in preserving the current model (pricing, taxing renewable rather than non-renewable resources).

The scenarios of change consider technological and wider business model and value chain related innovations. System innovation is important in this context as inefficiencies are often caused by systemic lock-ins. The new model can thrive in the growth-oriented economy in the future but growth is dematerialised. Environmental arguments are also used to support this narrative based on the assumption that circular models will lead to relative and eventually absolute decoupling.

**Figure 16. Circular economy model according to Ellen McArthur Foundation**

The approach is based on a belief that the socio-economic system can be redesigned to become a cyclical model. The model is to limit the absolute consumption of resources by maximising service delivery based on resource efficiency and the continuous re-use and recycling of resources. The logic of the model is paralleled with the nature’s cyclical processes where no nutrients and resources are wasted. The narrative is based on the assumption that humankind is capable to design and implement system-level changes.

The narrative mentions the new models of consumption but it does not enter into the discussion on the cultural aspects of consumption. It does not dwell on values and beliefs underlying current lifestyles. It is, nevertheless, based on an implicit assumption that there will be a pervasive shift in consumer models (notably from individual ‘ownership of products’ to the focus on ‘accessing the service’). The quality of life of consumers, it is
assumed, will not be at risk as a consequence of this shift; the nature of consumption will be different (e.g. shift to product-service systems based on leasing and sharing).

Many stakeholders see this narrative as an extension of the narrower narrative of material-efficient economy. The two frames are often brought together. There are, however, several fundamental differences between the two narratives. First, the boundaries of circular economy are broader including entire economic system whereas material-efficient economy focuses mainly on the production. Second, circular economy has re-use and restoration at its core, which makes a production system as much about maintaining and remanufacturing as about manufacturing. Circular economy is based on a business model that sees efficiency from the service point of view, which often may mean a focus on performance and durability of products instead of seeking the most efficient way to produce them (more from less). The purpose is quality rather than quantity, which in some cases may make the traditional notion of economies of scale obsolete. The source of economic growth in circular economy – i.e. value-added of service - is diametrically different than in material efficient models.

Although the narrative is enjoying its heyday now, its roots go back to the 1970s and are based on the principles put forward by many thinkers and business innovators including Walter Stahel and his performance economy (Stahel 1976), John Lyle and his work on regenerative design (John T. Lyle), cradle to cradle models of Michael Braungart, biomimicry popularised by Janine Benuys or blue economy of Gunter Pauli. In the current EU debate, the most prominent proponent of the model is the Ellen MacArthur Foundation (2012). The narrative starts getting support from business as well as gets increasing recognition on the EU level.

### 7.3.4. Sufficiency economy – new consumption culture

The ‘Sufficiency economy’ narrative calls for the absolute reduction of consumption and broadens the narrative to include the fundamental questions of culture and values. It is not just about economic system but also about fundamental rethink of our way of life. The first-order problems are mainly growing environmental impacts signifying that human activity leads to systemic overshoot and irreversible depletion of natural resources and habitats. The roots of the problem are not only systemic deficiencies of economic systems as in the circular models, but foremost consumption oriented culture and lifestyles.
The *vision of change* describes society that knows how to live within the planetary limits and – as one of the interviewed policy makers put it – recognises it ‘shares the planet with nature’. Sufficiency economy explicitly calls for an absolute reduction of production and consumption. As such it comes closer to ‘strong sustainability’ and ‘strong’ ecological modernisation discourse. Moving towards this vision requires ‘a new grand societal consensus’. The model emphasises the issue of local resilience and importance of local communities in enabling change. The narrative is based on the explicit recognition that natural resources are limited. The underlying *worldview* includes a social and cultural dimension: humankind and nature are part of the same interconnected system. There is no hierarchical relation. There should be respect and restrain in relations with the planet.

Sufficiency narrative may have a significant overlap with circular economy when it comes to the vision of production system focused on restoration and re-use but the rationale of change is strikingly different. Here the focus is on cultural shift in the first place which should be followed by the rethink of economic and social models. It is mode a bottom-up or grass-root agenda with a key role of local communities. The naïve versions of the narrative could even refer to the *idyllic* past when humans would live in harmony with nature. The sufficiency narratives are probably least present in the current EU resource efficiency debate. The issue of limited consumption or absolute reduction of resource use is highly delicate and controversial. Many interviewed policy makers and politicians argued that consumption is *taboo* in political debates and the common argument is that ‘consumers shouldn’t be troubled’. As one interviewed policy makers put it since ‘consumers are voters’ there is fear to touch this agenda.

Consequently, the term of ‘absolute decoupling’ rarely finds its way to the political speeches or documents. Even in Germany, the proposal to include ‘absolute decoupling’ into one of the policy documents was interpreted by industry as a threat of introducing quotas of use of resources, even if the draft document has never mentioned it. The final document did not include the term although at the time of the debate there was evidence that Germany had de facto achieved absolute decoupling (MS5 2012). In the EC Roadmap context, the term ‘absolute decoupling’ was never in the draft document (initially even ‘relative decoupling’ was not mentioned) as it was considered unrealistic.

The discussion on sufficiency and consumption culture may not appear strongly in the resource efficiency debate, but there are other parallel debates where the issue of growth and quality of life are debate. It is a core element of the Transition movement in the UK (see, for example, Hopkins 2008, Chamberlin 2008).
7.3.5. Discourse affinity between meta-narratives of resource efficiency

The analysis of meta-narratives points to both significant differences and similarities emerging in the EU public discourse on resource efficiency. The explicit problem boundaries of resource efficiency range from the linear material efficiencies in the extraction and production system to the systemic view on redefining consumption patterns. Material-efficient and resource-intensive economy narratives focus mainly on the production system. Circular economy extends the frame to the entire economic system, including lifecycle perspective on material flows and underlying business models and value chains. Sufficiency economy shifts the focus to value systems and way of life. Setting the boundaries of the problem has significant consequences for the overall narrative framework. The policy narrative framework analysis revealed shared argumentative spaces but also fundamental differences within underlying worldviews and understanding of the roots of the problems.

The most significant overlaps are in the first-order problems. All the narratives, perhaps to a lesser extent sufficiency economy, depart from economic problem frames and point to high prices of materials as the most burning problem. This is not surprising taking into account the context in which the current meta-narratives were formed. Financial crisis, slowing economic growth, growing unemployment and the related search for recovery set the global context of the discourse. The latter strongly framed debates on sustainable development shifting emphasis to ‘green economy’ and ‘green growth’ being framed by some as panacea for the global crisis.

The centrality of problems in the debate depends also on what is considered the most urgent problem and by whom. This brings up the issue of power and related capacity to take action. In the times of crisis the voice and actions of business players and economic and financial ministers are considered most relevant and is under increasing public scrutiny. This is a strong argument for instrumental framing of resource efficiency narratives as an economic opportunity. Convergence of problem frames (here growing prices and material scarcity) and the associated claim of economic opportunity supported by many stakeholders were a (welcomed) common starting point of many narratives. Insights into perceptions of systemic deficiencies causing high prices and scarcities revealed important differences in how problem was framed. Depending on their scope, the narratives may limit themselves to ‘blaming’ inefficient technologies and regulatory limits for poor access to resources or make a more elaborated argument on systemic deficiencies in the current economic model and social system. In general, narratives aiming at
adaptation of the current system, rather than at transformative change, focus on technical and technological shortcomings. Narratives with more ambitious change-oriented agenda, extend their discourse to system-level problems incorporating institutional lock-ins and path-dependencies or even cultural shifts. They also have more explicit and more elaborated future scenarios and visions.

Future solutions to the problem range from techno-fixes and regulatory adaptation of the current system to designing and implementing system innovations and social transformations. Unsurprisingly, narratives with a strong focus on production systems suggest technological solutions or techno-fixes to the problem. Broader approaches, for example circular economy, emphasises stronger the need to change organisational models underlying the design of products and the use of technologies. This does not mean that technological changes are not relevant in the context of circular economy or even sufficiency economy; the focal area and agents of change are different.

The underlying normative assumptions are most often implicit, yet fundamental, layers of narrative frameworks. In case of the resource efficiency debate the key aspects included the perception of limits-abundance of natural resources and the relation between humankind and natural resources (and nature). As for the former, the public discourse appears to be shifting towards acceptance of scarcity and limits of resource use. The interpretation of ‘limits’, however, remains strikingly different. Also the nature of limits differs depending on the type of resources. In terms of material resources, the actual discussion on the limits is focussed on the notion of reserves and conditional resources rather than the overall stock of primary resources. The interpretation of limits of carbon, water, land, mineral resources, biomass or biodiversity is very different due to different properties of each resource.

The understanding of limits could be placed between two extremes. On the one hand, there is a very strict understanding of irreversible limits. Environmental scientists put forward a concept of ‘planetary boundaries’ designed to define a ‘safe operating space for humanity’ (Rockström, Steffen et al 2009). ‘Planetary boundaries’ are a contemporary approach to the discourse brought by the famous book ‘The Limits to Growth’ by Donella and Dennis Meadows, Jørgen Randers and William Behrens in the early 1970s (Meadows et al 1972). ‘The Limits’ were based on the systems dynamics model. In the systems dynamics jargon, exceeding planetary limits leads to ‘overshoot’. Overshoot happens when the use of resource exceeds system’s carrying capacity. Depending on the system, this may be irreversible. Based on this notion, sufficiency economy narrative calls for the absolute
reduction of consumption. This view adopts the long-term perspective assuming the need to preserve natural resources for future generations and preventing activities that may cause irreversible environmental impacts.

On the other hand, some stakeholders, especially manufacturers and extraction and manufacturing industry, emphasise that although the stock of reserves is in fact limited, their physical limits are not the problem. The challenge is to ensure accessibility to resources; the level of reserves is a function of regulatory, technological and market framework. Scarcities (rather than limits) can be, therefore, overcome in most cases by adaptations of the above elements. An interesting twist to the scarcity debate is how to estimate levels of secondary materials (urban mines, landfills).

As regards assumptions on the nature of relationship between humankind and nature, these two understandings of limits reveal deep assumptions about relationship between humanity and nature. In the resource exploitation-driven approach, humankind is considered superior to nature and de facto separate from eco-system. Nature is to serve humanity. The extension of this worldview is a belief in human progress, technology and substitutability of nature. Most environmental problems can be fixed or done for. Resource-intensive economy and linear resource-efficient models have affinity with this worldview.

On the other extreme, humanity and nature are connected; they are part of the same system. Circular economy model calls for imitating nature. In this relationship humankind co-exists with nature and even can learn from its solutions. Sufficiency economy moves further by adding ‘mutual respect’ between humans and nature. In some narratives, this relationship could be considered having spiritual and meditative dimension.

The reflection on similarities and differences of meta-narratives reveals that various frameworks are interconnected and co-evolve. Narratives may be constructed in opposition to one another (e.g. circular model as better than linear), build on existing narrative or merge several narratives. Narratives constantly clash and intertwine in response to specific contexts. This discursive process may reflect ‘social learning’ in which discourses change and iterate between various arguments. This societal learning can be seen as a process of argumentative interpretation comprising a mix of normative claims and empirical evidence and facts. Vision frames of meta-narratives could be seen as ever-evolving socially constructed scenarios that move up and down ‘argumentative ladder’ depending on their persuasiveness and distance to the current dominant institutional and meta-cultural frames.
Narrative frameworks become suitable for argumentative use in different times and regions. Narratives also follow geography! Experts and policy makers often brought up the issue of the right timing for specific narratives. For example, according to several experts who are very aware of the possible problems of rebound effect, the timing of the resource efficiency debate was not right to bring up this issue too strongly. It was better to emphasise benefits from material efficiency in manufacturing.

It appears that policy reframing in emerging change-oriented policy areas will tend to search for argumentative alignment with the dominant frames even if one of the implications may be leaving out or watering down core arguments related to the pursued change. It could be seen as a compromise based on the assumption that achieving even partial argumentative alignment is a step in the overall direction proposed by the new frame. This may explain the lack of internal coherence in policy narratives and the emergence of ‘narrative hybrids’ constructed with a rationale to align with targeted stakeholders.

Signing up to a specific narrative may be purely rhetorical and not result in changes of action frames and practices. For example, using adjectives typical for more radical narratives of resource efficiency, such as ‘closed-loop’ or ‘zero-emission’, may be used instrumentally to position innovations or organisations in the context of emerging vision frame. Closed-loop mining or zero-emission cars could be examples of such ‘discursive interventions’.

7.4. Evidence in resource efficiency narratives

The relationship between policy frames and empirical evidence is of co-evolution and continuous reinterpretation. The arguments and causal assumptions supporting narrative frameworks of specific problems are based on interpretation of empirical evidence but also on underlying normative claims and beliefs. In the case of long-term policy visions, the nature of knowledge and expertise used for evidence and argumentation changes resonating with ‘post-normal science’ (Funtowicz and Ravetz 1993) and ‘foresight knowledge’ (Schomberg et al 2005).

Argumentation and evidence

Most experts and policy stakeholders interviewed for this study argue that evidence base tends to be constructed to support pre-constructed argumentation. Some referred to this relation as a ‘policy-based evidence’ suggesting that the interest-driven policy decision is
the ultimate driver of evidence selection and interpretation and not the other way round (expert interview 2012). From the interpretive perspective, this would suggest that evidence is intentionally framed to reflect specific construction of reality.

Different problem boundaries have a direct impact on the scope and nature of the evidence and arguments put forward in the narratives. One of the academic respondents argued:

‘[The focus on the production system - MM] is dominant and favours economic discourse, e.g. about cost savings. In the first mode even environmental issues (such as bio-diversity) are interpreted from an economic standpoint, e.g. their potential impact on agricultural productivity. [The focus on a societal system should - MM] refer to different values in defining societal and environmental aspects. The two modes require different evidence bases. There is a political pressure to express resource efficiency in a quantitative way. A lot of possible outcomes of the second understanding, however, is qualitative, e.g. quality of food, and cannot be reduced to purely quantified criteria or monitoring (EXP10 2012).’

Many stakeholders argued that a narrower technical or technological focus on a resource-efficient economy makes it relatively easier to support policy with existing quantitative data. Conversely, extending problem frames to new paradigms and system transition requires revisiting conventional approaches to evidence base. More ambitious frames come with new angles to look at the economy and society that do not fit conventional ways of analysing and measuring social and economic phenomena, e.g. new model of circular economy requires different knowledge base. Extending the frames to explicitly include long-term future makes the task even more challenging. Social and natural sciences may simply lack data and robust alternatives to support new lines of argumentation. Clearly, what is considered robust and sufficient is also a subject to interpretation and convention.

Problem boundaries and frames of resource efficiency influence the choice of indicators used to support arguments. The most often used indicators in the context of the current EU resource efficiency debate refer to the economic opportunity of material efficiency innovations. The opportunity is most often expressed as potential cost savings, profits and less often jobs (see EIO 2012 for the review of various estimates). Data on waste, for example, would be often used in the narrative on circular models as an economic potential for re-use. The broader context of the resource efficiency debate is often introduced with data on country-level material productivity calculated as a ratio of GDP and domestic material consumption (DMC). Data on environmental pressures (e.g. emissions, water,
materials) are often referred to describe the environmental challenge. Micro-level LCA data are used in the policy debate less often, although the principle of lifecycle approach is routinely referred to.

**Numbers as symbols of frames**

In terms of generic frames emphasising economic, environmental or social dimensions of the problem, the choice of measurement approach can be symptomatic of the underlying assumptions about the problem. A key example in this context of resource efficiency is expressing value of natural resources. In most meta-narratives (but the sufficiency economy), nature and its resources are attributed mainly economic value: anything, including eco-system services and biodiversity, can be priced or monetised. The explicit intention is to use monetisation as a mechanism protecting nature. The consequence may be, however, that once everything has its price, it can be subject to transaction. It can be bought, exchanged or substituted. It becomes a part of the current neoliberal economic system. The opposition to this approach, often found in the sufficiency economy narratives, argues that humankind cannot put a price tag on eco-system or biodiversity. Its value is systemic or for some even spiritual and simply should not be monetised; non-renewable part of nature should be taken out of the sphere of economic transaction.

A more specific issue in the context of resource efficiency indicators is the notion of environmental pressures and impacts. Indicators on pressures concern absolute use of materials (mass), water (litres), land (space) and carbon (mass). The link between pressures and impacts is complex although it can be assumed that any pressure will eventually lead to environmental impact. The details on lifecycle-wide environmental impact have to be analysed separately; most often LCA methods are applied in this case on a product level. Importantly, impacts can be considered in relation or independently from the question of quantity. The most discussed problems of extraction of uranite, for example, are related to probable harmful effects on health and the global debate on nuclear energy rather than to the physical scarcity (although the latter is also used as an argument questioning nuclear energy). The related discourse here is organised around the question: ‘what is an admissible impact of the resource use?’ and not ‘what is admissible amount of resource we can extract?’ This confirms that interpreting ‘limits’ in reality is not only related to the absolute physical availability of resources, but integrates other aspects that in reality result in perceived limits (e.g. prohibitive environmental impact, technological advancement, geopolitical issues, economic factors etc.).
In the current debate on resource efficiency debate, pressure indicators became instrumental and moved to the forefront by allowing to calculate country-level material productivity (GDP/DMC). A highly contested area emerged when pressure indicators started being interpreted by some stakeholders as proxy of environmental impact. This interpretation held mainly by some academics, experts and NGOs is that pressure indicators of material flows can be seen as sufficient – or ‘directionally correct’ – indicator of environmental performance. This is based on the assumption that pressures always lead to impacts. The supporting argument is that impact measurement methods (such as LCA) are not well suited to be aggregated as material flows. This argumentation comes from change-oriented transition narrative.

Industry representatives and some experts contest giving too much importance to aggregated material consumption indicators arguing that they cannot be used to formulate any sound policy advice for industry. They cannot be used to deduce actual environmental impact since the latter depends on the material used. LCA is better suited to understand impacts. Neither is the measurement robust enough to yield economic lessons. Aggregated material flows data cannot be directly related to resource costs flows of materials in value chains. This argument reveals predominantly economic frames much in line with the limited to technical understanding of resource efficiency.

A related on-going debate is on using resource flow indicators including the unused extraction (Total Material Requirement) in the calculations of resource efficiency. One position has it that unused extraction should be included in the ratio to indirectly take into account pressures on environment. The high levels of the unused extraction will relatively reduce resource productivity ratio revealing the potential for improvement of both economic and environmental performance. Stakeholders disagreeing with using this indicator claim that unused extraction does not relate to the material productivity itself and thus should not be used in the ratio. Further, in many cases environmental impacts of the unused extraction can be minimised or reversed (e.g. extraction sites can be restored).

The material flow indicators (MFA) were developed by environmental scientists primarily to provide a systemic view on material flows in society and economy. This was done mainly to serve environmental dimension of the research on resource use. MFA was to become a tool of material accounting to complement conventional economic accounting. The underlying assumption was that material flows need to be managed within their limits. In the current debate, the MFA indicators were appropriated by resource efficiency narrative and framed as a denominator (DMC) in the resource productivity ratio in which
GDP is nominator. Constructing such ratio framed resource efficiency as mainly economic problem, which can be solved with economic means. One could argue that this risks taking MFA out of its original context: MFA could be reduced to a subsidiary of economic accounting.

Another area of contention is the issue of targets and limits. In resource-intensive economy, resource-efficiency and circular economy targets and potentials are expressed foremost in economic terms. Environmental benefits are expected to follow the change of economic model. In the sufficiency economy there is more focus on the absolute limits, also in terms of quantitative targets. The concept of ‘planetary boundaries’ is often referred to in this context as it builds scientific basis for the sufficiency argument. In this context, metrics allowing for measuring absolute mass of consumed material (MFA) are believed to be more critical than LCA approaches that focus on impacts.

Acceptability of measurement methods is an important issue in the context of reframing policy. Policy makers are very cautious when using the newest indicators even if they may be more suitable for the policy frame. Many data sets and methods used in resource efficiency are relatively recent (e.g. indicators based on material flow analysis). The stakeholders referred to the issue of limited trust and acceptability of new approaches and data. The methodological caveats or simply lack of indicators suitable for the new narrative can lead to using more conventional proxies. The selection of proxies may reveal preferences as for the problem frames, but it may be also influenced by established practice of including quantitative indicators to the documents.

**Dealing with uncertainty**

Uncertainty was not the topic majority of the stakeholders would ponder unless probed to do so. When confronted with the issue, however, stakeholders would admit existence of uncertainties related to both the understanding of systemic problems underlying resource efficiency as well as to the required process of change and innovation. Virtually all respondents considered the issue complex and uncertain, but they tended to emphasise different areas of complexity and different implications of uncertainly. Some spoke mostly about complexity of the problem and understanding environmental and economic impacts (mostly academics and policy makers). Some were concerned with the dimension of changing value chains and industrial processes (notably business). Few respondents were concerned mostly with the fundamental uncertainty of the ‘planned’ societal transition. Interestingly, one of the interviewed experts argued that given the sheer number of natural
resources and their different nature, the discussion should indeed be about ‘many resource efficiencies’ rather than ‘one resource efficiency’ (EI5 2012).

Policy and academic respondents noted our current knowledge does not allow us to fully appreciate the dynamics and impacts of resource use. There is an on-going scientific effort to understand these dynamic relations and dependencies better. As one of the experts from an international organisation expressed it:

‘We do know which activities are critical or most harmful for the environment. The problem is that we still lack ‘dynamic understanding’ of the system behaviour. We do not know exactly how system will behave when alternative solutions are introduced e.g. innovative materials or technologies. We do not know how new elements or changed processes will affect their sub-systems or entire system. There is uncertainty on how exactly material efficiency gains or material substitution will affect the system (how to map knock-on effects etc). There are a lot of variables to be considered in these analyses. This makes choices about different innovative solutions very difficult’ (IO1 2012)

One of the researchers noted a similar concern about the limits of our understanding of environmental impacts of resource use:

‘I am sceptical whether we are able to tackle uncertainties related to environmental impact in the global scale. We are dealing with a complex system. The more interlinks between different elements in the system, the more complex or random behaviour we can expect. Both are very difficult to map and understand. I am not convinced if we can eliminate with uncertainty linked to behaviour of such systems.’ (EI5 2012)

A systemic uncertainty underlined by several EC officials related to whether and how economy and society could do without ‘material growth’ and ‘consuming less’:

‘[A] key ‘known unknown’ is to what extent people in the developed world are prepared to make do with less material growth. We are talking about service economy etc, but it is not clear how we can move away from GDP being overriding indicator. We work on this, but it does not really take off (e.g. ‘Beyond GDP’). Can the society move towards models which are not purely based on consumption in the traditional sense of ‘more’? (EI12 2012)
On the other hand, many stakeholders noted soberly that in fact we are surrounded by more or less fundamental uncertainties in all areas of society and economy, which, however, should not inhibit reaching consensus on action. One expert argued:

‘Certainty is in fact nowhere to find. Where is certainly in economy? Where is certainty in religion? In most cases we don’t need certainty to act. People are used to acting in the face of uncertainty. When it comes to environment it seems that people want to have a full scientific proof. Either they are afraid or they don’t understand systems. We will never have absolute certainty about system behaviour. In particular, there is no way to remove all uncertainties and calculate system behaviour, where two complex non-linear systems like economy and ecology are intermingling with other. Handling uncertainties is about willing to risk something new. Where would we be if Mr Ford had listened to all the uncertainties surrounding his inventions? What about Adenauer and Schuman and the European project? In my view, the ability to take risk is also a quality of a good politician and the statesman’ (EXP5 2012)

Despite knowledge gaps and varying perceived degrees of uncertainty, there was a clear convergence between all stakeholders, towards a position that the available knowledge in the area of resource efficiency is sufficient to agree on the structural decisions and general direction of action. There was no major difference between policy makers, business, researchers and NGO about this general conclusion.

One of the business representatives argued that referring to uncertainty surrounding the agenda is an excuse for indecision:

‘I don’t see much fundamental uncertainty and risk in this agenda. Perhaps there are uncertainties from the scientific point of view, but I don’t think they question the relevance and nature of the problem. We are uncertain about when we will run out of materials and oil, but does it really matter when? Can’t I take a political or strategic decision if I don’t know if it is in 2040 or 2052? I think it is just an excuse not to take a decision. If we know that we will run out of stuff this knowledge should be sufficient. On the more global level, does it matter that we don’t know exactly the environmental impacts or even if climate change is happening? (BIZ7 2012)

According to this and other similar statements, which uncertainties end up ‘barriers for action’ is socially (or politically) constructed and often exploited by specific groups to
their advantage. The current dominant political and business actors protect the status quo contesting the change suggested by resource efficiency narratives, especially the more radical visions opting for systemic changes.

Another expert illustrated the lock-in of obtaining funding for research:

‘Some of my colleagues, who are professors, ‘love to hide behind uncertainty’. If you move forward with the present knowledge and make a decision they may find that there is no more funding for their work. ‘More research is needed’ is a standard answer from all professors in the world. In fact, it is also a standard answer from politicians who fear change’ (EXP5 2012)

Uncertainty may be thus used as an argument covering deeper reasons for the lack of action, notably a lock-in of the current economic, political and knowledge system and related risk of losing dominant positions by the current incumbents.

The unresolved issue here is thus how to overcome the lock-in of the current system (‘no one wishes to lose market share’), which related to the perspective of power. One of the national policy makers reflected:

‘We need to move forward without certainty. The lack of certainty implies we need other motivations for action and change. (…) You need to understand and create incentives for different groups to act and to move in the similar direction. As long as you can trust that stakeholders want to move in the same direction (even if they have different motives), it is secondary what knowledge and information brought them to this choice. Scientific information is less important in this context.’ (MS2 2012)

The major challenge is building a collective capacity to learn and change rather than to filling in all knowledge gaps on understanding the problem There was a realisation that the transition requires a different kind of knowledge created in the process of social learning and linked to the organisational capacity to plan and implement collective action. One of the Commission officials explained:

‘The knowledge on how to move forward is a type of knowledge that is missing. It is a different kind of knowledge, ‘collective knowledge’. It needs to take into account different parts of society, especially education.’ (EI3 2012)
Vision and scenarios of change: knowledge and social learning

In the context of future transition, the development of knowledge needs to take place in parallel with agreeing on the overall vision and direction of action. Without underlying societal consensus and shared incentives to act, knowledge will be always deemed insufficient to frame action. The notion of systemic innovation and innovating value chains (notably mentioned by business) appeared most often in this context. Several respondents linked the issue of transition and uncertainty with the overall dynamics of systemic societal change. One of the interviewed experts argued:

‘We are in the process of societal learning. These societal learning consists of learning within sub-groups. It is not a linear process. It involves interactions of information and interests between different circles. Availability of knowledge is only part of the story. You need ‘information carriers’ between different groups that can use it for their own interests. There is also a learning process at the interface of policy – statistics – science’ (EXP3 2012)

One of policy-makers linked complexity, uncertainty and the changing role of government and the new modes of governance:

‘We witness the shift from the traditional regulatory role towards a facilitative or intermediary role of government. Even the traditional role of norm and standards setting needs to be revisited, because of the ever-changing reality that regulatory process cannot keep up with. The changing role of governance also goes hand in hand with the higher level of uncertainty. The status of the science to show the way is also changing. There is a need to collaborate and share the vision between many stakeholders. Similarly, the nature of leadership is changing. The government’s role in this context is to create an environment where different stakeholders can take lead, implement initiatives and seek cooperation. It some areas it may be the government to take initiative, but it may be also others’ (MS2 2012)

There is a need for collective processes where knowledge is shared and visions co-created; this requires new approaches to organising the policy processes and governance. A great majority of policy makers and business explicitly referred to the need of creating ‘common understanding’ and ‘shared knowledge’ rather just ‘performing more research’ to fill the knowledge gaps.
One of the politicians argued that framing ‘resource efficiency’ as an issue of economic opportunity and economic risk may make it a more resilient discourse than this of sustainability and climate change based mainly on science:

‘To a large degree the sustainability discourse has fallen in its own trap. We have set up a Plato-like concept. In ‘The State’ Plato talks about philosophers governing. In the sustainability context we have come up with a similar concept: climate scientists and environmental scientists are governing or at least policy makers and politicians are learning how to ‘go by environmental and climate science rules’. This has not proven to be a successful political concept. In this context, to undermine even slightly the overwhelming probability of imminent climate change, risks undermining the whole political approach (e.g. the ‘Climate Gate’ in the US that served as a tool to undermine the whole credibility of this discourse).

If, on the other hand, this issue put in a different framework and organise a discussion about economic opportunities and economic risk, then you are following an entirely different rationale to avoid a risk, of which you know it exists, even if you don’t know how big it is. It still makes economic sense. Being smart businessmen, in this context, means to follow a ‘precautionary approach’ and recognise and act upon risk. This is conducive to give a new credibility to this agenda.’ (EI10 2012)

This reflects the understanding that risk and uncertainty related to radical innovation and major shifts cannot be eliminated by scientific research. The nature of ‘knowledge’ needed to act in this context is different. It appears closer to the notion of ‘collective learning’ and ‘shared understanding’ or – as in the latter example – something to be acted upon by deliberative and entrepreneurial action.

This societal process aims at creating ‘shared understanding for action’ rather than improving our understanding by creating scientific knowledge. The process of social learning benefits from scientific knowledge that indicates key trends and directions, but does not rely solely on it and does not require detailed evidence to take strategic decisions. The stakeholders are not mobilised by scientific knowledge, but by ‘common vision’, ‘mutual trust’ and ‘understanding of mutual dependence’ (MS2 2012). It could be argued that this lack of certainty about future creates the space for creativity and deliberative debate about what is ‘desired’. If approached with a shared purpose, this perceived uncertainty might be creatively exploited.
8. Evolving frames of resource efficiency in EU policy

One of the main questions of this study is on how the current and emerging ‘resource efficiency’ problems are framed and interpreted by the European Commission (EC). This chapter looks at the evolution of the wider resource efficiency agenda that predated the publication of the EC’s ‘Roadmap to a Resource Efficient Europe’ (EC 2011a), including notably the EU ‘Thematic Strategy on the Sustainable Use of Natural Resources’ published in December 2005 (EC 2005).

8.1. Historical foundations of EU resource policy

The phrase ‘resource efficiency’ as such is not enshrined in the EU treaties. The treaties, however, have explicitly recognised the issue of environmental protection and natural resources calling for ‘prudent and rational use of natural resources’ already in 1987 in the Single European Act (EU 1987). Article 130r states that the Community shall ‘preserve, protect and improve the quality of the environment’ as well as ‘ensure a prudent and rational utilisation of natural resources’ (ibid).

More than ten years later in 1997, the Treaty of Amsterdam entered into force making ‘sustainable development’ a transversal priority of the EU (Art 2). The subsequent treaties confirmed this objective. Treaty of Nice of 2001 has made a direct reference to specific ‘natural resources’ giving the Council power to take measures affecting water management and land (Art 175). The Treaty of Lisbon (2009) added ‘natural resources’ to the general provisions on the EU’s external action. The EU is to define and pursue common policies and actions to ‘help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development’.

The EU treaties do not mention ‘efficiency’ in the context of the use of natural resources, which are referred to mainly in the context of environmental protection. Interestingly, the Treaty of Lisbon mentions the need to promote ‘energy efficiency’ in the context of the internal market and with regard for the need to preserve and improve the environment (art. 194). On the other hand, the call for ‘prudent and rational use of natural resource’ can be
also interpreted as the ‘efficient use of resources’. One may argue that the essence of ‘resource efficiency’ has been present in the EU legal framework for more than 25 years.

The scope of interpretation of this phrase has changed over time. Initially, the references to natural resources had been initially framed as a mainly environmental issue. The introduction of ‘sustainable development’ to the general provisions made a link between environmental, economic and social issues, which could be interpreted as an opening for constructing both environmental and economic rationale for resource policy.

The issues falling under broadly framed ‘resource efficiency’ agenda have a long history in the context of EU environmental policy. Already in 1975, the Waste Framework Directive promoted waste prevention, recycling and reuse, which are now covered by the resource efficiency umbrella. The EU environmental policy has developed a series of ambitious regulations, which retrospectively may be framed as a part of today’s ‘resource efficiency’ agenda. It has to be emphasised, however, that the purpose of most regulations have been originally framed as ‘environmental protection’, which is a traditional rationale of environmental policy.

8.2. Resource efficiency under the Lisbon Strategy

8.2.1. The 6th Environmental Action Programme and the Thematic Strategy

Resource efficiency appeared in the EU documents and discourses in early 2000s. It was mentioned the 2001 European Gothenburg Council declaration on ‘A Sustainable Europe for a better world: A European Strategy for Sustainable Development’, in which the Council argued that economic growth must be decoupled from the use of natural resources. The Council conclusions referred to the 6th Environmental Action Programme (6EAP) and the Commission’s Communication on the EU Sustainable Development Strategy (SDS) and prepared the ground for the EU-SDS. The EU-SDS and 6EAP were developed in parallel with a view to develop an environmental pillar of the EU Lisbon Strategy and provide a counterweight to the economic and social objectives of the Lisbon Strategy (Ecologic et al 2011).

The European Commission has announced 6EAP in 2001. The Programme provided a direct foundation for the EU resource policy and explicitly referred resource efficiency as one of the priority areas. In relation to the natural resource resources the 6th EAP was to work towards:
‘Better resource efficiency and resource and waste management to bring about more sustainable production and consumption patterns, thereby decoupling the use of resources and the generation of waste from the rate for economic growth and aiming to ensure that the consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment’ (EC 2001a)

Interestingly, in its press release issued on the occasion of adoption of the proposal for the 6EAP, the EC made a direct link between resource efficiency and competitiveness:

‘Improved resource efficiency will be the leitmotiv of a thematic strategy on the sustainable use of resources – another area where the 6th Environmental Action Programme will break new ground. As in other areas, the Commission believes that high environmental objectives in this respect will not least promote the competitiveness of European industry’ (EC 2001b).

Pallemaerts et al (2006) emphasise the importance of the Programme compared to its predecessors:

‘While earlier action programmes were in fact Commission documents, which subsequently received some form of political endorsement from the Council through a qualified declaration or resolution, the fact that the 6EAP is the result of a formal inter-institutional co-decision process provided for in the Treaty, gives it a particular kind of political importance and legitimacy which its predecessors lacked’ (ibid).

The EC published the Thematic Strategy on the Sustainable Use of Natural Resources in December 2005 (EC 2005; henceforth referred to as ‘the Thematic Strategy’). The overall objective of the strategy was to ‘reduce the negative environmental impacts generated by the use of natural resources in a growing economy – a concept referred to as decoupling’ (EC 2005:5). To achieve this objective, the strategy put forward actions to:

- improve our understanding and knowledge of European resource use, its negative environmental impact and significance in the EU and globally;
- develop tools to monitor and report progress in the EU, Member States and economic sectors;

foster the application of strategic approaches and processes both in economic sectors and in the Member States and encourage them to develop related plans and programmes; and

raise awareness among stakeholders and citizens of the significant negative environmental impact of resource use.

In concrete terms, the Thematic Strategy put forward four initiatives:

- establishing an ‘information hub’ - the European Data Centre - on natural resources that is to support policy decisions by ‘pulling together existing basic data, knowledge, scientific expertise and networking capabilities’ from variety of sources within and outside EC;

- developing indicators to allow the setting of targets for reducing environmental impacts (by 2008); three types of indicators were to be established:
  
  - indicators to measure progress in efficiency and productivity in the use of natural resources, including energy;
  
  - resource-specific indicators to evaluate how negative environmental impacts have been decoupled from resource use;
  
  - an overall indicator to measure progress in reducing the ecological stress of resource use by the EU (eco-efficiency indicator).

- encouraging concrete measures on MS level and establishing a High Level Forum on the EU level to exchange experience on these actions;

- setting up an International Panel on the sustainable use of natural resources in collaboration with UNEP.

An independent evaluation of the 6th EAP published in 2011 noted that ‘given limited political support, methodological difficulties, and an insufficient knowledge base at the time, the Strategy failed to produce targets for resource use as originally envisaged and did not deliver clear guidance for future policy’ (Ecologic et al 2011). The authors of the assessment, however, noted, that

‘(…) while some stakeholders were disappointed that these Strategies have so far not resulted in legislative measures, it should be kept in mind that these Strategies concerned politically sensitive areas characterised by strategic interests and subsidiarity concerns on the part of some Member States’ (ibid).
Furthermore, resource policy was relatively new to the EU agenda. In the absence of previous legislative initiatives, the area met ‘formidable political constraints’ to set in motion any new activities and considerable shape European resource policy. This slow development of the resource agenda was

‘largely due to the higher priority given to economic growth and consumption rather than decoupling, but also to the fact that resource policy is a rather new policy field that often lacks well-developed and implemented methodologies to deal with the problems at hand, such as resource monitoring and the reduction of resource use’ (ibid).

Clearly, the level of priority attributed to specific topics and areas covered by the 6th EAP depended on political developments, notably the re-emphasis of growth and jobs in the review of the Lisbon Strategy performed in 2005:

‘Changes in economic circumstances and concerns about European competitiveness have led to a shift in political priorities at the EU, national and global level towards spurring economic growth. This has changed the political opportunity structure for important areas of the 6EAP. Growing scientific evidence about the harmful effects of climate change, technological solutions with attractive market prospects, and links with competitiveness and energy security issues have helped overcome these constraints in the climate change area and led to important developments in particular the adoption of the 20-20-20 targets and the Climate and Renewable Energy Package which have also had implications on other policy areas. These favourable opportunity structures have thus far been available to a lesser extent in the biodiversity and natural resources areas (…). The issue of decoupling of resource use/waste generation and economic growth therefore did not seem to be of primary importance any more.’ (ibid).

Several academic and policy stakeholders interviewed for this study also took a critical stance towards the Commission as regards the Thematic Strategy. They pointed out that the EC took a deliberate political decision to slow down the process of agreeing on resource efficiency targets by – as couple of the respondents put it - causing ‘paralysis by analysis’ (EI8 2012, EXP7 2012). Another expert argued that at the time of finalising the draft of the Thematic Strategy the EC’s priorities moved noticeably towards an industrial agenda, which shifted the focus of the strategy from reducing the resource consumption to analysing environmental impacts (EXP3 2012). One respondent went even further. They
recalled that at the time of finalising the document, a staff rotation took place between DG Environment and DG Enterprise, which led to a change within the Unit in DG Environment responsible for drafting the document: ‘There seemed to have been some ‘chess play’ behind to have someone more industry-friendly in this position’ (ibid).

What emerges from the testimonies gathered for this study and the final assessment of the 6th EAP is that the political context played an instrumental role in moving the resource efficiency up and down the agenda between 2000 and 2005. The context became unfavourable for a stronger stance for decoupling at the time of finalising a draft of the Strategy. The fact that the knowledge base and data on the consumption of natural resources was incomplete also contributed to sidelinining and postponing the agenda. As mentioned above, many NGOs, researchers and policy practitioners, consider the latter argument only a pretext to freeze the agenda. Thus, despite the existence of methodologies and even resource efficiency targets in several EU countries, the argument of the Strategy was that these methods were insufficient for policy. Shifting political agenda coupled with the uncertainty about the evidence base proved sufficient to ‘drown the agenda’.

Pallemaerts et al (2006) placed the developments of the 6th EAP and its Thematic Strategies in a wider context of changing environmental policy. Environmental policy, they observed, started moving away from using regulatory instruments towards mixes of policy instruments including voluntary schemes and market-based instruments. This notion of the wider shift becomes even more relevant for understanding of the rationale behind Europe 2020, its Flagships and the later published ‘Roadmap to a Resource Efficient Europe’.

### 8.2.2. Policy narrative framework of the EU Thematic Strategy

The frames employed in the 2005 EC Thematic Strategy are analysed with the policy narrative framework (POLFRAME) method. The analysis is based on the original text of the Commission Communication (EC 2005) as well as on the views expressed by interviewed stakeholders including both EC officials and external stakeholders.

**First-order problems and systemic deficiencies**

The main challenge in the Thematic Strategy is to reduce environmental degradation and depletion of natural resources without affecting economic growth. The first-order problem is mainly ‘damage to the natural resource base’ (EC 2005:4). The economic dimension is introduced mainly as the dependence of economy on natural resources that can cause
‘acute’ economic problems. Environmental degradation can also bring wider unfavourable economic consequences.

The Thematic Strategy considers the natural resources ‘crucial to the functioning of the economy and to our quality of life’ (EC 2005:3). The predominant patterns of resource use are causally linked to the environmental impacts: ‘If current patterns of resource use are maintained in Europe, environmental degradation and depletion of natural resources will continue’ (ibid:3). The resource efficiency has improved by ‘increased production volumes have often outpaced any overall environmental improvements or efficiency gains’ (ibid:4). This is caused by the ‘traditional’ production and consumption patterns based on the inefficient use of natural resources. Policy is also seen as a part of the systemic deficiency as ‘current policies have not been sufficient to reverse fundamentally unsustainable trends either in Europe or globally’ (ibid:5).

Scarcity of natural resources is not considered a serious environmental problem. The Communication downplays the notion of scarcity the limits to growth. The following passage is symptomatic for the worldview of the Strategy:

‘The world has not run out of fossil fuels and the market, through the price mechanism, has regulated scarcity. The use of many metals and minerals has declined because of changing technology rather than depletion of reserves.’ (EC 2005:5).

The reference to the market mechanisms and technology reveals the underlying belief in the human progress under the current neoliberal system. There is no explicit reflection on the market failure or system failures that underlie the environmental and economic challenges.

**Future vision and scenarios of change**

The Strategy set out a time horizon of 25 years to achieve its general objectives of decoupling and improved resource efficiency. The document does not include an explicit vision statement. Probably the closest to such is a passage on the expected impact of the implementation of the strategy:

‘The implementation of this strategy will create the conditions for improved eco-efficient resource use and incentives for moving towards more sustainable production and consumption patterns. This will have positive impacts on the economy, particularly since these incentives will help business to innovate and to improve their competitiveness. It will allow policymakers to make more
informed choices of policy options and provide the means (indicators, data) to measure progress (EC 2005:11).’

This vision is thus driven mainly by the need to reduce the ecological stress of resource use by changing the predominant production and consumption patterns. The change is to be achieved by decoupling resource use from economic growth:

‘Considering that the driver of resource use in Europe is economic growth, while at the same time economic growth is a major EU policy objective, the only way to achieve a reduction of environmental impacts is to de-link or decouple resource use and associated environmental impacts from its driver: economic growth, and to do so at European level’ (ibid:15).

The document does not explain what are economic incentives for business to innovate and to move away from the current production patterns. Apart from the short reference to industrial policy, there is no reflection on drivers and barriers to the shift to sustainable production and consumption. The strategy does not elaborate on when, how and who is supposed to trigger the change process.

The document considers public policy key in the process. The future policy is to be based on the systemic understanding and measurement of the life cycle environmental impacts of the use of materials and energy that moves beyond end-of-pipe perspective:

‘To have more of an impact in reversing these unsustainable trends, containing environment degradation and preserving the essential services that natural resources provide, environment policy needs to move beyond emissions and waste control. It is necessary to develop means to identify the negative environmental impacts of the use of materials and energy throughout life cycles (often referred to as the cradle to grave approach) and to determine their respective significance. This understanding of global and cumulative impacts along a causal chain is needed in order to target policy measures so that they can be most effective for the environment and more cost-efficient for public authorities and economic operators.’ (ibid:4-5)

The EC recognised that the changes will require ‘a combination of actions to be taken at different levels of governance and by various actors’ (EC 2005:6) and that new policy initiatives need to take into account the resource use dimension at the design stage. This challenge needs to be addressed in an integrated and systemic way in existing and emerging environmental policies (ibid:6) as well as across other policy fields such as
transport, energy or fisheries and farming (ibid:7). Interestingly, the need to take into account the resource issues in the case of these other fields is mostly motivated by the objective to decrease their negative impacts on environment. The Thematic Strategy also links with the initiatives falling under industrial policy domain. This is where the text mentions the link to positive economic incentives as ‘pursuing enhanced eco-efficiency may also act as a driver for innovation, improved productivity and hence competitiveness and growth’ (EC 2005:7). Again, there is no explanation on the logic underlying this assumed causal inference.

The Strategy withdrew from setting quantitative targets for resource efficiency and ‘diminished use of resources’ because, as it explained, ‘it is not possible to do so with the current stage of knowledge and state of development of indicators’ (EC 2005:6). The EU level actions of the strategy focused mainly on developing the knowledge base and metrics relevant for natural resources. The action was requested from Member States which were expected to develop national measures and programmes on the sustainable use of natural resources to achieve the strategy’s objectives.

The Strategy was criticised by environmental NGOs and think tanks as well as by some national governments (Pallemaerts et al 2006, Scheppelmann 2006). Pallemaerts et al (2006) noted that whereas the 6th EAP called for development and implementation of concrete instruments including research, technology transfer, market-based and economic instruments, programmes of best practice and indicators of resource efficiency, the Thematic Strategy failed to meet these objectives. Further criticisms indicated that the strategy was not specific whether it supported absolute or relative decoupling and lacked binding quantitative targets on resource efficiency and resource use (Scheppelmann 2006).

In relation to target setting, Scheppelmann (2006) noted that at least in the area of resource productivity the methodologies had already existed and a number of countries had resource efficiency targets in place at the time of preparing the strategy. He argued that the EC had deliberately postponed the target setting, which made it impossible to define priority actions and effectively delayed the policy cycle. Pallemaerts et al 2006 argued:

‘Though the Commission has defended this due to a lack of quality data, how long can this excuse be made? Even if perfect information is not available at present, evidence of the trends of unsustainable resource use are clear, as are the impacts.’ (ibid)
Despite ambitious statements regarding the desired impacts, there are several statements in the Thematic Strategy that reveal its weak position in terms of overall hierarchy of problems:

‘The strategy further develops an approach that delivers the best return on effort invested in environmental protection. Focusing the finite means of government and economic players on the major environmental problems will be part of this.’ (ibid:5)

The above passage reveals that the sustainable use of natural resources was considered above all from the point of view of environmental protection. Given the means of major players are ‘finite’ only major environmental problems can be addressed. The statement suggests a limited understanding of the challenge of the sustainable use of natural resources. Resource efficiency is considered here an environmental problem rather than an economic investment opportunity.

Figure 17 introduces a summary POLFRAME analysis of the narrative framework of the Thematic Strategy.
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<td>Key changes of arguments, claims and challenges framing empirical evidence and normative assumptions</td>
<td>Changes in interpreting meanings of facts, empirical evidence and anticipated trends</td>
<td>Changes in assumptions on historical and future causal mechanisms</td>
<td>Changes in assumptions underlying arguments, evidence and causal claims</td>
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<td>Storyline and argumentation</td>
<td>Environmental</td>
<td>‘Damage to the natural resource base (...) was and remains an issue.’ ‘The EU is highly dependent on resources coming from outside Europe and the environmental impact of resource use by the EU and other major economies is felt globally.’ ‘At the same time [as EU uses imported resources], the growing economies of the developing world such as China, India and Brazil are using natural resources at an accelerating pace’</td>
<td>Current production and consumption patterns cause environmental impacts. ‘If current patterns of resource use are maintained in Europe, environmental degradation and depletion of natural resources will continue. (...) At the same time the growing economies of the developing world such as China, India and Brazil are using natural resources at an accelerating pace.’</td>
<td>Mainly environmental frames of the first-order problem (i.e. environmental impacts caused by production and consumption patterns). Internally diverse narrative of first-order problems appearing in different passages. Economic frames also mentioned as a first-order issue but presented as ‘acute problems’.</td>
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<td></td>
<td>Economic</td>
<td>‘(...) rapidly growing demand and bottlenecks in supply can cause acute economic and environmental problems, as the recent price hikes for many raw materials have demonstrated.’</td>
<td>‘European economies depend on natural resources, including raw materials such as minerals, biomass and biological resources’</td>
<td>‘European economies depend on natural resources’ ‘[Resources] are crucial to the functioning of the economy and our quality of life’ ‘Market mechanism regulating scarcity: ‘The world has not run out of fossil fuels and the market, through the price mechanism, has regulated scarcity.’</td>
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<td>Social</td>
<td>A mention of ‘quality of life’ but not as an immediate problem.</td>
<td>‘(...) scarcity has not proven to be as environmentally problematic as then predicted.’</td>
<td>Technology leads to the reduced use of ‘many metals and minerals’</td>
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<td></td>
<td>Environmental</td>
<td>‘(...) increased production volumes have often outpaced any overall environmental improvements or efficiency gains and current policies have not been sufficient to reverse fundamentally unsustainable trends either in Europe or globally’</td>
<td>‘Natural resources] crucial to the functioning of the economy and to our quality of life.’</td>
<td>‘(...) environment policies focused on the visible problems due to emissions and waste – reducing pollution from “point sources” like factories and power plants. They have met with success. Air and water quality have improved. A larger part of the waste generated is being recycled, and less of it is going to landfill.’</td>
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<td></td>
<td>Technological and technical infrastructure</td>
<td>‘The use of many metals and minerals has declined because of changing technology rather than depletion of reserves.’</td>
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<td><strong>Scenarios of change (transition process)</strong></td>
<td>‘The overall objective to reduce the negative environmental impacts generated by the use of natural resources in a growing economy – a concept referred to as decoupling. (…) this means reducing the environmental impact of resource use while at the same time improving resource productivity overall across the EU economy. For renewable resources this means also staying below the threshold of overexploitation’</td>
<td>Strong focus on creating evidence base: ‘To address the environmental concerns relative to the use of natural resources (e.g. raw materials and land), the strategy will put in place actions that will track and monitor the use of natural resources through their whole life-cycle – “from cradle to grave” – and develop the actions necessary to reduce their environmental impacts. The focus of the strategy is to identify – during the 25 year timeframe – the most serious environmental impacts related to the use of natural resources and promote solutions and actions to overcome them by increasing knowledge of them and providing easy access to it.’</td>
<td>‘Efficient use of resources contributes to growth. Inefficient use of resources and overexploitation of renewable resources constitute long term brakes on growth.’</td>
<td>The vision frames are based on dual economic and environmental frames. The former, however, are dominant as eco-efficiency has to be in line with economic growth. Market and economic growth remains the core mechanism of the transition. Economic growth is considered ‘a given’. Adapting economic strategy to environmental objectives is not considered. Vision frames of policy impacts base its logic on a very rational (controllable) view of change process based on providing information to economic operators and public policy makers. Strong underlying belief in humankind’s capacity to control and steer its destiny and design its fate. Strong underlying assumption of rational behaviour of both economic actors and consumers responding to newly provided information and incentives. A belief in a possibility of implementing change in a controlled and predictable way based on evidence.</td>
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<td><strong>Vision frames</strong></td>
<td>‘Considering that the driver of resource use in Europe is economic growth, while at the same time economic growth is a major EU policy objective, the only way [emphasis added] to achieve a reduction of environmental impacts is to de-link or decouple resource use and associated environmental impacts from its driver: economic growth, and to do so at European level.’ ‘The alternative can be to adopt a coordinated approach, anticipating the need to shift to more sustainable use patterns, which can result in environmental and economic benefits in Europe and globally.’ ‘(…) informed policy-making requires knowledge of how resources move through the global economy, what drives this and what the impacts are wherever the resources are extracted and used’’ ‘It requires a combination of actions to be taken at different levels of governance and by various actors.’</td>
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<tr>
<td><strong>Future vision</strong></td>
<td>No formal vision, but a long-term time horizon (25 years) and passages depicting future vision: ‘The sustainable use of resources, involving sustainable production and consumption is hence a key ingredient of long-term prosperity, both within the EU and globally.’ ‘(…) a situation in which growth objectives are met by using natural resources more efficiently, without further eroding the natural resource base.’ The need of a long term strategy expressed: ‘a long-term strategy that integrates the environmental impacts of using natural resources, including their external dimension (i.e. impacts outside the EU, including on developing countries) in policymaking.’</td>
<td>‘If the world as a whole followed traditional patterns of consumption, it is estimated that global resource use would quadruple within 20 years. The negative impact on the environment would be substantial.’</td>
<td>Need to reduce environmental impacts of resource use: if the current consumption patterns continue then it will cause substantial environmental impact. ‘If current patterns of resource use are maintained in Europe, environmental degradation and depletion of natural resources will continue’ (EC 2005)</td>
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8.3. Europe 2020 and a ‘Flagship Initiative for a Resource Efficient Europe’

8.3.1. First signs of the instrumental political reframing

The ‘Roadmap to a Resource Efficient Europe’ was published in September 2011. The political process of preparing the ground for ‘resource efficiency’ as a key objective of European environmental policy should be seen in a wider context of Europe 2020 strategy and the arrival of the new college of commissioners. The renewed ‘resource efficiency’ agenda was launched during a public hearing of Janez Potočnik, the new Commissioner for Environment, at the European Parliament in January 2010. The speech was an in-a-nutshell preview of the new frames of ‘resource efficiency’ in the upcoming Europe 2020 strategy.

The speech framed resource efficiency in the broad context. Potočnik opened his speech by referring to one of his talks given two year earlier: ‘Europe will exist as a green continent, or it will not exist. The world will exist as a blue planet, or it will not exist’ (Potočnik 2010). Potočnik underlined that sustainable development and the environment have moved from being a moral issue (‘something a few marginal and specialist campaign groups cared about and the rest of us considered probably right, but not so urgent’) towards an area based on ‘convincing and overwhelming scientific evidence of environmental damage caused by no-one else but us.’ (ibid.)

He made it clear that the sustainability problems facing Europe are in fact global as they ‘do not recognise borders’ and ‘belong to everybody’. The planet is becoming increasingly ‘interconnected and interdependent’ and ‘fragile’:

‘(…) it is this very fragility which makes the environment such a key part of our positive agenda for the future. What could be more fundamental, more universal than the stewardship of the air we breathe, the ground we walk on or the water we drink?’

The new Commissioner argued for the need to make the transformation to a ‘knowledge-based resource-efficient economy’. He referred to a transformation that started after the Second World War from a resource-based economy towards a knowledge-based economy.

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The new agenda required combining the two in a sustainable manner. He defended an economic case for sustainability using the language of costs, benefits, savings and growth:

‘(...) preserving the environment makes such enormous economic, social and business sense: maybe we don’t have a silver bullet to take us out of recession, but we have a green one. I don't deny that reaching higher levels of environmental protection can cost money, involve administration and regulation. But it is necessary, and in the long-run it saves money. It also improves our quality of life, stimulates our economies and creates jobs. Yes, we need growth and new jobs, but we need growth and jobs that are coherent with the principle of sustainable development – we need a knowledge-based resource-efficient economy’ (Potočnik 2010)

Potočnik made ‘resource efficiency’ his first priority followed by biodiversity and implementation and enforcement. The Commissioner made it very clear that resource efficiency as he saw it was not about rushed decisions towards short-term ‘green growth’ that was neither a comprehensive answer to the economic recession nor it could provide us ‘with the ‘high level of environmental protection’ that the Treaty demands of us’ (ibid.). The latter statement contrasting short-term needs with a larger vision of change represents one of the key contentious areas for the resource policy.

The objective of growth and jobs needs ‘a strong foundation of sustainability and resource efficiency’. The resource efficiency challenge is thus more systemic:

‘We must concentrate on how to break the link between growth and resource use, and that will involve changing behaviour across the wider economy and society. Not an easy task, but I believe it is possible. Possible because for business the concept of resource efficiency is already second nature, and becoming more and more attractive.’ (ibid.)

The latter is an indirect reference to ‘decoupling’ that as we have seen featured strongly in the 6th EAP and the Thematic Strategy. Choosing ‘resource efficiency’ as a key priority in the context of Europe 2020 was to politically reinvigorate this approach, this time insisting more on its economic dimension.

The role of evidence and scientific knowledge in environmental policy making was strongly emphasised in the speech. First, evidence was referred to as having a role in developing a stronger case for sustainability considered by many as ‘not urgent’ and a
‘moral issue’. Second, it was evidence (‘information, analysis, knowledge and solid evidence’) that was to support future policies and the choice of policy tools:

‘I want environmental policy-making to be informed to a degree it has never been before: grounded in evidence and nurtured and fine-tuned through dialogue. I want it to be agreed but effective, mainstreamed but targeted, principled but practical.’ (ibid.)

This can be considered an example of an intentional use of knowledge to legitimise future policies. This is a logical statement given the past experience of the Thematic Strategy and the perception of some stakeholders and the Commission officials of evidence gaps in the resource efficiency agenda. It is also a clear signal that the new agenda is to be a rational choice. The reference to the role of evidence and the role of dialogue can be also seen as an argument put forward in anticipation of the oft-used criticism of the limited democratic accountability of the Commission’s policies.

The Commissioner also called for a vision to guide the policies. The importance of vision was emphasised with the Japanese saying: ‘vision without action is a daydream action without vision is a nightmare’ (ibid). The speech was unclear about the formal role of this vision, how it was to be constructed and who was supposed to develop it, share it and ‘own’ it. The role of evidence for the vision was not articulated. The commissioner was clear, however, about wishing to create new partnerships with Member States and regions and opening new dialogues with all stakeholders ‘who can contribute to improve the environment’ (ibid).

Potočnik made it clear that his vision of policy was not limited to enforcing implementation of directives and other parts of the environmental acquis or ensuring good management of Natura 2000 sites. In order to achieve impact, he intended to ‘fight hard for a coherent and comprehensive approach across the gamut of Community policies (ibid.) The environmental portfolio as outlined in the speech was more complex and challenging than traditional environmental policy. It gives a confirmation that the scope and frames of policy areas are being redefined to fit new political and economic context.

8.3.2. Resource efficiency in Europe 2020 Strategy

The EU ‘Europe 2020 Strategy’ (EC 2010) was published in March 2010 replacing the Lisbon Strategy. The new strategic framework aims to ‘turn the EU into a smart,
sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion’ (ibid.).

The very first paragraph sets the tone of the new strategic framework to guide EU policies:

‘Europe faces a moment of transformation. The crisis has wiped out years of economic and social progress and exposed structural weaknesses in Europe's economy. In the meantime, the world is moving fast and long-term challenges – globalisation, pressure on resources, ageing – intensify. The EU must now take charge of its future.’ (ibid)

In order to respond to these challenges, *Europe 2020* is to put forward ‘a vision of Europe's social market economy for the 21st century’. Three ‘mutually reinforcing’ priorities are to guide this vision:

- ‘Smart growth: developing an economy based on knowledge and innovation;
- Sustainable growth: promoting a more resource efficient, greener and competitive economy;
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion’ (ibid).

Resource issue was recognised as a growing global challenge caused by some key trends and interdependences:

‘Climate and resource challenges require drastic action. Strong dependence on fossil fuels such as oil and inefficient use of raw materials expose our consumers and businesses to harmful and costly price shocks, threatening our economic security and contributing to climate change. The expansion of the world population from 6 to 9 billion will intensify global competition for natural resources, and put pressure on the environment. The EU must continue its outreach to other parts of the world in pursuit of a worldwide solution to the problems of climate change at the same time as we implement our agreed climate and energy strategy across the territory of the Union’ (ibid).

The new strategy was strongly influenced by the financial crisis that ‘coloured’ the document throughout, making it de facto the recovery strategy. Sustainability is framed as ‘sustainable growth’ where environmental problems are often presented as a threat or an opportunity for the European economy. (In fact, the term itself is symptomatic as ‘sustainable’ is most often used as an adjective associated with ‘growth’. The latter is never questioned.) Europe is to first build resource efficiency and competitive economy,
which is to help the EU to prosper while contributing to dealing with climate change and reducing environmental impacts.

This is clear in how Europe 2020 defines ‘sustainable growth’:

‘Sustainable growth means building a resource efficient, sustainable and competitive economy, exploiting Europe's leadership in the race to develop new processes and technologies, including green technologies, accelerating the roll out of smart grids using ICTs, exploiting EU-scale networks, and reinforcing the competitive advantages of our businesses, particularly in manufacturing and within our SMEs, as well through assisting consumers to value resource efficiency’ (ibid).

This approach is to

‘(...) help the EU to prosper in a low-carbon, resource constrained world while preventing environmental degradation, biodiversity loss and unsustainable use of resources. It will also underpin economic, social and territorial cohesion.’

In order to further its main priorities Europe 2020 put forward seven interrelated Flagship Initiatives. Two Flagship Initiatives targeted the priority of sustainable growth: ‘Resource Efficient Europe’ and ‘An industrial policy for the globalisation era’. The document includes the main objectives and includes lists of actions for the Commission and the Member States, which were to be later picked up by individual Flagship Communications. Both Flagships address actions on resource efficiency.

8.3.3. Flagship Initiative for a Resource efficient Europe

In January 2011, the EC put forward a ‘Flagship Initiative for a Resource Efficient Europe’ (later referred to as Flagship) (EC 2011b). According to Europe 2020, Flagship was ‘to decouple our economic growth from resource and energy use, reduce CO2 emissions, enhance competitiveness and promote greater energy security’ (EC 2010).

The document itself by large repeats main objectives of the 6th EAP and the 2005 Thematic Strategy by arguing that decoupling the use resources and environmental impact from economic growth has both environmental and economic benefits. The transition is to embrace practically all economic and political stakeholders as well as consumers as it calls for ‘changes in behaviour as producers and consumers’ (EC 2011b).
The language of the document diverges from the previous EC policy documents on resource efficiency by embracing the tone of *Europe 2020* and placing a much stronger emphasis on economic opportunities associated with the ‘transition’:

‘A vision of where Europe should be in 2050 and a long-term policy framework can provide a clear path for businesses and investors.’ (EC 2010)

As if in the response to the criticism of the 6th EAP, the EC moved stronger towards the discourse of action:

‘To give businesses the certainty which they need to invest now, and to ensure that future generations benefit from smart investment, *we have to start taking action immediately*, on the basis of a regulatory framework that provides long-term stability’ (ibid, emphasis added).

This urgency to act seems to be driven primarily by an economic logic rather than by environmental concerns. The ambition of Flagship is to become a widely recognised and influential strategic framework of this transition to an extent to able to give a ‘certainty for investment’. It is a clear example of instrumental framing in policy that aims at creating a shared understanding and alignment of economic actors. The document aims:

‘to give businesses the *certainty* which they need to invest now, and to ensure that future generations benefit from smart investment, we have to start taking action immediately, on the basis of a regulatory framework that provides long-term stability’ (ibid, emphasis added).

And elsewhere:

‘(…) to increase *certainty for investment* and innovation by forging an agreement on the long-term vision and ensuring that all relevant policies factor in resource efficiency in a balanced manner’ (ibid, emphasis added)

It is unclear, however, what one of these key tools of de-risking the agenda really is. It is left unexplained what form ‘an agreement on the long-term vision’ is supposed to have and how it is supposed to be ‘forged’. It is also unclear what are the elements of the regulatory framework providing this ‘long-term stability’.

The Flagship points out to many possible synergies and trade-offs or rebound effects of policies aiming at resource efficiency. The document recognises that the EU is already implementing a number of related strategies, action plans and programmes and explicitly calls that they are consistent with the long time framework. In doing so, it attributes the
Europe 2020 strategy and its flagships the ex-post framing power to correct and align previously started strategic actions. In this context, it calls for a careful assessment of the trade-offs taking into account the whole life cycle of the resource use. Flagship devotes a full section to the knowledge base and consistent analytical approaches that should support policy choices. In the opening paragraph the section emphasises that the underlying analysis:

‘(…) must be based, where possible, on common assumptions, parameters and baselines, as well as on shared medium- and long-term visions.’ (EC 2011b)

It is relevant to underline the mention of ‘shared medium- and long-term visions’ and ‘common assumptions, parameters and baselines’ (ibid, emphasis added) in the context of the present study. Just as in the case of the overall vision, it is unclear, who is supposed to ‘share’ the visions and how this ‘common’ assumptions are to be achieved. It is not clear what ‘to share’ really means in this context. Further, the EC does not pose itself the question on what it will do with the areas where agreeing on ‘common assumptions, parameters and baselines’ is not possible. What will it mean for the decision making process, especially in the context the explicitly expressed need to ‘act now’? How to take decisions about issues were common and shared pose a challenge?

The section on the knowledge base recognises the complexity of modelling of resource efficiency and admits existence of certain knowledge gaps:

‘existing models (…) cannot capture fully the impact of resource use on ecosystems, enterprises, the economy and society as a whole, or the interdependence of policy measures. The Commission will undertake further analytical work to estimate economy-wide impacts, and to improve its ability to model in other areas relevant to resource efficiency, such as agriculture, industry and environment’ (ibid).

This passage is symptomatic. The document does not explicitly recognise the inherent uncertainties of modelling complex systems. At no point the issue of investment risk and uncertainty associated with any major innovation effort is mentioned. The arguments and narrative constructed to frame Flagship are there mainly to serve the instrumental political purpose of ‘selling’ resource efficiency as economic opportunity to economic decision-makers. It is, nevertheless, done naively by avoiding using terms and referring to problems, which are commonplace in any innovative business activity.

The Flagship was to be further elaborated by four ‘coordinated roadmaps’ including:
− ‘Roadmap to a Resource Efficient Europe’ (referred to as ‘the Roadmap’ henceforth) defining ‘medium and long-term objectives and means for achieving them with the main aim to decouple economic growth from resource use and its environmental impact’ (EC 2011);
− ‘Low-carbon Europe 2050 Roadmap’ aiming at creating ‘a low-carbon economy in 2050, cutting greenhouse gas emissions by 80-95%, as part of global efforts to fight climate change, while improving energy security and promoting sustainable growth and jobs’ (EC 2011e);
− ‘Energy Roadmap 2050’ that analyses ‘how the EU can create an energy system by 2050 which is low-carbon, resource-efficient, secure and competitive’ (EC 2011f);
− ‘Strategic Transport Technology Plan’ presenting ‘a vision for a low-carbon, resource-efficient, secure and competitive transport system by 2050 that removes all obstacles to the internal market for transport, promotes clean technologies and modernises transport networks’ (EC 2012).

8.4. The making of the ‘Roadmap to a Resource Efficient Europe’

8.4.1. Internal EC process

The process of preparing the Roadmap started in late 2010 and continued with a varied intensity throughout 2011 until September 2011 when the document was published.

According to one Commission official the preparations of the Roadmap started well before the Resource Efficiency Flagship Communication was drafted and published. In fact, the work on both documents had been done in parallel.

While the task to draft the Roadmap was led by DG Environment, the work on the Resource Efficiency Flagship was coordinated by the Secretariat General of the European Commission. Resource efficiency was the only Europe 2020 Flagship communication not led by its ‘mother DG’. According to one Commission official, this was an intentional decision that was to reflect the crosscutting character of the topic and was done so the document was ‘shared by the whole college of Commissioners’ (EI12 2012). Another official argued that despite this formal arrangement the Flagship was based mainly on contributions from DG Environment. Secretariat General’s role was mainly to edit the document and add several minor contributions from other DGs (ibid).

Several Commission officials emphasised the crucial role of the 2005 Thematic Strategy in preparing the knowledge base of resource efficiency policy documents. One of the officials
put it simply: ‘Without thematic strategy our briefings for the Commissioner wouldn’t be so good’ (EI1 2012). The main difference between the Strategy and the Roadmap was not the actual content but the different level of political priority. The Roadmap became ‘a top priority of the Commissioner’ (ibid).

In February 2011, DG Environment established the Resource Efficiency Task Force led a smaller group of officials (‘Core Group’). The Task Force was initially chaired by one of the directors, but at the later stages the meetings were run by lower-ranked officials (Head of Unit and below). The meetings took place on a weekly basis from February until summer 2011. There were six sub-groups set up to prepare the Roadmap: three focussed on ‘areas of economy’ and three on ‘cross-cutting issues’. Each sub-group met twice in March 2012. The ‘areas’ included: Sustainable Materials Management; Food, fisheries and land use; and Infrastructure, logistics, buildings and planning. The crosscutting issues focussed on: ‘Working with the market’, ‘Research needs, modelling, metrics and indicators’ and ‘Impact assessment’. The discussion paper was to spur the discussions in the sub-groups. The discussions in the sub-groups were rather technical and focussed mainly on economic conditions for transition to resource efficient Europe rather than on the overall vision and priorities. The process allowed for collecting views as well as additional evidence to substantiate the draft document.

According to a couple of regular members of the Task Force, the discussions during the meetings did not tackle the ‘big questions’ of resource efficiency and the vision (EI2 2012, EI6 2012). The objective was rather ‘to solicit specific inputs from the units’. In the final stages the process was concentrated in the Core Group and there was a feeling that the cabinet was more involved (ibid). The actual drafting was limited to several officials from the Core Group. The first unofficial draft of the Roadmap had a status of a discussion paper. This included the work on the vision and milestones. The paper was consulted internally with selected officials.

The focus on 2050 was influenced by the work on the climate change as well as the report of the World Business Council for Sustainable Development (WBCSD). The first version of the vision was drafted by a specific workgroup within DG Environment:

‘The group included people from different units, who are less busy with technical implementation. We selected people who have ‘visionary thoughts’. You could say they are ‘free electrons’ (or ‘nonconformist people’) in the system. Thinking so much forward is not something you normally do within the Commission, so it was not an easy exercise.’ (EI1 2012)
One of the officials admitted that 2050 was a ‘symbolic number’ rather than an actual target year (EI1 2012). The work was based on three time horizons: short-term (2011-2013), medium-term (2020) and long-term (beyond 2020 i.e. ‘2050’). There was no dedicated reflection, however, on the intermediary timeframes between 2020 and 2050. The team realised it could not quantify many issues in the long term ‘as the uncertainty was too high’ (EI1 2012). The biggest challenge was to link the short and long-term actions. During discussions some issues were moved back and forth between ‘vision’ (2050) and ‘milestones’ (2020). The overall tendency at the end was to shorten the vision and move relevant issues to the milestones. The exercise was all the more challenging since at the time of drafting the document the formal status and format of the Roadmap was unclear to many officials involved in the process (EI1 2012, EI2 2012). The core team decided to work under an assumption that it would be a Commission Communication, which had a formal length requirement of 10 pages.

The Roadmap was consulted with other Commission services (other Directorates General) in February and March 2011. Curiously, the internal inter-service consultation started at the same time when the EC opened public on-line consultation on the Roadmap (see the next section). The invitation to the consultation with a draft discussion paper attached was distributed to other Directorates General (DGs) of the EC in late February 2011.

The publication of the Roadmap was delayed. It was originally foreseen for June 2011. With the political pressure rising and to prevent further delay, the Roadmap was finalised at the end of the summer 2011. Several EC officials suggested that the delay was caused by the lack of the internal alignment within DG Environment. The cabinet and the DG could not agree on the direction and scope of the Roadmap. One of the officials referred to the tension between the political expectations of the cabinet and what the DG was realistically able to deliver. This problem was never articulated in the process and led to ‘a constant stream of disappointment’ and a document based on ‘half-baked ideas’ (EI2 2012).

Several EC officials who took part in the process were critical of the debate and the communication about the process to the rest of the DG, notably in relation to expectations on input of various Units to the process. In fact, the representatives of the Units taking part in the internal process found the process formal and largely influenced by ‘protecting’ particular perspectives of participating units (EI6 2012). The limited participation of top management in the drafting process and the lack of clear leadership in the DG towards the agenda made it difficult to discuss the substance. This situation ‘led to the escalating fears, doubts and distrust toward the initiative; this problem has not been resolved’ (EI2 2012).
8.4.2. Stakeholder consultations and involvement in the Roadmap

The EC opened a public on-line consultation on the Roadmap in the late February 2011. The consultation was open to any individual or organisation for two months (22 February 2011 to 22 April 2011). The comments were collected based on a short document and a questionnaire. The document introduced resource efficiency as defined by the Flagship Communication and put forward a number of questions. The stakeholders could respond using a questionnaire or simply upload their position papers. The draft Roadmap discussion paper discussed internally at the EC at the same time was not made available to the stakeholders. Policy documents that set the context of the consultation were *Europe 2020* and the Flagship communication.

Despite a relatively short time to respond, the consultation received significant interest from stakeholders. According to the EC, nearly 250 contributions were received. 217 followed the suggested format and further 31 positions were submitted in other formats. Nearly 60% of the responses came from organisational stakeholders. Two biggest groups that responded to the consultation were companies or business associations (72) and NGOs (27). Other groups included public authorities (10), think tanks (5), academic organisations (2), trade unions (2) and consulting company (1). The EC published a summary of the results presenting average responses to the questions and the full texts of position papers.

The interviewed stakeholders based in Brussels (notably business associations and NGOs) were generally very critical of how public consultations are handled. The most often used criticism is that the EC does not make it clear if and how the position papers are used in the policy processes. Some stakeholders (including Commission officials) indicate that the EC does not have time and capacity to really study and respond to the stakeholders’ positions.

What is considered a limited transparency from the outside, however, may be a simple consequence of short-time policy cycles and internal political tensions. As the original publication of the Roadmap was foreseen for June 2011 the process of drafting, impact assessment, internal inter-service consultations and public consultation had to be all handled in a very short time. In order to ensure continuous stakeholder involvement, the EC set up several channels, including European Resource Efficiency Platform (EREP), on-going on-line stakeholders consultations and a dedicated website. The website on resource efficiency was set up to share information and engage diverse stakeholders interested in ‘new pathways to sustainable resource-efficient growth.’

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9. Frames of resource efficiency in the EC’s ‘Roadmap to a Resource Efficient Europe’

The European Commission established its formal narrative and vision of resource efficiency in the Flagship communication issued in the context of its *Europe 2020* strategy and – in more detail – in the ‘*Roadmap to a Resource Efficient Europe*’. The Roadmap is considered here as an argumentative intervention. It is not a policy intervention *per se* with a clear-cut impact on decision-making as it neither directly results in a new regulatory or fiscal measures nor it provides a direct financial support to targeted groups. It nevertheless introduces frames of resource efficiency to policy narrative.

9.1. Frames of resource efficiency in the Roadmap

The Roadmap opens with a strong framing statement:

‘Europe has enjoyed many decades of growth in wealth and wellbeing, based on intensive use of resources. But today it faces the dual challenge of stimulating the growth needed to provide jobs and well-being to its citizens, and of ensuring that the quality of this growth leads to a sustainable future.’

(EC 2011)

This opening paragraph can be directly related to the Potočnik’s call for a ‘knowledge-based resource efficiency economy’ he made in his Parliamentary hearing in early 2010. The language is strongly flavoured by *Europe 2020* rhetoric and suggests how the challenge of ‘resource efficiency’ is framed in the Roadmap. It could be ironically summarised ‘What does Europe need and why is it growth?’ On the other hand, the Roadmap insists on ‘the quality of growth’. One of its milestones envisions that by 2020:

‘Economic growth and wellbeing is decoupled from resource inputs and come primarily from increases in the value of products and associated services.’ (EC 2011)

Growth it is then, but it is to come from ‘increases in the value of products and associated services’ (ibid). This would suggest that growth is to occur in parallel with dematerialisation. Despite mentioning ‘decoupling’ growth from resource use several times, the document is not explicit whether it is to be absolute or relative decoupling. It is
similar in this respect to the 2005 Thematic Strategy (EC 2005) that was also criticised by environmental experts for not being clear about the overall aim.

Probably the closest the Roadmap gets to implicitly recognising the logical possibility of the need of having to decrease the resource use is in its vision that opts for an economy that grows ‘in a way that respects resource constraints and planetary boundaries’ (EC 2011). The vision requires that ‘the stocks of all environmental assets from which the EU benefits or sources its global supplies are secure and managed within their maximum sustainable yields’ (ibid). This is clearly not a statement that absolute decoupling is required. Given the current state of natural resources the Roadmap describes, however, one may infer that the economy envisioned in the document will have to reduce its consumption of some resources in absolute terms at some point in the future. Absolute decoupling is thus not ruled out as an option but it is not an explicit objective.

The main indicator ‘tentatively’ put forward to measure the progress in resource efficiency suggests that the prime concern is in fact relative decoupling. The lead indicator ‘to measure the principal objective of this Roadmap’ (ibid, emphasis added) is the ratio of the GDP to Domestic Material Consumption (expressed in Euro/tonne) where ‘a higher ratio would indicate better performance, with growth consuming relatively fewer resources’ (ibid, emphasis added). There is no mention about any measure of ‘wellbeing’ despite explicit recognition of ‘the interdependencies between the economy, wellbeing and natural capital’ (ibid.). The document calls for further work on ‘Beyond GDP’ (EC 2009), which enquire alternative measurements of economic and societal performance. The Roadmap does not elaborate on implications of ‘wellbeing’ in the context of resource efficiency.

The focus is mainly on economic and environmental dimensions of resource efficiency. Figure 18 highlights citations from the Roadmap where economic, environmental or social trends are interpreted as opportunities and threats. The text analysis reveals that the Roadmap placed greater emphasis on ‘translating’ the narrative into economic language of cost, benefit and risk. The chapter on ‘Transforming the economy’ symbolically comes before sections on natural capital and provides the sets the frames of the document. The chapter ‘Natural capital and ecosystem services’ that introduces individual resources also uses mostly economic frames. A dimension of environmental threat is well elaborated, but the economic frames are predominant. Even environmental threats are ‘translated’ in a current or future economic threat or opportunity. The environmental dimension is not disregarded, but the language suggests who was an intended audience of the document.
### Figure 18. Framing resource efficiency as an opportunity and threat in the Roadmap

<table>
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<tr>
<th>Resource</th>
<th>Economic</th>
<th>Social</th>
<th>Environmental</th>
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<tbody>
<tr>
<td><strong>Opportunity</strong></td>
<td><strong>Threat</strong></td>
<td><strong>Opportunity</strong></td>
<td><strong>Threat</strong></td>
</tr>
<tr>
<td>Eco-system services</td>
<td>‘Investing in natural capital – like green infrastructure – often brings higher returns than constructed or manufactured alternatives, with lower up-front costs.’</td>
<td>‘Our economic prosperity and wellbeing depend on our natural capital, including ecosystems’ [that are deteriorating]</td>
<td>‘(…) they continue to be overly depleted or polluted, threatening our long-term sustainability and resilience to environmental shocks’</td>
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<tr>
<td>Biodiversity</td>
<td>‘It has been estimated that by 2050, the global business opportunities dependent on biodiversity and the ecosystem services it underpins, could have a value of between $800-2.300 billion per year.’</td>
<td>‘Restoring degraded ecosystems is costly, and in some cases, change can become irreversible.’</td>
<td>‘Its loss can weaken an ecosystem, compromising the delivery of ecosystem services and making it more vulnerable to environmental shocks’</td>
</tr>
<tr>
<td>Minerals and metals</td>
<td>‘As we move towards a genuinely consumption based, sustainable materials management or a ‘circular economy’, where waste becomes a resource, a more efficient use of minerals and metals will result’ [opportunity for those who benefit from this shift e.g. innovators focused on efficient use or substitutions of minerals and metals]</td>
<td>‘Their specific risks, including security of supply, are addressed in the Raw Materials Initiative’</td>
<td>‘(…) threat to those who lose because of this shift e.g. extraction sector’</td>
</tr>
<tr>
<td>Water</td>
<td>‘(…) water efficiency could be improved by 40% through technological improvements alone’ [opportunity for technology developers]</td>
<td>‘Changes in ecosystems, land use, in production and water consumption and re-use patterns could cost-effectively reduce scarcity and ensure water quality.’</td>
<td>‘Good environmental status and citizens’ health depend on the quality and availability of fresh water.’</td>
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<tr>
<th>Resource</th>
<th>Economic</th>
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<tr>
<td></td>
<td>Opportunity</td>
<td>Threat</td>
<td>Opportunity</td>
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<tr>
<td>Air</td>
<td>‘(…) ecosystems and agriculture also suffer damage from airborne impacts such as acidification, eutrophication and ozone damage to vegetation. The annual cost in 2020 has been estimated at €537b’</td>
<td>‘(…) ecosystems and agriculture also suffer damage from airborne impacts such as acidification, eutrophication and ozone damage to vegetation. The annual cost in 2020 has been estimated at €537b’</td>
<td>“EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050; soil erosion is reduced and the soil organic matter increased, with remedial work on contaminated sites well underway”</td>
</tr>
<tr>
<td>Land and soils</td>
<td>‘Decisions on land use are long term commitments which are difficult or costly to reverse.’ [this is an opportunity as this can be improved, hence cost savings]</td>
<td>‘Decisions on land use are long term commitments which are difficult or costly to reverse.’</td>
<td>‘In many regions soil is irreversibly eroded, or has a low content of organic matter. Soil contamination is also a serious problem.’ [threat for agriculture and health]</td>
</tr>
<tr>
<td></td>
<td>‘In many regions soil is irreversibly eroded, or has a low content of organic matter. Soil contamination is also a serious problem.’ [threat for agriculture and health]</td>
<td>‘If we are to reach the state of no net land take by 2050, following a linear path, we would need to reduce land take to an average of 800 km2 per year in the period 2000-2020.’ [threat for developers, farmers etc]</td>
<td>‘In many regions soil is irreversibly eroded, or has a low content of organic matter. Soil contamination is also a serious problem.’</td>
</tr>
<tr>
<td>Marine</td>
<td>‘The marine environment holds economic opportunities in a wide range of sectors such as minerals extraction, pharmaceuticals, biotechnology and energy.’</td>
<td>‘The depletion of fish stocks has severe economic and social consequences for coastal zones and contributes to other biodiversity loss by disrupting systems, while marine pollution and climate change pose other challenges (e.g. acidification).’</td>
<td>‘The marine environment provides key ecosystem services (…). Pressures on these systems, including from the discharge into the sea of pollutants in freshwater, are still severe, even if in some cases declining.’</td>
</tr>
<tr>
<td>resources</td>
<td>‘The depletion of fish stocks has severe economic and social consequences for coastal zones and contributes to other biodiversity loss by disrupting systems, while marine pollution and climate change pose other challenges (e.g. acidification).’</td>
<td>‘There is a lack of coherent management of sea space which is already affecting our possibilities to benefit from maritime activities.’</td>
<td>‘The depletion of fish stocks (…) contributes to other biodiversity loss by disrupting systems, while marine pollution and climate change pose other challenges (e.g. acidification).’</td>
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9.2. Policy narrative framework analysis of the EC’s Roadmap

The narratives and frames employed in the Roadmap are analysed with the policy narrative framework (POLFRAME) method. The analysis is based on the original text of the Commission Communication as well as on the views expressed by interviewed stakeholders including both EC officials and external stakeholders. The second part reflects on whether and to what extent different arguments and assumptions of the Roadmap fall into an internally coherent policy narrative. The last part discusses the discursive affinity between the Roadmap and the meta-narratives of resource efficiency emerging the EU public discourse.

9.2.1. First-order problems and systemic deficiencies

As in the public discourse on resource efficiency, the central stage in the Roadmap’s narrative is given to economic concerns about rising costs of raw materials and volatile prices of materials:

‘Businesses are facing rising costs for essential raw materials and minerals, their scarcity and price volatility are having a damaging effect on the economy’ (EC 2011).

The Roadmap chooses to give priority to economic problems and often frames environmental problems as an economic opportunity or threat. The text stresses, for example, that resource efficiency is not only to decrease impacts of economy on environment, but also to understand and avoid ‘systemic risks to the economy from the environment’ (EC 2011). Interviewed senior EC policy makers underlined that much effort was invested in DG Environment in elaborating economic arguments and developing the business case for resource efficiency. At the time of drafting the document, there was a feeling that economic narrative was underdeveloped whereas environmental argumentation was well in place. This was an instrumental reframing aimed to align with the language used by business and economic decision makers.

The economic argumentation in the Roadmap is in line with the framing and understanding of the problem developed in the OECD’s ‘Green Growth Strategy’ (2011) or UNEP’s ‘Green economy’ (2011) but also in the McKinsey’s report ‘Resource revolution’ (2011). The latter promoted the arguments and data on resource efficiency based on the evidence on growing commodity prices, material cost as well as broader arguments on implications of the global population growth, and the rise of middle class, on the future resource
demand and prices. All above brings together and reframes arguments and research developed over the last two decades by pioneers of materials efficiency, e.g. Friedrich Schmidt-Bleek and Ernst von Weizsacker of the Wuppertal Institute in Germany or the Amory and Hunter Lovins of the Rocky Mountain Institute in the US. UNEP and McKinsey consulted many of the long-standing advocates of resource efficiency while compiling their report.\textsuperscript{10}

The main first-order problems in the Roadmap are thus prices of raw materials, scarcity and import dependence on imported materials and depletion of ecosystem services. Dependence on imports of resource is framed as a clear threat for European economy, which reveals a predominantly euro-centric perspective and an underlying assumption of the world governed by competitiveness and struggle for dominance and survival. Environmental problems are mentioned and very prominent in the document. In most arguments, however, they are framed as economic problems ‘translated’ into existing or future opportunity or threat. In this context, the loss of biodiversity, depletion of ecosystem services, and pollution are all given a ‘price tag’. This does not mean that economic frame is the only one in the document. In fact, the Roadmap is internally diverse revealing different parallel narratives it used to construct its overall narrative framework.

Specific problem frames are revealed in sections concerning different resources or sectors. For example, the narrative on food production and consumption has a global ethical dimension with concern over wasting edible food and overconsumption of animal proteins. Similarly, referring to data on deaths of animals due to plastic waste in marine environment signals an underlying ethical concern. In general, however, ethincal and global concerns are left implicit. The understanding of the systemic deficiencies or factors underlying the first-order problems is predominantly economic and market-related. Market failure is at the core of the policy narrative with emphasis on wrong pricing signals and information asymmetries. The systemic deficiency is located in the economic system as ‘our economic system still encourages the inefficient use of resources by pricing some below true costs’ (EC 2011).

The root of the problem is that the current market economy system fails to ensure prices that reflect ‘true costs’ of the resources. ‘True costs’ refer to environmental, social and economic implications of the resource inefficient model. The narrative continues with the argument that low prices of commodities led to depletion and pollution leading to long-

\textsuperscript{10} For example, Ernst von Weizsäcker, author of Factor 4 and Factor 5 books, was consulted by McKinsey. Von Weizsäcker also co-chairs in the work of UNEP’s Resource Efficiency Panel.
term sustainability problems and environmental shocks. A major claim in this argumentation is that changes in prices are indeed the core of the problem of resource use.

Importantly, according to the Roadmap’s narrative the wrong market signals are largely due to a systemic policy failure. The existing policy framework sends out wrong signals and incentives to the market that are exacerbating the problem. Furthermore, ‘wrong’ price signals are ‘deliberately’ caused by policy, notably by environmentally harmful subsidies. Wrong incentive frameworks are set by the current taxations systems that tax labour and not resources; this does not encourage resource efficiency. From these arguments, one may deduce that it is the policy failure rather than only market failure that should be considered the underlying problem.

In the discourse on systemic deficiencies, nature is framed mainly as ‘natural capital’, which reduces it to an economically exploitable factor. The main ‘value’ under consideration in the document is economic. Nature (and its eco-system services) is seen primarily as a provider of goods and services following a causal dictum that humankind exploits nature to achieve growth and high standard of life. While the narrative is strong about the need to protect nature, the implicit assumption is that it should be protected as something economically valuable.

This moves us to the central argumentative proposition of the Roadmap’s narrative that connects the narrow economic frames with the broad boundaries of the definition of natural resources. The document performs a clever argumentative extension of economic frames by proposing to attribute ‘right’ economic value not only to tradable commodities but also to non-tradable eco-system services, water, land, air and biodiversity. The extension is placed within economic frames and does not extend the concept of value itself.

The Roadmap’s narrative on environmental dimension, notably environmental limits and scarcities, is not straightforward. On the one hand, the document recognises the concept of ‘planetary boundaries and resource constraints’. This suggests that the underlying assumption of the document is that the use of resources and resources themselves have limits. The notion of limits is most explicitly expressed in the section on land and eco-system services. On the latter, the Roadmap underlined that they are ‘used almost as if their supply is unlimited’ (EC 2011). The document argues that all natural resources are to be managed ‘within their maximum sustainable yields’ (ibid).

This suggests existence of absolute limits and may symbolise at least a partial departure from the more liberal approach to the resource constraints expressed in the 2005 Thematic
Strategy that underlined the key role of the market mechanisms in ‘regulating scarcity’ that could cause mainly ‘acute’ problems. At that time absolute scarcity was not a concern and it was not as ‘environmentally problematic as then predicted’:

‘A major concern in the 1970s, following the first oil crises, was natural resource scarcity and limits to growth. However (…) scarcity has not proven to be as environmentally problematic as then predicted. The world has not run out of fossil fuels and the market, through the price mechanism, has regulated scarcity. The use of many metals and minerals has declined because of changing technology rather than depletion of reserves. However, rapidly growing demand and bottlenecks in supply can cause acute economic and environmental problems, as the recent price hikes for many raw materials have demonstrated.’ (EC 2005)

The Roadmap may be seen as an attempt to change the policy discourse on the limits, at least in the context of some resources, especially eco-system services, land and water. There is no clear stance, however, on the limits in relation to other specific resources, notably commodities, such as minerals, metals and other materials. The document uses stronger sustainability language when addressing limits of resources such as eco-system services, land, water or biodiversity but remains very general about raw materials and other tradable goods. There is no explicit recognition that extraction of materials causes irreversible changes in eco-systems, land, water systems and biodiversity. In general, the refection on the connectedness of all natural resources in the context of resource use is very limited if not absent from the document.

Despite recognising limits and the need to manage resources ‘within their maximum sustainable yields’, it is unclear what these limits imply and how they are supposed to be managed. The focus is on remodelling economy, but apart from some resources (notably land use), the Roadmap does not engage in a discussion whether apart from improving the efficiency, sustainable management of resources needs to consider imposing absolute limits of extraction or use (such as quotas).

In general, the document is vague on its stance toward ‘weak’ and ‘strong’ sustainability. The interpretation of some passages makes the reader believe that it has a certain preference for ‘strong sustainability’ implying non-substitutability of certain natural resources and systems. On the other hand, non-substitutability is not a fundamental rule as the document relies on economic argumentation when pondering substitution of natural capital with manufactured alternatives: ‘Investing in natural capital – like green
infrastructure – often brings higher returns than constructed or manufactured alternatives, with lower up-front costs.’ (EC 2011)

There is no explicit limit mentioned that would be imposed if economic benefits of investing in manufactured infrastructure outweighed investments in natural capital. Similarly, the overall call for valuing – or monetising - natural capital and ‘getting the prices right’ does not substitute the question of the absolute limits. There is a gap in the argumentation between calling for ‘recognising planetary limits and constraints’ and then relying on market-based economic mechanisms to correct decisions on the use and substitution of natural resources. The former recognises absolute limits of resources whereas the latter assumes that relative improvements based on economically rational decisions will lead to absolute improvement. The Roadmap does not make it explicit, which argumentation has priority, but as indicated the overall narrative follows predominantly economic line of argumentation.

The Roadmap does not question the values underlying the relationship between humankind and nature. It does not enter into the discourse on value systems and ethics; the latter are rare and implicit in the text. The problem is rather to remodel the interface between nature, society and economic system. Alternative explanations of the resource problem pointing to value systems and lifestyles governing producers and consumers choices and behaviour and are not explored. The Roadmap does not question strongly whether the levels of consumption are excessive. Many interviewed stakeholders, including representatives of European Commission, national policy makers as well as NGOs and experts emphasised that there is lack of reflection and actions addressing the consumption side.

One of the interviewed national officials from ministry of environment argued:

‘I feel that consumption side is too weakly developed in the current policy. The cabinet of our minister, for example, doesn’t want to touch consumption side, because the consumers shouldn’t be troubled. There is a political fear to go into detail about consumption (e.g. the issue of repair of products was taken out from one of the speeches). Politicians do not want to change consumption habits of consumers. Consumers are voters’ (MS4 2012)

The Roadmap does make an explicit choice to focus more on production systems as well as on service delivery rather than on the levels of consumption. The formal argument is the focussing on economic system is the core of the problem and that remodelling the
system will not decrease the standard of life. The implicit message here is that the actual consumption experience will not be compromised. The EC officials are well aware that ethical dimension is one of the important aspects of the problem but it is too politically sensitive to make into one of the central argument. The recent emphasis on behavioural economics in the context of resource efficiency appears a safe way to address the problem. It is channelled through scientific research rather than through a political debate.

9.2.2. Future vision and scenarios of change

‘Vision without action is a daydream...action without vision is a nightmare’ (the Japanese saying brought up by Janez Potočnik in the European Parliament in 2010).

The Roadmap introduces a general vision for 2050 and milestones for specific sections for 2020. The vision states:

‘By 2050 the EU’s economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored.’ (EC 2011)

The vision itself seems to have stronger stance about the need to protect nature and recognise planetary limits. The notion of growth is central but the vision itself subjects it to environmental criteria of constraints and limits. The vision also introduces stronger a global perspective (from Euro-centric perspective in setting problem frames). Despite these apparent changes, the vision frames sustain dominant economic argumentation.

The vision reveals a fundamental assumption of rational behaviour of both economic actors and consumers that are to respond to newly provided signals and incentives. It has a mechanistic perception of societal change. There is an assumption that the process of transition can be implemented in a ‘predictable’ and ‘controlled’ way.

‘Preparing that transformation in a timely, predictable and controlled manner will allow us to further develop our wealth and wellbeing, whilst reducing the levels and impact of our resource use.’ (EC 2011)
Creativity, innovation and entrepreneurial potential are to be directed and channelled to serve the vision. There is a belief, for example, that the entrepreneurial potential that has led to improved labour productivity ‘over centuries’ can be employed to drive innovation in resource efficiency. This reasoning is an interesting example of interpreting (and transposing) historical evidence to support a vision. Entrepreneurial potential that worked in the past is expected to work again in the future. A related assumption is that the current economic and social model is capable to support major societal learning process leading to economic transition, radically changed consumer behaviour and wider understanding of planetary boundaries. In the interviews, the EC officials were more open about the uncertainty and risks of the envisaged societal shift from models ‘purely based on consumption in the traditional sense of more’. One of the highly ranked EC officials recognised that the transition will face societal lock-ins:

‘We are locked in to resource intensive growth not only in terms of infrastructures and growth models, but also in terms of ‘attitudes and behaviours’ (EI12 2012)

The Roadmap, however, avoids explicit statements on complexities, institutional lock-ins and uncertainties linked with transition processes. There is only a limited reflection on systemic barriers to reconfiguring existing practices, networks and power relations. The Roadmap hints that the transition can create winners and losers and the caution is called for when abolishing environmentally harmful subsidies. The notion of persistent ‘lock-in’ is mentioned in the context of discontinuing harmful subsidies but it is not elaborated and reflected in the other contexts.

The overall answer to these challenges in the Roadmap’s narrative is innovation. The Roadmap and interviews rely on innovation to help out ‘to avoid hitting […] critical points’ (EI12 2012). The Roadmap is based on the assumption that policy should define the nature and direction of innovation rather than giving preference to specific solutions.

Most experts and business stakeholders found the reference to the role of innovation overly generic and questionable. One business stakeholder found the assumption of the possibility to plan and control the economic transition based on innovation naïve:

‘From the history of mankind we know that we have permanent innovation but important innovations occur relatively rarely. How can we guarantee that by 2020 or 2050 we will have innovation to guarantee getting to the objective?’ (BIZ6 2012)
Others pointed out that directing innovation by policy intervention would meet a strong opposition as running counter to the dominant perception of market-driven innovation:

‘Market-driven change is regarded as inevitable or to be welcomed. Government-driven innovation, despite the fact that democracy is to be expressive of social values, is increasingly difficult to bring about, because ‘losers’ of this process will organise against it. The kinds of changes that we need for resource efficiency transition are mobilising the most powerful lobbies to stop them’ (EXP4 2012)

This understanding of innovation and its role in transition seems to be based on the linear ‘science-push’ understanding of innovation process in which progress takes place as a result of scientific breakthroughs. The reflection on the societal, cultural or institutional aspects that drive or hamper innovation is virtually absent from the document. Market remains the key mechanism of the transition, but it is the policy shift that is expected to drive and direct the change. One EC official expressed it explicitly:

‘There is a myth that markets decide on resource efficiency. In fact, it is policy framework and the set of institutions that decides for the market as it sets level playing field (e.g. taxes and subsidy structure). The idea of market being free and deciding may be good for a traditional school of economics. Many CEOs insist that policies define the market place that is why they lobby policy makers so hard. The myth of the free market is used against policy and really is a matter of political force and people making spurious, but strong argument on why they should be favoured by policy’ (EI2 2012)

Despite considering the notion of incentives central to the process of change, the vision fails to consider incentives for those who are expected to introduce major changes in policy, namely politicians and policy makers. This makes the assumption of ‘seamless implementation’ rather questionable.

The lack of political dimension of the transition is the major gap in the narrative framework of the Roadmap. On the one hand, it reflects the main focus on economic side of the narrative, which should not be disturbed by collateral issues. On the other hand, and more fundamentally, it reveals the actual and perceived role and competences of the European Commission and the European Union in this process. Most of the key drives of change are in fact in hand of Member States thus outside EU’s competence. Basing the
narrative on the assumption that Member States can implement required changes, invites them to be part of a process and passes a message that they hold key to the vision.

Just as the problem frames, vision frames have a degree of ambiguity. The Roadmap calls for the ‘fundamental transformation’ of behaviour and the radical transition of natural resource management practices to recognise ‘planetary boundaries’. On the other hand, the vision embraces concepts and values underlying current social and economic model such as the belief in growth, competitiveness and progress. The document does not reflect on the relation and dependencies between expectations towards changes of production and consumption patterns and the deeper issues of economic and societal systems they evolve in. The business models based on leasing and sharing cannot overhaul the current economic model in the unchanged value system and culture based on individual ownership and consumption-based lifestyles. The latter opens up fundamental questions on value systems and ideologies underlying current social systems where the Roadmap does not venture. Deep underlying causes or roots of the problem are rarely questioned in the policy debate.

According to one official, the risk of decreasing welfare, thus the risk of changing lifestyles, potentially linked with the more radical resource productivity change made more radical vision politically unfeasible (EI1 2012). The observation may be seen in contrast with the Roadmap text and its assumptions about innovation-driven transition and radical transformation of consumer behaviour. The Roadmap limits itself to a rather idealistic vision of the transition where changes are to take place without any major implications to welfare. Despite calling for a radical transformation, the vision seems to be striving for more or less radical resetting of the parameters of the existing economic and social system. The implicit assumption in the vision is that the future society would be organised in a similar way as today.

The causal inferences in the Roadmap’s narrative are predominantly linear. Orchestrated policy intervention is expected to play a key role in the transition by resetting the framework conditions to provide ‘right’ price signals and fiscal incentives for business and consumers. As a result, business is supposed to innovate while consumers are expected to change their behaviour. This reveals implicit belief in humankind’s capacity to design and control its fate. Humankind can ‘orchestrate’ the planet (e.g. by adopting crops).

Figure 19 presents a detailed POLFRAME analysis of the Roadmap.
<table>
<thead>
<tr>
<th>Frame reflection</th>
<th>Narrative</th>
<th>Problem frames</th>
<th>First-order problems (symptoms)</th>
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<tbody>
<tr>
<td>Storyline and argumentation</td>
<td>Facts and empirical evidence</td>
<td>Causal assumptions</td>
<td>Underlying cognitive and normative determinants</td>
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<tr>
<td>Arguments, claims and challenges framing empirical evidence and normative assumptions</td>
<td>Constructing and interpreting meanings of facts, empirical evidence and anticipated trends</td>
<td>Assumptions on historical and future causal mechanisms</td>
<td>Interpretation of cognitive and normative assumptions underlying arguments, evidence and causal claims</td>
</tr>
<tr>
<td>Economic</td>
<td>Absolute material consumption in the EU in 2007: 8 billion tonnes</td>
<td>Difficult access to resource expected to decrease competitiveness of the EU</td>
<td>Dominant economic and market-centric frames (priority given to economic problems).</td>
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<td>Concern with rising costs and price volatility of raw materials.</td>
<td>Total mass of waste (2.7 billion tonnes of waste, 98 million tonnes of which is hazardous). Economic cost of airborne impacts such as acidification, eutrophication and ozone damage to vegetation (annual cost in 2020 about €537b) Number of working days lost due to air pollution induced illnesses</td>
<td>Possible impacts on third countries due to risks of resource access</td>
<td>Predominantly euro-centric narrative (dependence on imports framed as a clear threat; underlying vision of the world governed by competitiveness and the struggle for dominance and survival).</td>
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<td>Dependence on imported materials and energy as a strategic economic issue with implication for competitiveness. The issue of secure access to resources with possible negative environmental impacts on third countries.</td>
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<td>Environmental problems often framed as economic problems and given ‘price tag’. Instrumental framing to attract business and economic decision makers dominates the document.</td>
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<td>Internally diverse narrative with competing frames appearing in different passages. Predominantly economic frames, but also implicit deep ecological concerns (e.g., data on premature deaths, animal deaths due to waste). Weak concern with the global impacts (in the context of access to raw materials considered only ‘additional concern’).</td>
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<td>Ecosystems depleted or polluted (economic implications) Agriculture suffers damage due to airborne impacts The depletion of fish stocks has severe economic consequences</td>
<td>Share of degraded ecosystem services (60% in the last 50 years). Depletion of fish stock in the EU (88% of fish stocks fished beyond max. sustainable yields) Land take in the EU (1,000 km2 are subject to ‘land take’ every year for housing, industry, roads or recreational purposes); ratio of sealed land (about half of land take: comparison: in aggregate every ten years we pave over a surface area equivalent to Cyprus) Animal life loss due to plastic waste: 1 million birds and 100,000 marine mammals and sea turtles per year GHG emissions and material consumption caused by food and drink value chain use, with our consumption patterns having global impacts, in particular related to the consumption of animal protein Food waste (unnecessary resource use)</td>
<td>Current economic model generates environmental pressures</td>
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<tr>
<td>Environmental</td>
<td>Natural resources and climate system under pressure. Waste generation is stable in the EU, but generation of some waste streams like construction and demolition waste is increasing. Air quality standards exceeded in the EU’s most densely populated areas. Ecosystems damaged by airborne impacts Ecosystem services depleted or polluted Excessive ‘land take’ every year for housing, industry, roads or recreational purposes High GHG emissions and resource use caused by food and drink</td>
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<td>Frame reflection</td>
<td>Storyline and argumentation</td>
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<tr>
<td>Social</td>
<td>Ecosystem services depleted or polluted (social implications). The depletion of fish stocks: <strong>social impacts</strong> for coastal zones. <strong>Waste of food</strong> suitable for human consumption. Competition for access to resources with possible negative social impacts on third countries.</td>
<td>Number of working days lost due to air pollution induced illnesses Deaths caused by concentrations of fine particles in the EU and immediate neighbourhood (500 000 premature deaths/year)</td>
<td>Economic prosperity and wellbeing depend on natural capital, including ecosystems that provide us with a flow of essential goods and services</td>
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<tr>
<td>Economic</td>
<td>Resource-intensive economic system (that brought ‘growth in wealth and wellbeing’) Prices do not reflect the cost of externalities Market signals come too late to prevent unsustainable exploitation Short-termism of many businesses and the lack of awareness of the scale and urgency of challenge Organisation of value chains leads to excessive emissions and waste (e.g. food and drink) Environmental Climate change is projected to increase water shortages as well as the intensity and frequency of floods.</td>
<td>Relative increase of consumption of fossil fuels and materials in XX century Material consumption per capita per year (including data on wasted materials) Proportion of re-used or recycled solid waste (40%) and waste sent to landfill or incinerator (40 to 60%)</td>
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<tr>
<td>Technological and technical infrastructure</td>
<td>Water abstraction, land drainage and dams leading often to poor water quality with major adverse ecological effects, possible health impacts and leaving limited space for natural habitats. Weak water efficient technology diffusion</td>
<td>Material consumption per capita per year (including data on wasted materials) Whilst demand for food, feed and fibre may increase by 70% by 2050, 60% of the world’s major ecosystems that help produce these resources have already been degraded or are used unsustainably.</td>
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<tr>
<td>Policy and regulatory</td>
<td>Public policy unfit to deal with competing demands on resources Taxation favour resource use rather than increased employment in the economy Prices deliberately distorted by Environmentally Harmful Subsidies (EHS) which can lock in inefficient practices and hinder businesses from investing in green technologies Decision making: decisions with long-term implications (e.g. land use) taken without proper prior analysis of impacts</td>
<td>The scale of subsidies with potential negative impacts on the environment, notably in the areas of fossil fuels, transport and water, are estimated to be worth a global total of $1 trillion per year.</td>
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<td>Systemic deficiencies (root problems)</td>
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<td>Frame reflection</td>
<td>Storyline and argumentation</td>
<td>Facts and empirical evidence</td>
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<tr>
<td>Organisational</td>
<td>Lack of systemic management capacity to deal with natural resources (e.g. sea space)</td>
<td>Whilst demand for food, feed and fibre may increase by 70% by 2050, 60% of the world’s ecosystems that help produce these resources have been degraded or used unsustainably.</td>
<td>Reducing information asymmetry to boost innovation and open new markets (exchange of information within value chains and across sectors)</td>
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<td>Social</td>
<td>Consumption patterns of food (animal protein) have global impacts</td>
<td>'UNEP estimate that the annual financing needs for making the world economy more resource efficient are between US$1.05-2.59 trillion, mainly from private sources'</td>
<td>Preparing that transformation in a timely, predictable and controlled manner will allow us to further develop our wealth and wellbeing, whilst reducing the levels and impact of our resource use.</td>
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<tr>
<td>Economic</td>
<td>Investments in resource efficiency (argument: the growth of financing for clean energy shows how the shift in mindset is possible; unfamiliarity of financiers with resource efficiency). Stopping harmful subsidies to deliver economic, social and environmental benefits (but affected economic sectors, regions and workers to be assessed and protected)</td>
<td>'Improving the reuse of raw materials through greater 'industrial symbiosis' (where the waste of some firms is used as a resource for others) across the EU could save €1.4bn a year and generate €1.6bn in sales'</td>
<td>Policy believed to play key driving role in transition by mainly by setting the framework alleviating the current market failure. The transition is de facto about resetting markets to provide 'right' incentives. Market remains the key mechanism of the transition with prices playing central role.</td>
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<td>Reducing information asymmetry</td>
<td>Potential economic gains from resource-efficiency (Germany: in manufacturing 20%-30% cost savings and up to 1 million jobs; £23 billion the savings in the UK)</td>
<td>Strong underlying assumption of rational behaviour of both economic actors and consumers responding to newly provided incentives. A belief in a possibility of implementing change in a controlled and predictable way. Avoiding explicit statements on complexities and uncertainties linked with transition processes (instrumental framing to emphasise an economic opportunity rather than difficulties).</td>
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<td></td>
<td>Growth and innovation in natural capital (investment in green infrastructure to bring high returns)</td>
<td>'The average share of environmental taxation in total tax revenues in the EU has generally been declining since 1999, reaching a level of 6.3% in 2009-12. Good practices to demonstrate the shift in taxation is feasible (in some Member States a share of environmental tax revenues in total taxes of more than 10%, while at the same time preserving fiscal revenues)'</td>
<td>Mechanistic perception of change mechanisms underpinned belief in humankind’s capacity to steer its destiny and design its fate. Humankind can ‘orchestrate’ the planet.</td>
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<td>Improving management capacities (e.g. waste management)</td>
<td>Provisional indicators to monitor progress:</td>
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<td>Policy and regulatory</td>
<td>Lead indicator - 'Resource Productivity' - to measure improving economic performance while reducing pressure on natural resources; A series of complementary indicators on natural resources such as water, land, materials and carbon, that will take account of the EU’s global consumption.</td>
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<td>Coherent policy framework creating a playing field, where innovation in resource efficiency is incentivised and rewarded</td>
<td>'20% to 40% of Europe’s water is wasted and water efficiency could be improved by 40% through technological improvements alone.'</td>
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<td>Market-based measures to correct prices, fiscal incentives to support environmentally friendly consumption, demand measures to build markets by changing behaviour of buyers. Transparent framework to send clear signals to investors to create 'investor certainty' and better access to finance</td>
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<td>Better implementation of existing legislation and new, science-based standards to steer innovation. Mainstreaming of RE in various policy areas. Dialogue between policy makers, business and civil society</td>
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<td>Joint effort to define indicators and targets (2020: stakeholders mobilised to ensure that policy, investment, research and innovation are mutually reinforcing. Targets and indicators guide public and private decisions). Recognise the interdependencies between the economy, wellbeing and natural capital, and between policies.</td>
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<td>Innovation and research</td>
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<td>Incentives to lead to innovation; firms to benefit from small incremental changes to major technological breakthroughs</td>
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<td>Research to identify challenges and guide actions, including understanding of firm and consumer behaviour.</td>
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Scenarios of change (transition process)

- Strong underlying belief in humankind’s capacity to steer its destiny and design its fate. Humankind can ‘orchestrate’ the planet.
- Policy believed to play key driving role in transition by mainly by setting the framework alleviating the current market failure. The transition is de facto about resetting markets to provide ‘right’ incentives. Market remains the key mechanism of the transition with prices playing central role.
- Strong underlying assumption of rational behaviour of both economic actors and consumers responding to newly provided incentives. A belief in a possibility of implementing change in a controlled and predictable way. Avoiding explicit statements on complexities and uncertainties linked with transition processes (instrumental framing to emphasise an economic opportunity rather than difficulties).
- Mechanistic perception of change mechanisms underpinned belief in humankind’s capacity to steer its destiny. Humankind can ‘orchestrate’ the planet (e.g. reduction of information asymmetry to lead to change in behaviour; new collaborations between economic actors).

Incentives given central role in the process of change, but there is limited reflection on systemic barriers to reconfiguring existing networks and power relations. Lock-in mentioned in the context of discontinuing
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<td></td>
<td>Robust and understandable indicators to provide signals and measure progress in improving resource efficiency/ Substitution (example: research is needed to identify how improvements to reduce our dependence on mined phosphate)</td>
<td>‘Better construction and use of buildings in the EU would influence 42% of our final energy consumption, about 35% of our greenhouse gas emissions and more than 50% of all extracted materials; it could also help us save up to 30% water.’</td>
<td>Changing patterns of private and public purchases to increase demand for more resource efficient services and products</td>
<td>Harmful subsidies but not reflected in the other contexts. A mixed approach to knowledge and measurement approaches (a mix of positivist mode 1 ‘science to show the way’ and constructivist mode 2 implying the crucial role of stakeholders in agreeing on measurement and targets). The vision frames have dominant economic framing despite much stronger emphasis of environmental limits. Despite calling for a radical transformation, the vision does not have clear picture of the resulting radically changed societal system; it seems to be striving for resetting the parameters of the existing market economy. A major implicit assumption in the vision is that the economic transition is to (somehow) lead to radically changed consumer behaviour and wider understanding about interface between economic and nature (as the economy respects planetary boundaries). The vision frames have a degree of ambiguity. On the one hand, they call for an ambitious transition in terms of natural resource management practices (mentioning ‘planetary boundaries’) and it calls for the ‘fundamental transformation’ of behaviour. On the other hand, the vision embraces values underlying current economic model (belief in human ingenuity, technology, competitiveness and the notion of necessary growth). Policy plays a key role in transition. Most proposals rely on a significant policy input, notably adapting prices and fiscal systems. Despite envisioning such a difficult task for policy, the vision assumes virtually seamless implementation of the most radical policy suggestions.</td>
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<tr>
<td>Future vision</td>
<td>2050: the EU’s economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored. Fundamental transformation of economic system as well as producer and consumer behaviour. Growth and wellbeing decoupled from resource inputs due to increases in the value of products and services. Economy Increased competitiveness and new sources of growth and jobs through cost savings from efficiency innovations and better management of resources over their whole life cycle. A full recycling economy: product design integrating a life-cycle approach, better cooperation along the value chain, better collection processes and regulatory framework. New business models (leasing models) to satisfy consumer needs with less lifecycle resource use. Policy and regulatory Incentives for resource efficiency by adapting prices and environmental information. Min. environmental performance standards to remove the least resource efficient products. 2020: Market and policy incentives that reward business investments and innovation in efficiency. Companies and investors can measure lifecycle resource efficiency. 2020: EHS phased out, regard to the impact on people in need. 2020: RE shared objective of the international community.</td>
<td>‘If we carry on using resources at the current rate, by 2050 we will need, on aggregate, the equivalent of more than two planets to sustain us, and the aspirations of many for a better quality of life will not be achieved’. ‘It has been estimated that by 2050, the global business opportunities dependent on biodiversity and the ecosystem services it underpins, could have a value of between $800 and 2.300 billion per year.’</td>
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| Future vision    | 2020: a major shift from taxation of labour towards environmental taxation (substantial increase in the share of environmental taxes in public revenues)  
2020: Waste legislation is fully implemented.  
2020: natural capital and ecosystem services valued and accounted for by public authorities and businesses.  
2020: EU policies take into account their impact on land use in the EU and globally (no net land take by 2050)  
2020: incentives for healthier and sustainable food production and consumption; 20% reduction in food chain's resource inputs.  

**Environmental**  
2050: All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored. Environmental assets from which the EU benefits or sources its supplies secure and managed within maximum sustainable yields. The loss of biodiversity in the EU and the degradation of ecosystem services halted and, as far as feasible, biodiversity restored (2020).  
Sustainable food production and consumption will have driven a 20% reduction in the food chain's resource inputs. Disposal of edible food waste halved in the EU.  

**Social**  
**Consumer transformation of consumer behaviour**  
High consumer demand for more sustainable products and services. Purchasing choices to stimulate companies to innovate and to supply resource efficient goods and services.  

**Innovation and research**  
2020: scientific breakthroughs and sustained innovation efforts dramatically improved how we understand, manage, reduce the use, reuse, recycle, substitute and safeguard and value resources.  
Alternative water supply options used when cheaper savings opportunities are taken  
The impacts of droughts and floods minimised with adapted crops, increased water retention in soils, efficient irrigation. |

‘If we are to reach the state of no net land take by 2050, following a linear path, we would need to reduce land take to an average of 800 km2 per year in the period 2000-2020. In many regions soil is irreversibly eroded, or has a low content of organic matter.’ |

Vision frames of policy impacts base its logic on a very rational (controllable) view of change process based on ‘right’ incentives to business and (less convincingly) to consumers. It fails, however, to indicate incentives for policy makers and politicians who are to introduce the changes. The political dimension of the transition is the major gap in the narrative framework of the Roadmap.  
The vision frames are stronger about the need to protect nature and recognise planetary limits. The notion of growth is subjected to environmental criteria of constraints and limits. It shifts stronger to a global perspective (from Euro-centric perspective in setting problem frames).  
Strong assumption of rational behaviour of both economic actors and consumers responding to newly provided incentives. Mechanistic perception of change mechanisms. There is an implicit assumption that the process of such societal learning takes place in a rational and controlled way (in a spirit of never ending ‘win-win’).  
Rationality is also attributed to international relations by assuming emergence of international alignment on resource issues (probably also based on a rational discourse on markets and better metrics).  
Assumption of scientific breakthroughs underpinned by the belief in humankind’s progress and ingenuity. Implicit belief in genetic engineering (adopted crops) as a solution to problems.
9.2.3. Internal narrative coherence of the Roadmap

Shallow argumentative coherence

The overall narrative reveals dominant economic and market-centric frames in which priority given to economic dimension of problems. Environmental problems are often framed as economic problems and given ‘price tag’. A further analysis reveals this was an intended frame design to align with and attract business and economic decision makers (see Chapter 10). The overall Roadmap’s narrative is thus designed to be internally coherent in terms of argumentation and attempts to reconcile competing frames of economic growth and planetary limits. Despite predominantly economic frames the Roadmap does not leave out implicit deep ecological concerns (e.g. data on premature deaths, animal deaths due to waste). The narrative coherence is attempted by translating the environmental concerns into economic language of opportunity and threat.

This is based on an assumption of the possibility to rationally design and implement a win-win transition strategy that delivers both economic and environmental benefits. Changing economic model is to resolve fundamental environmental problems or at least reduce the environmental impact. The narrative is explicit about the need to protect nature but the implicit argument is that the environment should be protected above all as something economically valuable. The Roadmap performs an argumentative extension of the economic frame by arguing for attributing ‘right’ economic value not only to tradable commodities but also to eco-system services and biodiversity.

…and unresolved inconsistencies, narrative gaps and ambiguities

With its strong economic perspective, the overall argumentation may seem coherent; however, a deeper analysis of the underlying assumptions of the narrative reveals areas of ambiguity and or even implicit internal conflict. The policy argumentation is based on a number of assumptions that underlie the dominant problem frames:

− Nature is symbolically reduced to a economically exploitable factor - a commodity - which does not include other types of value and implicitly implies substitutability of nature with other inputs of similar economic value;

− Vague stance towards absolute decoupling (consequence of the above);

− Deeper assumptions of the hierarchical relationship between humankind and nature where the latter is there to serve the former;
– Weak concern with the global impacts, which undermines the planetary dimension of resource flows and associated environmental presses and reveals the overriding concern with the economic competitiveness of Europe.

These are strong assumptions that in looked at carefully may question the very possibility of reconciliation of the strong sustainability position with the narrative of the Roadmap. The Roadmap may refer to ensuring that planetary limits are respected in its future vision. The above assumptions, make it clear, however, that reconciling predominantly economic arguments in the Roadmap with deeper environmental discourse is but rhetorical. Planetary limits discourse argues for assuring protection of nature by introducing the concept of safe operating space. This implies the notion of absolute limits of resource extraction and nature protection where economic rationale does not reach. Simply put, there are elements of nature which are priceless. Making the nature part of the economic system, regardless the intentions, subjects it to the market valuation and market dynamics. This is unacceptable from the view of the strong sustainability.

On the other hand, the document includes statements that suggest the lack of overall consensus of predominantly economic frames of the problem. For example, implicit ethical concern emerges in criticising edible food waste and meat consumption (animal protein) in relation to unsustainable food consumption patterns. This concern is not only of economic nature which shows that the Roadmap’s discourse implicitly opens up to broader understanding of the agenda.

Analysing the assumptions on the transition towards the vision reveals a major narrative gap. According to the Roadmap, societal transition and system innovation are possible to be rationally designed, planned and channelled by policy framework. The perception of change is very rational as is perception of change agents, which are expected to predictably react to designed incentives. The transition is de facto about resetting markets in order to provide ‘right’ incentives with prices playing a central role. Humankind can, the Roadmap seems to argue, ‘orchestrate’ the planet (e.g. reduction of information asymmetry to lead to change in behaviour). This mechanistic perception of social change is at odds with what we know from policy studies (see Chapter 2), societal learning and organisational change (see Chapter 3), social psychology literature on the long-known phenomenon of bounded rationality (see for example Gigerenzer and Selten 2002, Kahneman 2003) and with many more fields of social science (evolutionary economics, science and innovation studies etc.).
The Roadmap’s narrative is thus based on simplistic causal inferences and claims about the wider societal shift towards the vision. Despite calling for a radical transformation and change of behaviour, the vision does not have a clear picture of the associated changes in the societal system. The narrative does not extend to discussing the issue of non-economic determinants of consumption and production and to the inherent ‘design uncertainty’ of any major change. This is a fundamental gap in the Roadmap’s narrative.

In general, comparing problem and vision frames of the Roadmap reveals fundamental ambiguity. The vision calls for an ambitious transition in terms of natural resource management practices calling for the ‘fundamental transformation’ of behaviour. In the same time, it is deeply rooted in dominant values and meanings of the current economic model, including the notion of growth and competitiveness and emphasising the belief in progress and human ingenuity and technology. While this narrative inconsistency reveals deep ambiguities, it can be partly explained by the instrumental use of reframing and the political context of the Roadmap.

**9.2.1. Discursive affinity: external coherence of the Roadmap’s narrative**

The Roadmap resonates in different ways with all the analysed meta-narratives. The document is intentionally framed to reconcile dominating resource efficiency narratives. The narrative links growth-oriented discourses of circular economy and material efficiency as well as the notion of absolute limits and sufficiency economy. In terms of the external coherence with formal policy narratives, the Roadmap aligns with the broader policy frames set by *Europe 2020* strategy and the Flagship Communication that reframed the issue of resource efficiency.

In terms of setting problem boundaries, the Roadmap is very close to the circular economy narrative that also covers the entire economic system and broadly understood natural resources. This narrative is much broader than technical material efficiency. There is, however, only little reflection in the Roadmap on the wider social models, lifestyles and underling value systems as in sufficiency economy.

**Problem and vision frames**

In terms of perception of the first-order problems, the Roadmap is very similar to all the meta-narratives emerging in EU discourse at the time of enquiry, but the sufficiency economy narrative. It departs from economic problem pointing to high prices of materials and the prospect of material scarcity as the most burning resource-related issues. The predominant economic rhetorical frames of most of the narratives were influenced by the
wider economic and political context. Environmental concerns were also among key problems, however, at the time of research they were not emphasised as strong as the economic dimension. Even environmental NGOs, although cautious, recognised the need to build their narratives around economic concerns.

The analysis of perceptions of systemic deficiencies leading to first-order problems reveals more fundamental differences. The Roadmap’s narrative points to market and policy failures as the key systemic problems of economic model that leads to unsustainable use of resources. This understanding is close to the circular approach, although the latter has a lesser focus on policy failure and concentrates more on suggesting changes to the overall economic model and business models. The Roadmap clearly dissents from resource-intensive economy that sees major issue with the (whether technological or regulatory) limits to access to primary materials.

The sufficiency economy sees the main problem in the social and cultural approach to consumption. The Roadmap’s relation to this dimension is ambivalent. It strives for more sustainable consumption patterns and changes in consumer behaviour. The Roadmap approaches behavioural change as a rational process that can be predictably changed by providing right incentives and information. There is no recognition of underlying determinants of behaviour and social practices embedded in institutions, culture or belief systems. In this sense, the systemic problem with consumption patterns is the same as economic problem. Sufficiency economy has a different approach recognising other drivers of behavioural change such as belonging to community and the recognition of inherent value of nature.

The Roadmap’s vision strongly aligns with the vision of circular economy that focuses mainly on revamping the economic model. It is a broader vision from the narrow perspective of the resource-intensive and material-efficient economies, which operate within parameters of the current system and suggest mostly ‘techno-fixes’ or regulatory adaptation. The distinctive feature of the Roadmap is pointing to the central role of policy framework in enabling the transition.

**Underlying normative assumptions and deep beliefs**

The normative assumptions and deep beliefs are often implicit layers underlying narrative frameworks. In case of resource efficiency debate they may include the perception of limits or abundance of natural resources and the relation between humankind and nature.
The discourse in the Roadmap appears to be shifting towards acceptance of the notion of limits to resource use. The document explicitly refers to the concept of the ‘safe operating space’ (Rockstrom and Steffen 2009) and makes strong statements about recognising sustainable limits in its vision. On the other hand, by not explicitly referring to absolute decoupling the text opens to various interpretations of ‘limits’ and approaches them differently depending on the natural resource in question. The narrative is most ambivalent about limits when referring to resources that are also tradable commodities but brings in stronger sustainability messages in case of resources such as land, water or eco-system services. This vagueness suggests the question of ‘limits’ remains contentious, especially when it is perceived as a possible factor constraining economic activity. Furthermore, the outspoken support for monetising all natural resources and almost exclusive focus on ‘economic value’ in the document can be considered a fundamental problem from the strong sustainability point of view. Monetising may be de facto permission to consider nature substitutable, which would make the limits negotiable and open to constant redefinition.

Underlying assumptions on the relationship between humankind and nature reveals deeper discursive layer of narrative frameworks. The relations vary from hierarchical relationship in which humankind is considered superior to nature and de facto separate from eco-system to the other extreme, in which humanity and nature are part of one system. Despite following the circular view of economy, the Roadmap appears to be firmly rooted in the hierarchical worldview in which nature is subordinate to humanity and progress. The perspective of mutual respect between humans and nature or valuing nature for its non-economic value (sufficiency economy) is absent from the narrative.

Figure 20 presents an overview of areas of possible convergence, dissent and ambiguity between the Roadmap and the meta-narratives of resource efficiency. Such comparisons are useful to identify the areas of ambiguity and gaps in a policy narrative. These can reveal potentially contentious or yet unexplored areas – or gaps - in the investigated policy fields.
<table>
<thead>
<tr>
<th>First-order problems</th>
<th>Resource-intensive economy</th>
<th>Material-efficient economy</th>
<th>Circular economy</th>
<th>Sufficiency economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem frames</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Affinity</strong>: high prices of resources (all narratives but sufficiency economy)</td>
<td>High prices of resources</td>
<td>High prices of resources</td>
<td>High prices of resources</td>
<td>Excessive consumption</td>
</tr>
<tr>
<td><strong>Dependency</strong>: dependency on imported materials</td>
<td>Dependency on imported materials</td>
<td>High share of material cost</td>
<td>Waste streams</td>
<td></td>
</tr>
<tr>
<td><strong>Sustainability</strong>: difficult access to natural resources</td>
<td>Difficult access to natural resources</td>
<td>Low material productivity</td>
<td>Environmental impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Future vision</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Affinity</strong>: economic systems based on the linear model of unsustainable resource-intensive growth (see circular economy)</td>
<td>Environmental protection is too stringent given extraction technologies are clean and safe. Technologies not sufficiently developed to extract feasible resources. Population growth and economic development in emerging economies</td>
<td>Production systems based on the inefficient model of material-intensive processes and products</td>
<td>Economic systems based on the linear model of unsustainable resource-intensive growth</td>
<td>Social and economic systems based on the model of unsustainable growth and consumption-based culture.</td>
</tr>
<tr>
<td><strong>Dependency</strong>: regulation as a barrier to access resources (resource-intensive economy)</td>
<td>Better access to materials: Need to innovate technologies to get access to so far unexplored resources and territories. Policies to support better access to resources and frame economic relations with resource-rich countries to allow access to resources. Secondary and renewable resources as an alternative but in a longer term.</td>
<td>More productive use of materials: Mix of incremental (but widely diffused) and radical technological and non-technological innovations</td>
<td>Mismanged material flows, business models and value chains, badly designed products</td>
<td>Market has failed to account for negative environmental effects. Population growth and economic growth in emerging economies</td>
</tr>
<tr>
<td><strong>Ambiguity</strong>: unsustainable consumption-based culture (sufficiency economy)</td>
<td>Technology-based economy and society. Technological innovation ensures that problems related to access to resources are resolved. Benefits from efficient extraction allow to withstand competition and to test alternative technologies. Material growth and high consumption.</td>
<td>Technology-based economy society. Technological and non-technological innovations ensure that problems related to inefficient use of resources are resolved. Relative decoupling and growth thanks to high material productivity</td>
<td>Circular use (re-use, recycling, up cycling) of resources: system innovation to support performance-oriented business models and closed-loop systems of production and consumption (need for both technological and non-technological innovations). Policies to support system innovation and to influence resource pricing</td>
<td>Strong sustainability in use of resources: social innovation to support sustainable lifestyles and limited consumption. System innovation to support performance-oriented business models and closed-loop systems. Policies (including quotas, targets and pricing) to protect nature and support resource-efficient social and system innovation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem frames</th>
<th>Resource-intensive economy</th>
<th>Material-efficient economy</th>
<th>Circular economy</th>
<th>Sufficiency economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario of change</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Affinity</strong>: Policies to correct resource pricing and support innovative technologies (see material-efficient and circular economy)</td>
<td>High prices of resources</td>
<td>High prices of resources</td>
<td>High prices of resources</td>
<td>Excessive consumption</td>
</tr>
<tr>
<td><strong>Dependency</strong>: insufficient economic systems</td>
<td>Dependency on imported materials</td>
<td>High share of material cost</td>
<td>Waste streams</td>
<td></td>
</tr>
<tr>
<td><strong>Ambiguity</strong>: insufficient economic systems</td>
<td>Difficult access to natural resources</td>
<td>Low material productivity</td>
<td>Environmental impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Gap</strong>: the lack of substantial reflection on alternative transition pathways and different types of innovation</td>
<td>Key resources available mainly in developing and emerging countries</td>
<td>Dependency on imported materials</td>
<td>Dependency on imported materials</td>
<td>Difficulty access to natural resources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vision frames</th>
<th>Resource-intensive economy</th>
<th>Material-efficient economy</th>
<th>Circular economy</th>
<th>Sufficiency economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Future vision</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Affinity</strong>: Economy and society re-organised to close the loops of material flow (see circular economy)</td>
<td>Technology-based economy and society. Technological innovation ensures that problems related to access to resources are resolved. Benefits from efficient extraction allow to withstand competition and to test alternative technologies. Material growth and high consumption.</td>
<td>Technology-based economy society. Technological and non-technological innovations ensure that problems related to inefficient use of resources are resolved. Relative decoupling and growth thanks to high material productivity</td>
<td>Economy and society re-organised to close the loops of material flow. Technological and non-technological innovations ensure that problems are resolved. Absolute decoupling and growth thanks to system innovation.</td>
<td>Humanity uses resources only when needed to satisfy human needs. Key role of local decentralised economic and social models based on self-sufficiency. Absolute decoupling and steady state economy.</td>
</tr>
<tr>
<td><strong>Dependency</strong>: Material growth and high consumption (resource-intensive economy)</td>
<td>High prices of resources</td>
<td>High share of material cost</td>
<td>Waste streams</td>
<td></td>
</tr>
<tr>
<td><strong>Ambiguity</strong>: Vision leans towards the notion of absolute decoupling; radical ‘behavioural change’ will imply changing consumption patterns but unclear in what way</td>
<td>Dependency on imported materials</td>
<td>Low material productivity</td>
<td>Environmental impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Gap</strong>: reflection on alternative social and economic models (sufficiency economy)</td>
<td>Key resources available mainly in developing and emerging countries</td>
<td>Environmental impacts</td>
<td>Dependency on imported materials</td>
<td>Difficulty access to natural resources</td>
</tr>
</tbody>
</table>

**Figure 20. The EC Roadmap and meta-narratives of resource efficiency**
9.3. Reframing resource efficiency in the Roadmap

The focus of this chapter is to reflect on the nature and extent of the reframing of resource efficiency of the Roadmap. It reflects whether and to what extent the overall scope, argumentation and underlying assumptions in the document differ from the pre-existing formal policy narrative of resource efficiency. The first part compares the policy narrative of the Roadmap to the 2005 EC Thematic Strategy documents. The second part discusses the nature and degree of the reframing in a wider policy context.

9.3.1. Comparing the Roadmap to the 2005 EU Thematic Strategy

The 2005 EU Thematic Strategy and the Roadmap both address the challenge of resource efficiency. This comparison is conducted to provide an additional analytical dimension to the overall examination of the reframing of EU resource efficiency policy. As the documents were developed with different policy purposes at different times and in different political contexts, their direct comparison should be regarded with caution. This section needs to be read alongside chapters placing the Roadmap’s narrative in the wider discoursive context.

Both the Roadmap and the Thematic Strategy recognise environmental and economic challenges linked to the challenge of resource efficiency. They both refer to unsustainable consumption patterns that lead to – or are likely to cause future - environmental impacts. They both recognise economic implications and opportunities linked to improved ‘resource efficiency’ (and ‘eco-efficiency’ in the Thematic Strategy). The documents both emphasise the global dimension of the challenge and the dependency of European economies on renewable and non-renewable materials originating outside the EU. While neither document questions economic growth as an overall objective of EU policy, the documents revealed different understanding of the scope of resource efficiency, notably in relation to the economic and business dimension of the challenge.

The Thematic Strategy approaches resource efficiency mainly from the point of view of reducing environmental impacts of economic growth. The Strategy does mention economic opportunities linked to resource efficiency, but the Roadmap gives a much stronger emphasis to economic opportunity with its systemic implications for predominant economic models and policies alike. The sought for change in the Roadmap’s narrative becomes a business strategy offering business opportunities to companies to both reduce
the current and avoid future costs as well as, importantly, to develop and implement innovation and new business models. Just as the Thematic Strategy the Roadmap frames the challenge of resource efficiency as a win-win strategy but places far greater emphasis on an economic opportunity. The document builds a business case for resource efficiency.

The Roadmap’s narrative is explicit about the need of a systemic change referring to new economic models such as circular economy. This is a significant step-up of ambition compared to the Thematic Strategy of 2005, signalling an attempt of radical reframing of the scope of the challenge. The challenge is not anymore mainly about reducing information asymmetry by improving metrics. It attempts to place resource efficiency at a centre of a major socio-economic transition redefining current economic system and business models.

Similarly in terms of the policy implications, the Roadmap goes much further than the Thematic Strategy. The Strategy concentrated on developing precise metrics and evidence base in order to better focus policy action and to ensure the most cost efficient implementation of environmental protection measures for public authorities and economic operators (EC 2005). The strategy had an ambition to integrate ‘environmental concerns’ into other policy fields mainly through developing an ‘analytical framework’ that allows for factoring in environmental concerns into public policies.

The Roadmap recognises this need and hails achievements of traditional environmental policy but it also explicitly admits that the traditional environmental policy failed to meet a systemic challenge of resource efficiency. It calls for a radical rethinking of environmental policy arguing that it also needs to offer positive incentives to enable the societal transition to a more resource efficient economy and society. This reveals a higher ambition for public policy; it offers a vision of a new generation of environmental policy that is no longer preoccupied mainly with environmental protection but also offers positive instruments to steer economic and industrial transformation.

Another symbolic difference between frames of both documents is an explicit recognition of the concept of planetary boundaries in the Roadmap. The 2005 Thematic Strategy recognised the unsustainable patterns of resource consumption and stated that the continuation of the current trends would lead to significant impacts. At the same time, however, it played down the impacts of scarcity, indicating that the market mechanisms and technology advancement have provided an answer to the supply problems in the past. The Roadmap recognises that scarcity of some resources (notably water and land take)
have or may imminently lead to problems that the market and technology alone will not solve. The document frames increasing waste generation of some waste streams as a problem. Construction and demolition waste as well as food waste are flagged as unnecessary waste. The document extends the scope of the challenge by including passages on the damage of eco-system services caused by resource use and by harmful emissions (notably air pollution and GHG emissions). The narrative recognises the systemic nature of the problem that needs a systemic change to be avoided.

Despite these differences in scoping the challenge, both documents rely on a similar underlying deep worldview regarding the socio-economic model and the perception of societal transitions. Neither document questions the economic growth as a basis of an economic model. Both documents are rooted in the rationalistic worldview based on an assumption of rational behaviour of economic operators and policy actors foreseeably reacting to policy and market incentives. The process of socio-economic change is thus portrayed as controllable and manageable.

Figure 21 overviews differences and similarities of frames in the formal policy narratives in the 2005 EU Thematic Strategy and the Roadmap using a POLFRAME matrix.
Figure 21. Reframing resource efficiency: the Roadmap versus the Thematic Strategy

<table>
<thead>
<tr>
<th>Frame reflection</th>
<th>Storyline and argumentation</th>
<th>Facts and empirical evidence</th>
<th>Causal assumptions</th>
<th>Underlying cognitive and normative determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Key changes of arguments, claims and challenges framing empirical evidence and normative assumptions</td>
<td>Changes of interpretation and meanings of facts, empirical evidence and trends</td>
<td>Changes of assumptions on historical and future causal mechanisms</td>
<td>Changes of assumptions underlying arguments, evidence and causal claims</td>
</tr>
<tr>
<td>Narrative</td>
<td>Differences</td>
<td>Differences</td>
<td>Differences</td>
<td>Differences</td>
</tr>
<tr>
<td></td>
<td>the Roadmap has a stronger focus on economic symptoms, emphasising evidence on rising costs of materials and price volatility of commodities that contributes to higher cost for business and has direct implications for competitiveness of the European economy;</td>
<td>the Roadmap references more evidence sources including research projects and reports by private companies;</td>
<td>the Roadmap emphasises that market mechanisms and price signals cannot prevent environmental degradation and excessive resource consumption;</td>
<td>Stronger overall economic framing of the problem in the Roadmap;</td>
</tr>
<tr>
<td></td>
<td>the Strategy places a stronger emphasis on environmental impacts as first-order problems;</td>
<td>the Roadmap refers to studies quantifying economic costs and opportunities related to resource efficiency trends of different resources and waste streams;</td>
<td>the Roadmap indicates that current organisation of value chains contributes to excessive waste and emissions;</td>
<td>The Roadmap has an explicit interpretation of the problem as a systemic challenge related to the organisation of the overall economic system including producer and consumer behaviour;</td>
</tr>
<tr>
<td></td>
<td>Environmental impacts on the natural resource base;</td>
<td>while the Thematic Strategy strives for measurement of impact, the Roadmap recognises the importance of measuring environmental pressures;</td>
<td>Similarities</td>
<td>Explicit recognition of a limited carrying capacity of the planet (resource constraints and planetary boundaries);</td>
</tr>
<tr>
<td></td>
<td>Differences</td>
<td>Differences</td>
<td>Differences</td>
<td>Differences</td>
</tr>
<tr>
<td></td>
<td>the Roadmap has a broader understanding of systemic problems related to resource efficiency pointing to a resource-intensive economic model that underlies unsustainable consumption patterns;</td>
<td>the Roadmap explicitly recognises that market mechanisms and price signals are insufficient to prevent unsustainable exploitation of natural resources (the Thematic Strategy indicated that price mechanisms historically resolved scarcity issues);</td>
<td>the Roadmap explicitly recognises resource constraints and planetary boundaries;</td>
<td>Economic growth as such not questioned;</td>
</tr>
<tr>
<td></td>
<td>the Roadmap explicitly recognises market constraints and planetary boundaries;</td>
<td>- The Roadmap explicitly recognises resource constraints and planetary boundaries;</td>
<td>- Both documents refer to studies with absolute data and trends of material consumption per capita.</td>
<td>- Nature as economically exploitable factor and considered primarily a provider of goods and services, which implies a hierarchical relation: humankind exploits nature to achieve prosperity;</td>
</tr>
<tr>
<td></td>
<td>Similarities</td>
<td>Similarities</td>
<td>Similarities</td>
<td>Consumerist value system not questioned.</td>
</tr>
</tbody>
</table>
|                  | Unsustainable patterns of the use of natural resources causing growing environmental impacts. | Unsustainable patterns of the use of natural resources causing growing environmental impacts.
<table>
<thead>
<tr>
<th>Frame reflection</th>
<th>Storyline and argumentation</th>
<th>Facts and empirical evidence</th>
<th>Causal assumptions</th>
<th>Underlying cognitive and normative determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenarios of change (transition process)</td>
<td>Differences  - the Roadmap includes an ambitious vision of a global economic transformation based on a strong win-win strategy emphasising the role of business; the scope of the Thematic Strategy is more modest;  - the Roadmap has a broader understanding of the role of policy referring to the role of diverse policy instruments tackling market and system failure; the Strategy focused mainly on metrics to overcome information asymmetries and improve functioning of other policies;  - A more radical role of policy in transition in the Roadmap including adapting prices and fiscal systems;</td>
<td>Differences  - the Roadmap references studies focusing on future market and economic costs and potential benefits of improving resource efficiency;</td>
<td>Differences  - the Roadmap explicitly refers to a systemic change;</td>
<td>Differences  - The Roadmap symbolically recognises resource constraints and planetary boundaries and calls for a radical transformation of consumption and production patterns which may be interpreted as an implicit recognition of the fundamental dependency of humanity on nature;</td>
</tr>
<tr>
<td>Vision frames</td>
<td>Similarities  - Decoupling of economic growth from environmental impacts a priority;  - The transition process requires a long term perspective.</td>
<td>Similarities  - Projections of demand for natural resources assuming the current consumption patterns and continued economic growth.</td>
<td>Similarities  - Simple theory of change relying on a linear chain of events</td>
<td></td>
</tr>
<tr>
<td>Future vision</td>
<td>Differences  - The Roadmap includes an explicit 2050 vision whereas the Thematic Strategy has no formal vision;  - The Roadmap includes diverse dimensions of transition not mentioned by the Thematic Strategy including new incentives for increasing consumer demand for sustainable products, biodiversity, eco-system services and green infrastructures, business models such as leasing etc.  - The Roadmap’s vision does not limit itself to preventing environmental impacts but also sees restoration of biodiversity and eco-system services as a goal;</td>
<td></td>
<td>Differences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Similarities  - Sustainable use of resources as a key ingredient of long-term prosperity.</td>
<td></td>
<td>Similarities</td>
<td></td>
</tr>
</tbody>
</table>
9.3.2. RE Roadmap as a new frame of environmental policy

Why ‘resource efficiency’?

Resource efficiency became a key political priority for DG Environment in early 2010 when the new Commission started its term. The initial frames of the challenge were set by *Europe 2020* strategy (EC 2010) that positioned resource efficiency as an economic issue and set the overall objective of decoupling. Interviews point to a number of reasons why resource efficiency moved up the political agenda, notably the political choice and the new evidence on economic threats and opportunities related to material and energy efficiency.

From the political point of view, at the time when *Europe 2020* was drafted, resource efficiency appeared easier to adapt as a part of the new post-crisis recovery frames than climate change or any other environment-related issue. Resource efficiency as a positive pro-growth agenda was to resonate better with business and economic decision makers than climate change. As one of the officials argued, climate change ‘has been in the limelight for some years’ and did not translate into economic opportunity as easily as the resource issue (EI12 2012). Figure 20 introduces selected citations from interviewed stakeholders comparing resource efficiency with the climate change agenda.

The phrase ‘resource efficiency’ was selected as it did have a ‘history’ within DG Environment, notably as one of the central themes of the 2005 Thematic Strategy. This was one of the reasons why ‘green economy’ was not picked as a main term. Although the agenda is strongly influenced by ‘green economy’ and ‘green growth’, it was believed those terms might not resonate well with the usual audience of DG Environment and might be considered as encroaching on other policy portfolios. As for the organisational dimension, resource efficiency was set to become a new priority within DG Environment after DG Climate Action, formerly a directorate with DG Environment, was established as an independent DG in February 2010. One Commission official argued that this organisational split was ‘an immediate political incentive’ to prioritise resource efficiency within DG Environment that needed a new ‘leitmotiv’ for the environment portfolio (EI12 2012). Until then climate change was one of the key political areas in DG Environment, which at the time of international climate negotiations would guarantee high visibility and political presence of the DG both within the Commission and in international negotiations. The removal of a key directorate from DG Environment had significantly reduced its portfolio and caused ‘organisational identity’ crisis at the DG.
Many stakeholders compared the resource efficiency agenda to the climate change debate. One of the key differences between the two debates is the role and status of scientific knowledge. Most respondents argued that science played a less important role in the resource efficiency agenda than it had gained in the climate discussion.

One national policy maker noted:

‘The larger challenges came with the climate change and biodiversity debate and when scientific assessments became more important (e.g. arrival of more complex models). There was, however, common understanding of the trends and common understanding of the need to do something and reach political agreement. Resource efficiency is a different issue. On the climate change, there is a scientific knowledge, which is a driver. Resource efficiency agenda is shaped mainly by economic drivers. There is less of scientific knowledge, but more of economic rationale.’ (MS2 2012)

Many stakeholders consider the direct economic drive and economic frames of the resource efficiency a clear advantage when compared to climate change. One expert argued:

‘Resource efficiency debate is more open for economic and social concerns because of the ‘cost issue’ as well as it links better to development agenda’ (EXP2 2012)

Stakeholders also pointed to the feeling of urgency characterising resource efficiency challenge, which some see as a contrast with climate change where challenges are considered in a very long-term:

‘Resource efficiency is in many ways more urgent. If you run out of resources or the prices rise considerably, the economy will be hit very strongly. The effects of CO2 emissions are delayed in time and less imminent for business. In the short term, resource efficiency is a much stronger driver.’ (EI9 2012)

Resource efficiency is a less established field in a scientific community than climate change. Most experts recognised that the evidence for resource efficiency is more diffused and incomplete, but in the same time indicated that there is a sufficient (directional) evidence to provide a strong rationale for action.

There were also few voices raising concern about the rationale of policy intervention and the scientific evidence on impacts of the resource use in comparison to the climate change agenda:

‘With regard to the climate policy, there is a lot of evidence that CO2 emissions lead to catastrophic impacts. The problem here is not really uncertainty, but rather the time and geographical dimensions of impact. The justification of environmental policy comes mainly from impacts (…)’

From the economic point of view, when resource prices rise there may be new suppliers of raw materials. There is always some environmental impact of this, but this problem can be solved. Compared to the climate case, where there are catastrophic outcomes, it doesn’t seem to be a comparable problem’ (EXP9 2012)

Several stakeholders considered the role of science in driving a political agenda a potentially contested topic. Despite welcoming scientific evidence, some politicians and academic argued that making the policy issue too dependent on the scientific data may turn against the case. One of them indicated that ‘scientific frames’ made climate change agenda less effective in mobilising societal action. Most stakeholders frame resource efficiency very differently: economic case is emphasised much stronger than environmental impacts. Several respondents noted that in the EC context resource efficiency agenda started with frames similar to climate change. The 2005 Thematic Strategy, which focussed mainly on research, resulted according to some in ‘paralysis by analysis’ (EI8 2012, EXP7 2012). The new Europe 2020 frames gave the topic a new life.
One of the business stakeholders argued:

‘As the climate change debate has lost a bit of its momentum, resource efficiency has a chance to become ‘next climate change’ or simply ‘replace climate change’ as the two agendas overlap’ (BIZ1 2012).

Most stakeholders, notably politicians, academics and business, consider the two agendas as siblings as they share the same objective of sustainable development, but use different frames and ways to mobilise the response. Some hope that the approach to framing resource efficiency is based on the lessons learned from the mistakes of climate change policy.

Developments at the level of the international organisations were also of key relevance of the drafting process and supporting the framing of the issue. The Roadmap benefited from data and arguments used in the ‘Green Growth Strategy’ of the OECD (2011) and the UNEP’s ‘Green Economy’ report (2011). Influential for the reframing were studies by international business organisations (notably the 2050 vision of the WBCSD), consultancies (see McKinsey 2011) and private investors. According to the interviewed officials close to the policy process, the evidence and arguments put forward by the progressive economic actors were among key motivations to reframe resource efficiency agenda.

As one of the EC policy makers put it:

‘A big factor in it was long term data on resource pressures globally and the fact that some business, especially big ones having a luxury of having people thinking in backrooms thinking strategically, were getting concerned about these global pressures’ (EI12 2012)

Resource efficiency appeared a ‘natural’ candidate to become the top priority for many policy makers and officials: it had a clear economic dimension that made it ‘Europe 2020 proof’ and had a track record at the DG, notably within 6th EAP and its Thematic Strategy.

Reframing and ‘frame reflection’ in the Roadmap design process

The process of policy reframing was by no means smooth or without contention. The scale and ambition of reframing meant that the process became relevant for both internal politics within DG Environment, relations between various Commission services as well as relations with external stakeholders. The challenge DG Environment faced was thus to construct a consistent policy narrative around the new issue that would both reflect the past work of the DG as well as exploit the opportunity of being among key priorities of the new

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11 Jeremy Grantham was invited to present his views in the framework of the resource efficiency debate at the EC. Grantham, apart from being a multi-billionaire and investor, is known for his pro-environmental stance. He funds many environment-related activities and studies. Since 1977, together with his wife he has run the Grantham Foundation for the Protection of the Environment with the mission to protect and improve the health of the global environment (http://www.granthamfoundation.org/)
EU strategic framework. This was challenging since resource efficiency, now among the EU priorities, cut across many policy areas, some of which were not in the usual DG Environment’s space of operation and influence. The task, if taken up with all its implications, meant moving out from the comfort zone of established environmental policy areas and making resource efficiency narrative persuasive for other policies.

Policy stakeholders connected reframing of resource efficiency with the wider systemic change the environmental policy faced. ‘The golden age of environmental policy is over’ as one of the officials put it (EI2 2012). According to interviewed policy stakeholders we could witness shift from a traditional environmental policy focussed on environmental protection towards a policy addressing relations between economy and environment. This new policy was in line with the ‘green economy’ discourse. It was to focus on the ‘anthropogenic dimension that is relations between humans and economy and environment’ and to ask ‘how to change economy?’ (EI1 2012).

Under the new framing the political focus of environmental policy was to change from regulating economic actors towards improving the underlying economic model. Policy officials saw the need for this shift – or rather a ‘policy extension’ - in the context of the post-crisis recovery both to assure that environmental policy stays ‘in the political game’ as well as to attempt deeper changes in the rationale and scope of environmental policy. While the first stand of the policy continues ‘in the limelight’, the political and policy focus extends to the second strand.

Testimonies from the highly ranked Commission officials confirm that emphasis on economic frames of resource efficiency in the document was intentional and targeted at economic actors both within the EC (notably DG Enterprise) and outside the institution (especially business and economic ministries in Member States). One EC officials explained the agenda was addressed to economic decision makers:

‘(…) who are not interested in environment policy, to show that there is an economic potential and ways to tackle economic threats in a resource efficiency strategy.’ (EI2 2012)

Changing the policy frames also implied an ambition to enlarge its traditional portfolio of policy measures (from regulatory to market-based measures and supply side instruments), changing its approach and attitude to economic actors as well as redefining its relations with other policy areas. The thinking behind the Roadmap is that reframed environmental
policy should rely on positive economic incentives rather than regulatory pressure traditionally associated with environmental policy:

‘We thought the real potential impact we could have was not in creating new legislation, but rather in changing economic models and incentives to go from end-of-pipe approaches and punishing the polluters to one to create incentive so economic actors behave differently.’ (EI12 2012)

Using the language of economic opportunity was an explicit strategy of DG Environment, notably of the cabinet. Officials argued that economic argumentation would give the narrative ‘higher profile and more credibility’ (ibid). This frame was not only instrumental reframing, but also an opportunistic strategy of some environmental policy makers as the new frames could indirectly give ‘a new boost’ to the sustainability agenda. It also makes the Roadmap different from the previous EC documents on resource efficiency, notably the 2005 Thematic Strategy.

The reframing process faced many internal hurdles. Internal discussions and consultations revealed different understandings and policy visions of resource efficiency within the DG as well as between the DG and the Cabinet, which – according to several officials – have not been resolved during the drafting process. The process made various units inside the DG uneasy, as it was unclear to them whether and how they were covered by the new agenda. The internal debate was full of tensions and included parallel, often heated, discussions on the overall problem and vision frames of resource efficiency (environmental versus economic narrative), on the specific implications of the agenda for sub-areas traditionally dealt with by DG Environment (e.g. what does it mean for waste management, air pollution etc.) as well as on the role and way of approaching other DGs. Referring to the insights from organisational learning literature, the internal tensions and political turmoil did not contribute to creating ‘learning environment’ favourable of social learning and change that was expected from the process (see Argyris and Schön 1996).

The lack to internal consensus and the contentious internal consultations can partially explain overly generic and not fully coherent narrative of the Roadmap document. As the EC officials at DG Environment knew that the resource efficiency would ‘resonate differently with different groups’, they kept it ‘purposely vague’ opening the possibility of many interpretations. The idea was that such approach would work better to mobilise stakeholders rather than discourage them or risk negative mobilisation. The document thus became ‘intermediate product’ and was drafted to accommodate different understandings
and positions towards resource efficiency and the role of DG Environment in this emerging policy area. Beneath the dominant economic narrative, the Roadmap reveals a rather complex set of underlying narratives and arguments from specific areas such as waste, water or marine environment.

The reframing focused on a generic problem and vision frames without a deeper reflection on the transition process; the latter were simply not a key objective of the Roadmap. The process of elaborating Roadmap did not cater for any dedicated vision and scenario building exercises, let alone the formal roadmapping process. The vision was not elaborated in a participatory process. It was added to support the overall reframing effort rather than to create commitment and mobilise action. The document was an argumentative intervention aiming at both reframing the long-term challenge-driven policy area as well as revisiting the overall approach to environmental policy. This was very ambitious, especially given the internally conflicted environment and dynamically evolving external policy context.
10. Towards understanding effects of the instrumental reframing of policy

The final empirical chapter analyses the process and emerging effects of the intentional policy reframing attempted with the publication of the Roadmap. First, the chapter discusses the response to the reframing of policy from the EC services and a wider policy audience. Second, the discussion moves to the implications of the reframing for the use of evidence in the policy narrative. Third, the analysis discusses early effects of the instrumental reframing on stakeholder alignment.

10.1. Argumentative alignment and dissent in response to reframing

The ‘official’ frames of resource efficiency proposed in the EC documents may be aligned or strikingly different from the frames of resource efficiency held by various stakeholders. This section discusses the initial evidence on the emerging response to reframing from the EC and selected external stakeholders.

10.1.1. Internal response to reframing at the EC

Internal response in DG Environment

DG Environment reframed the problem of resource efficiency while attempting to shift the usual frames of the environmental policy. The interviews suggested that the DG has not reached an internal compromise on the major questions of how to address resource efficiency in the context of evolving environmental policy. Discussions on resource efficiency revealed the lack of common understanding and vision on the direction the future policy should take. This led to a rather ‘tense’ process with internal divisions and questions raised on what the new problem boundaries meant various Units.

It appears that the ambition and intended scale of policy reframing was not matched by the appropriate process and space needed for deep reflection and learning. The problem was not the organisation of the process itself but rather underlying organisational structure that ‘purposely divided DGs to reduce interference and potential conflict between them’ (EI2 2012). The debate on resource efficiency could be linked to the wider need of organisational change of the DG:
‘Resource efficiency is an agenda of organisational change and the way the policy is made. It is about how DG Environment functions and also how it relates to other policy areas. Part of the process should be a revision on how to reorganise the workings of the DG and its relations with others, but it was never really done.’ (EI2 2012)

This reveals even deeper institutional frames that underlie the predominantly technocratic structure of the EC. The arguments is that these frames primarily set ‘to execute’ are not adapted to dealing with complex challenges that cut across silos, face risks and uncertainties and require deliberative collaboration.

Response from other DGs and EU agencies

The new agenda resonated differently with different DGs and relevant European agencies. Most interviewed stakeholders reacted to the Roadmap with caution arguing that it is too early to judge what it can achieve and change. As a matter of fact, many Commission officials considered policy implementation a more significant problem than ‘reframing’ the policy in a form of the new Communication.

The interviewed stakeholders noted that the scope and frames of resource efficiency proposed in the Roadmap were its key distinguishable elements. The first aspect was the choice of the broad focus on all natural resources. This was both welcome as a holistic approach, but also criticised for being difficult to prioritise and implement. The latter point was brought up most often by all policy makers as well as by business who fears that ‘packing all materials together’ disregards their function and quality.

One policy maker complimented the smart choice of the new policy frames, but expressed their worry about practical implications of the Roadmap on the level of Member States:

‘The focus on resource efficiency including both economic and environmental aspects was a ‘masterstroke’ in a sense that it allowed to bring back environment to the front seat in the Europe 2020 strategy. The agenda is very difficult to object to as it makes a strong economic sense. The question remains, however, how this organisational and political development at the EC level will translate into the developments on the MS level’ (EI8 2012)

Another official pointed to a paradox. Despite its dubious status within DG Environment, the Roadmap was welcomed by other DGs ‘mostly because the authors were very careful leaving large parts of the Roadmap almost void referring the readers to other parallel
initiatives run by other responsible services (e.g. climate change, mobility).’ (EI2 2012). This strategy led several officials to note that they did not see anything substantially new in the Roadmap.

The formal division of portfolios and specialisation linked with the organisational structure of the EC was pointed as an obstacle in constructing policy agenda with unusual scope and focus. One of the officials summed it up:

‘Everybody has to do his or her job. Land, biodiversity and air are the work for our colleagues at DG Environment. [The focus of DG Enterprise] is on raw materials, material efficiency and energy resources and other aspects that feed into production process. This is our prime concern.’ (EI7 2012)

This links with the reflection cited above on the organisational dimension being a major barrier in advancing ambitious reframing. The problems of research efficiency do not overlay with organisational structures, which – as one of the EC officials argued – ‘reflect different logic and understanding of the world’ (EI2 2012). The central arguments on resource efficiency for DG Environment might thus seem marginal from the point of view of targeted policies:

‘You have an overarching view on how world should be and then you have to look at many policies to achieve it. Each of the small changes may seem secondary or even awkward for a particular policy stream (ibid)’

Both EC officials and external experts recognised risks linked to the mainstreaming of new frames among various DGs who have their own objectives and agendas. Other DGs may react as if new frames encroach on their ‘territory’. They have different scope and understanding of the problem underlined by their established frames, practices and motivations. They assume ownership of the problem based on the perceived capacity to act upon it. The reframing proposition coming from outside will be met with distrust or at best caution about underlying motivations behind the arguments. This is a major barrier for systemic policy approach to problems that span material flows or value chains. One of the consequences may be that the new frame and the language associated with it may become ‘naturalised’ by many policy fields, but without leading to changes in understanding or a shared ‘sense of direction’. One expert argued that ‘resource efficient’ was turned into an oft-used yet practically meaningless ‘adjective’ (EXP10 2012). This practice of adopting rhetorical frames but not changing the practices was referred to as ‘affichage’ (English: billposting) by one of the interviewed policy makers (EI11 2012).
The responses from various parts of the EC system point to the key importance of institutional frames that influence the internal process and the organisational structure. The latter was unanimously perceived as a major internal barrier to change. The common wisdom was that the real test for the newly constructed policy frames would be how they fare in the phase of programme design and implementation.

10.1.2. External response to reframing

General response to problem frames

The Roadmap and the resource efficiency agenda received much attention from various stakeholders, mainly because of its surprisingly elevated political status. A lot of actors felt they are or may be holding a stake in the agenda. One politician argued these broad frames are an advantage of resource efficiency over other resource related agendas:

‘Resource efficiency is not a stand-alone topic. It is a heart of a broader resource policy agenda that includes mining issues, international trade, recycling and reuse, as well as substitution. Efficiency is but one part of this agenda. It is not the most existing part, but probably the most important from the strategic point of view. This is the point, where different issues that may run counter to some other resource efficiency fields could meet and create a commonality of purpose’ (EI10 2012; emphasis added)

This general perspective, however, might lead to watering down the agenda:

‘I see a danger that all environmental issues are included in the agenda including biodiversity and eco-system services. This risks watering down key issues, especially that we don’t know clear links between biodiversity and resource agenda. I understand that the resource efficiency becomes an overarching agenda, but in my opinion it is too broad as it just cannot cover all environmental issues.’ (EXP1 2012)

In general, stakeholders involved in the agenda found that the Roadmap was a ‘good start’ to starting addressing the resource more holistically. It was a welcome voice in the ongoing debate. On the other hand, already the EC Thematic Strategy had a broad focus on natural resources, so the Roadmap was not substantially different in this respect.

The Roadmap and its new tone of economic opportunity targeted ‘progressive’ business and economic decision makers. Business actors involved in resource efficiency agenda, although sympathetic to the Roadmap and to the Commissioner Potočnik, could not really
align or strongly dissent from the frames and visions proposed by the Roadmap. The Brussels-based EU associations used to the EC politics and rhetoric found the document very generic; therefore, neither a strong alignment nor a collision with the Roadmap was to be expected or even possible. It appears the shift towards ‘grand narrative’ adapting the political arguments for wider audiences, had an adverse effect. The generic level of the message was feared to transpose the debate to such generic statements that make it meaningless for a concrete course of action.

Business actors new to the resource efficiency agenda either did not react to the Roadmap or reacted to it with general statements. Some stakeholders were rather defensive in their reactions. The document was misread as being focussed mainly on environmental aspects, which would awaken fears of new regulatory pressures and associated costs for conventional business. This is based on the assumption that as a document coming from DG Environment the Roadmap had environmental frames.

Stakeholders who knew the document argued it chose not to or was not ready for setting priorities and entering ‘win-lose’ discussion of implications of resource efficiency transition. Some pondered whether making the debate vague was an instrumental political decision to delay or postpone the process. The differences and conflicts, it was argued, would appear when discussions reach more concrete issues and their implications.

The new business-driven policy frames left some stakeholders, especially representatives of environmental ministries in the Member States, somehow puzzled. The document is *de facto* an action plan largely relying on the national governments for action. The Commission indicated a long list of milestones intended for MSs. As a result they could feel they were in fact one of the main intended audiences of the document. Meanwhile, the Roadmap was not specifically consulted with the Member States. This was not welcome and made some national policy makers ask the EC for clarifications. Some MS government representatives argued the EC failed to prepare the ground for one of the key strategic alignments it should have sought, that with the EU member countries. The document was later consulted with the countries by the Polish presidency but evidence on the result of this consultation was not obtained during the course of this research and was not communicated back to the interviewed MSs.

**Resource efficiency versus raw materials agenda**

Second aspect mentioned in terms of the general framing of resource efficiency concerned its relationship with the debate on access and criticality of raw materials. One of the
experts described the Roadmap as ‘surprisingly different’ (EXP8 2012) from the raw material agenda in a sense that is called for improving efficient use of resources rather than just assuring access. In fact, the Roadmap and the Raw Materials Initiative reveal a ‘dual strategy’ of the European Commission, which includes both the focus on efficient use and on access to materials. This duality was not considered incoherent by rather a pragmatic approach by business respondents concerned primarily with economic performance and competitiveness. Environmental NGOs and some experts, on the other hand, pointed out that there were internal tensions between the two approaches. The tensions can become more apparent if either objective is considered dominant. In simple terms, if economic rationale were higher in the hierarchy, then obtaining access to resources would be given a priority over efficiency and concerns with environmental impacts should it be economically more advantageous. The reverse could be true if environmental concerns were given absolute priority.

This duality – or ambivalence for some - becomes clear in terms of key policy actors behind the agendas. Each approach has its own ‘champion’: DG Environment supports resource efficiency and DG Enterprise focuses on raw materials initiative. As discussed previously the EC is ambivalent about prioritisation of various aspects of the agenda. The analysis of the policy documents suggests, however, that economic dimension is dominant line in the Roadmap and indeed in the overall Europe 2020 strategy. In practice, the balance between these two dimensions is likely to be negotiated based on a case-by-case basis during implementation of individual programmes or in respect to regulations.

Significantly, the Roadmap document does not dwell on material security or criticality referring the reader to the Raw Material Initiative. Despite proposing the overarching vision, the document does not venture into thematically (and politically) ‘occupied territories’. Several stakeholders found this lack of reflection on access and criticality of resources or the reflection on ‘resource security’ a weakness of the document. In their view this could become ‘a strong motivating argument for the roadmap, especially from the point of view of business’ (EXP6 2012).

**Balancing out economic and environmental ‘wins’**

Third issue, closely related to the previous problem, related to the focus of the Roadmap on emphasising the win-win nature of the agenda. The reactions to this notion from different stakeholders were mixed. In general, may argued one just cannot oppose general statements about ‘win-win’ approaches. The document linked environmental and economic
rationale, but the question on which one should prevail in conflicting situations and under what criteria is left unanswered. In the context of the Roadmap, many stakeholders found that neither environmental nor economic benefits were sufficiently articulated. This led to diverse interpretations of the implications of the Roadmap’s frames.

Environmental researchers and NGOs critically pointed to a dominance of the economic logic in the document. A leading Brussels-based environmental policy think-tank noted the Roadmap was not clear about limits and criteria of growth:

‘The Resource efficient Europe Flagship and Resource Efficient Europe Roadmap do not themselves set any targets or identify limits within which growth needs to happen to stay under various sustainability thresholds.’ (Mazza and Brink 2012)

Similarly, the choice of indicators of measuring the progress towards resource-efficient future (the ratio of DMC and GDP rather any measure of wellbeing) reveals a prime focus on economic performance:

‘This choice suggests that the roadmap is above all a ‘pro-growth’ process. Well-being is not ‘objectified’ in the document. The indicators suggested will not demonstrate whether absolute decoupling of resource use from economic growth is being achieved.’ (EXP6 2012)

The critics, although they understand the rationale of economic frames, fear that the focus on economic drivers may lock other issues (e.g. wellbeing, consumption) out early in the debate. This may alienate some stakeholders and lead to negative mobilisation. At the same time, this overall growth-flavoured framing fell short of expectations of some business respondents. The Roadmap was criticised for not explaining economic opportunities linked to the transition to the resource-efficient Europe. Several business respondents indicated that document did not ponder on what are positive economic incentives for the transition, especially for SMEs (BIZ6 2012, BIZ7 2012). Importantly, there was no reflection on risks associated with the transition. In the eyes of business, the economic rhetoric used by the document concentrated mainly on emphasising avoiding economic risks rather than creating innovative business opportunities.

In general, it appears that the Roadmap’s design did not resonate as intended with any particular group of stakeholders. It did not provide a systemic position on resource issues or a comprehensive perspective on the reframed environmental policy. The document was too general to advance the discussion. It failed to connect with the intended target group
while risking to puzzle or even alienate other stakeholders, notably Member States. The Roadmap was nevertheless considered an innovative ‘voice in the discussion’ on resource efficiency that was ‘generally welcome’, even if it caused a stir and a critical response. The criticism from stakeholders pointed to internal inconsistencies and ambivalence of the document in relation to priorities, which revealed the lack of internal consensus within the Commission.

10.2. Policy reframing and constructing evidence base

I want environmental policy-making to be informed to a degree it has never been before: grounded in evidence and nurtured and fine-tuned through dialogue. I want it to be agreed but effective, mainstreamed but targeted, principled but practical.’ (Janez Potočnik, 2010)

The Commission follows a paradigm of ‘evidence-based policy’, in which all decisions are to be based on the best available evidence. The EC tends to portray itself as a technocratic and rationalistic agency. Some argue that the EC indeed relies on expert knowledge to a larger extent than national governments (Boswell 2012). The use of expert and scientific knowledge and access to comparative data is considered one of the key building blocks of the Commission’s credibility and reputation as an impartial and ‘honest broker’ (Hooghe and Nugent 2006). Insisting on the role of evidence can be also considered one way to respond to the common criticism of the lack of democratic legitimacy and transparency of the Commission, often referred to as the ‘democratic deficit’.

The EC has established many channels to acquire expertise either by funding studies or by direct consultations with academic and business experts. It also has in-house capacity to undertake its own research, notably at the institutes of the Joint Research Centre (JRC). The role of evidence and expertise was one of the central threads in the debate on research efficiency and the EC Roadmap. The EC has sponsored a rich body of research related to the sustainable use of natural resources and resource efficiency for many years. The EC funded studies focused on sustainable resource management and waste conducted in the framework of the 6th EAP’s Thematic Strategy. One of the key developments in this context was establishment of the UNEP’s Resource Panel. The Commission has been the main funder and a key user of the research performed under auspices of the Panel.

The Commission has been instrumental in developing and mainstreaming methodologies such as Life Cycle Assessment (one of the roles of JRC), Material Flow Analysis (MFA) as well as other methods developed with EU financial contribution from FP grants or
dedicated studies. While DG Environment sponsored a number of studies concerned with both environmental aspects of resource use and more recently the links between resource efficiency and economy (including studies on eco-innovation), DG Enterprise funded both studies on resource efficiency and the access to raw materials, critical materials and competitiveness of eco-industries.

10.2.1. Evidence-based policy or ‘policy-based evidence’?

Shifting focus to economic dimension of resource efficiency created internal demand for economic evidence and arguments supporting ‘business case’ of resource efficiency. This was to support the notion of resource efficiency as a ‘win-win’ business strategy bringing about both economic and environmental benefits. The core arguments were on saving costs, competitiveness and growth as in ‘green economy’ and ‘green growth’ narratives. In the design phase, the EC officials understood the important role of evidence to support the new argumentation. One of the approaches used by DG Environment to increase the argumentative and persuasive power of the Roadmap was to refer to evidence and arguments put forward by organisations enjoying strong reputation in business and policy world. The Commission embraced arguments and estimations on material efficiency put forward by major consultancies (e.g. McKinsey) and business organisations (e.g. WBCSD). On the other hand, the work under auspices of UNEP’s International Resource Panel and its prestige was equally instrumental in advancing some arguments, notably on moving up the problem of food waste up the agenda (EI1 2012). Despite the explicit alignment with prestigious business organisations, the economic arguments and evidence in the Roadmap were met with caution in other DGs that feared the economic argumentation of resource efficiency was ‘overhyped’. The fact that much evidence for resource efficiency came from DG environment reduced the persuasive power or even created ‘resistance’ to some arguments:

‘DG Environment seems to be hyping up this agenda. Look at the solar power and wind, where jobs go to China. There is a worry here that Europe doesn’t translate its cutting edge in research and technology into economic benefits. These are legitimate concerns. (…) In terms of new business models: radical overhaul is difficult to implement if the current models have proved to work until now. In general, there is so much uncertainly out there. There is constantly new market information that makes previous predictions wrong. The long-term vision
is very difficult to develop in the context in which you don’t know what is controllable and what can be planned.’ (EI7 2012)

The EC officials engaged in preparations of the Roadmap pointed to patchy evidence and data gaps in knowledge base on resource efficiency. One of the officials explained:

‘In the Thematic Strategy we underlined that knowledge basis was important. We set a data centre and commissioned a lot of work on indicators. Our feelings were, however, that none of these studies were ‘advanced enough’ to really give ‘the knowledge’ to show that it was ‘the issue’, where the problems were and how to tackle it. We had a lot of ‘pieces’. If you put all the pieces together than it was clear enough that it was important, but there was no overarching story and no overarching knowledge framework’ (EI1 2012)

Despite existing gaps, the view shared by DG Environment officials was that evidence on resource efficiency was sufficiently robust to indicate a general direction of policy – the need for decoupling. The important knowledge gaps and uncertainties were about environmental impacts of specific materials as well as, more fundamentally, impacts of the social dimension of transition envisioned in the 2050 vision.

All in all, the relationship between policy and evidence is complex and needs to be looked at from the broader perspective and over longer periods of time. The frames in the Roadmap were not the result of new evidence, but mostly an elaboration of general frames of Europe 2020 and wider attempt at reframing environmental policy. Europe 2020’s focus on resource issue was inspired by evidence from business and academia, but the direct motivation for pushing resource efficiency up the agenda was political. The processes of interpretation and reinterpretation of evidence to support policy argumentation co-evolve with various policy agendas and wider context. Neither evidence-based policy nor policy-based evidence is a fair account of practice.

10.2.2. Policy metrics: frames behind numbers

The significant share of debate focussed on discussing and selecting suitable indicators of resource efficiency. The immediate policy push for this debate was mainly due to the prospect of introducing resource-efficiency related indicator in the mid-term review of Europe 2020 in 2013 (EC 2011). The Commission committed to continue work on indicators and to develop a new lead indicator on natural capital and environmental impacts of resource use by the end of 2013. The Roadmap recognises that indicators
already included in among *Europe 2020* headline indicators are relevant for resource efficiency\(^\text{12}\). It also argues, however, that:

‘(…) they do not capture some important adverse consequences to our economy, health and quality of life, for example factors such as inefficient land use, low water quality and availability, waste, air pollution, and losses of ecosystem services, fish stocks and biodiversity’ (ibid)

Considering the above would allow ‘to exploit new sources of sustainable growth and strengthening competitiveness in the longer term’ (ibid). Further the indicators are to trace the path to the 2050 vision by supporting policy design as well as by sending better signals to private sector for their investment plans, and by ensuring ‘the necessary predictability and transparency to take long-term decisions’ (ibid).

Despite concerns with the currently available indicators and in recognition of the need to start measuring the process ‘immediately’, the Commission proposed (1) a provisional lead indicator and (2) a series (or dashboard) of complementary indicators on key natural resources. The lead indicator called ‘resource productivity’ measured as the ratio of GDP to Domestic Material Consumption (DMC, expressed in Euro/tonne) is to measure the ‘principal objective’ of the Roadmap ‘of improving economic performance while reducing pressure on natural resources’ (ibid). Since DMC covers only material consumption, the lead indicator does not reflect the broad definition of natural resources introduced to the Roadmap. Further, DMC focuses on domestic consumption and does not recognise the potential burden shifting of resource consumption across counties. The logic of the Roadmap is thus to complement it with the dashboard to monitor consumption of other resources and pressures related with water, land, materials and carbon.

The choice of the lead indicator confirmed the overall economic framing of the Roadmap and, as one of the experts argued, its ‘pro-growth’ position (EXP6 2012). The selection of the ‘ratio’ of GDP and DMC as a lead indicator passes the message that the prime concern of the policy is economic productivity rather than *absolute* decoupling of resource use from economic growth. The problem of wellbeing being based on excessive resource consumption does not appear as the central concern. As mentioned before the meaning of ‘value’ in the document is predominantly economic. In words of one expert:

\(^{\text{12}}\) The headline indicators include eight indicators and three sub-indicators measured against the targets. Resource efficiency related indicators and targets are not included among the indicators. Climate change (Greenhouse gas emissions) and energy (Share of renewable energy in gross final energy consumption, Primary energy consumption) are part of the list (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Europe_2020_headline_indicators).
‘Both nominator [GDP] and denominator [DMC] are imperfect. The nominator needs to be improved as it only measures monetary value of goods and services, which is not what makes people happy. The question is rather how much material we need to satisfy the needs? The denominator is only about domestic consumption. In countries importing goods the ‘export’ of environmental impacts is not captured’ (EXP7 2012)

Several interviewed experts and business representatives argued that proposing one headline indicator for aggregated resource efficiency differentiates neither between different environmental impacts nor economic value added of different types of materials. As a consequence it cannot inform policy decisions. Especially business experts insisted such one-size fits all type of approach will not be optimal for effective policy. The complexity and uncertainty involved, however, makes it difficult (or virtually impossible) to find a universal measurement method integrating various dimensions and parameters.

The broader problem with this issue was that the debate on indicators was at times detached from the core policy questions it was supposed to serve. One expert argued:

‘The problem of statisticians is that they tend to focus mainly on technical discussion, but the critical issues are ‘policy questions’! (...) DG Environment seems to have implicit policy target questions. If you made them explicit, then the key questions would be ‘is the EC using natural resources efficiently?’ and ‘is the EU using natural resources sustainably?’ The latter is way more complicated (e.g. we need to agree on ‘acceptable levels’, ‘safe operating space’). At the moment, the EU is not ready for such discussion. Now, the focus is on resource productivity targets (‘relative increase’)’ (EXP3 2012) ¹³

The selection of indicators in the Roadmap indeed reflects a number of implicit policy questions and assumptions. The selection of the lead indicator focused on relative material productivity improvements, for example, confirms the main focus on economic dimension and an assumption of the contribution of resource productivity to economic growth. The broader resource efficiency dashboard, however, also includes sustainability aspects suggesting an inclination towards broadening the scope beyond economic growth. The emphasis on the participatory process on indicator development creates a space for

¹³ In a similar way, Herrick and Pendleton (2000: 358, cit. in Sarewitz al at 2000) argued ‘the likely policy or management context of predictive information should be assessed and characterised before the predictive model is designed and chosen. This will help to ensure that model output fit as closely as possible with management metrics or key variables of an ongoing policy debate. Policy advocates will thus be less likely to deconstruct model outputs to fit their specific objective, and scientific enquiry will be easier to focus on the specific construct or metric of policy interest’.
discussion on the measurement, but without explicitly addressing the underlying policy questions.

The reframing had an impact on the perceived usefulness and centrality of methodologies to measure environmental pressures and environmental impacts. Measuring environmental pressures focuses on measuring resource flows measured in mass of carbon and materials, volumes of water, area of land. Measuring environmental impacts focuses on assessing impacts of emissions in terms acidification, ecotoxicity, eutrophication, etc. Several experts argued that economic framing contributed to ‘the shift of focus within DG Environment from impact-oriented studies based on LCA towards economic considerations of material use’ (EXP2 2012). The views on both approaches revealed considerable differences among experts.

Experts sympathetic to the use of material flow analysis (MFA) argue that although MFA does not directly measure impacts on environment, it can be a robust proxy of environmental pressures. The underlying assumption is that any material use inevitably leads to environmental impact:

‘Whenever you lift resources [from the nature], you are changing the local balance and disturbing local equilibrium. The more resources you take, the bigger impact you have. Even without toxic inputs, this process is influencing the basic functioning of nature. This is a strong logical basis for dematerialisation. In this context, the only directionally true, measureable and realistic “yardstick” to measure environmental impact is in fact resource intensity of service, i.e. the amount of inputs from cradle to grave to receive service or value.’ (EXP5 2012)

The focus on materials is believed to be better suited for informing policies addressing ‘societal objectives linked to resource use’ as well as to give ‘an idea of the scale of resource use involved in the product or service’ (NGO1 2012, EXP1 2012). Data from MFA can be aggregated, scaled and directly related to economic issues. This gives MFA an edge over LCA in the current economic frames of the issue.

Several experts argued that the very logic and process of compiling LCA indicators made it unsuitable to inform resource efficiency policy. LCA focuses on micro-level product-oriented data, which makes it very difficult, if possible, to collect and aggregate. A related issue is the dependency of LCA on industry for data collection. The various measurement approaches comprise from 10 to 20 impact categories, which are very difficult to quantify.
and require considerable amount of data. Due to inherent complexities and uncertainties, strong assumptions have to be made in measuring impacts (NGO1 2012, EXP5 2012, EXP7 2012). The possibility to meaningfully aggregate LCA data was thus questioned. Another criticism was that LCA started showing its age. It includes issues such as ozone depletion. Given substantial regulatory progress in dealing with such issues, it is questionable whether they should have a big role in the current LCA (NGO1 2012). One academic expert suggested that because of numerous assumptions, claims and gaps, the entire ‘knowledge system’ proposed by LCA is ‘open for manipulation’ (EXP7 2012). This approach creates a risk of fruitless research that does not lead to creating useful evidence for policy. An NGO expert went further arguing that LCA only ‘pretends’ to be bringing scientific evidence to debate (NGO1 2012).

Critics of the orientation towards MFA related indicators were both among experts and business. LCA proponents note that measuring environmental pressures cannot be considered a robust proxy of environmental impacts (BIZ4 2012, EI5 2012). Aggregating different materials ‘puts everything together into one value, including relatively harmless and very toxic materials. From the environmental impact point of view, this doesn’t make any sense and can hide important information’ (EI5 2012, BIZ4 2012). Furthermore, from the business point of view, aggregated mass of materials does not reflect different economic value of different materials. Neither it reflects their market price nor value (or functionalities) they provide for business and society. Importantly, indicators like DMC do not contribute to the understanding of value chain perspective of material use: ‘We need knowledge to be able to understand implications of resource efficiency gains possible at different stages in the value chain’ (BIZ5). Focussing on aggregate measurements of material, water, carbon and land consumption cannot be justified by neither scientific (BIZ4 2012) nor economic (BIZ5 2012) arguments. Part of the scientific community, including researchers from JRC, also claims that aggregating LCA indicators is feasible and can provide the basis for Environmentally-weighted Material Consumption (EMC) that connects environmental impact considerations with material flow (see Van der Voet et al 2005).

Most experts from both sides admit that both approaches to measurement have a role to play. MFA and LCA based metrics focus on measuring different dimensions of the resource agenda (EI5 2012). There is an emerging consensus that the most pragmatic approach would be to include various measurement approaches to monitor the agenda that
should, however, be transparent about their assumptions and limitations. The tension rises when the debate links with the dominant policy narrative and perceived priority granted to either method in the context of decision-making process.

The debate on resource efficiency and the Roadmap reinvigorated some long-standing disputes within expert and scientific communities. The differences reflect differing frames of resource efficiency and the assumptions on the role of science and its role in informing policy and societal transitions. The two ‘extremes’ could be portrayed as follows. Respondents giving priority to the material flow approach are often explicitly referring to the need to reduce the consumption of natural resource in absolute terms. They identify excessive consumption of natural resources as a root problem of resource agenda. The underlying assumption is that since resource consumption always causes environmental impacts, it should be addressed as the systemic problem. Stakeholders giving priority to the LCA, on the other hand, see harmful impacts on environment from human activity as the root problem. This may or may not be linked with reducing the overall consumption of resources. There is no justification to assume that consumption of resources is a root problem. The notion of ‘excessive consumption’ has to be based on evidence on how harmful this consumption is and not only on mass or volumes.

In fact, all experts are concerned with the impacts. The major difference between the two standpoints emerging from the interviews is the perceived sense of urgency of the problem at stake and the view on what is ‘sufficient evidence’ needed to inform and mobilise action. Most interviewed proponents of shifting the focus towards environmental pressures, including both experts and NGOs, shared a strong sense of urgency and the need to take action. The sense of urgency is based on the evidence of deteriorating state of ecosystems. They call for a radical overhaul of the current economic and societal model towards dematerialisation. The inherent complexity and uncertainly linked to measuring systemic interactions between human activity and nature makes precise measurements unfeasible in terms of time and budget needed or – as some argued – simply unattainable. Considering the urgency of the problem, humanity cannot ‘afford’ continuing attempts to analyse and fix the problems based only on the ‘normal’ scientific method striving for precision and general consensus. The action can be based on knowledge about overall trends that is ‘directionally certain’, and not necessarily precise (see Section 10.3.3).

There is a need to refocus scientific effort towards supporting the process of change. In this context, the LCA approach is considered as not addressing the very core of the problem (i.e. excessive consumption). Furthermore, several interviews suggested the industrial
involvement in developing and compiling LCA data raises doubts in the context of the needed radical change of the current economic system. LCA is seen as a part of the existing system assuming that incremental changes are sufficient to meet the environmental challenge. Dominant industry does not have an interest in a radical change of the system they are a part of. Even if they do show concern, they will likely slow down the change until they are repositioned to take advantage of it.

Indeed, the underlying assumption of the LCA is that the resource efficiency has to be approached analytically. As a scientific method, LCA should not be influenced by the perceived urgency and can follow the scientific method. The approach is an incremental and accumulative development of data as in normal scientific discipline. This may be time-consuming, but – it is believed – will produce robust results. This approach recognises the complexity of the agenda and is based on a strong believe that the complexity can be grasped by the ‘normal’ scientific method. The knowledge can be precise and directly inform decisions.

The LCA approach to collect and analyse data is based on the implicit assumption that the solution of the current problems is incremental. Its underlying objective is to monitor the process of cleaning the current system. The very logic of the LCA relying on the notion of traditional product groups (e.g. fridges) means that it cannot be easily adapted to account for radically different innovative products or services. The approach works relatively well to compare environmental performance of well-established products, but it is not of help if there is a need to compare radical changes in business models resulting in services that deliver the same functions but make old products obsolete. The problem, therefore, does not necessarily require radical transition of the current economic and societal model. This change can be done within parameters of the current system, in a close collaboration with industry responding to regulation or voluntary schemes. The above deliberations are simplified, the reality being more complex and nuanced, but they grasp generic narratives and potential diverging issues in the debate. The interviews reveal that there is a significant convergence in recognising that environmental challenges are relevant and require systemic change. The perceptions on the urgency of the problem and the scope of transition are areas of divergence and tension.

The text of the Roadmap appears to lean towards environmental pressures, which is in line with the generic message of the 2050 vision. The Roadmap’s stance on measurement is, however, explicitly and purposely weak (‘tentative’) and largely reflects the ongoing discussions with different positions on the issue. The Roadmap postponed fixing the
indicators awaiting a broader scientific consensus on metrics. By doing that it hopes to emulate the climate change debate driven by scientific consensus. Recognising the complexity and variety of approaches, it proposed both the lead indicator and the dashboard. There is still a belief at the EC that finding one suitable indicator for policy is possible. There were a lot of expectations from Commission officials, for example, towards further developments of EMC (Environmentally-weighed Material Consumption) that promised connecting MFA and LCA into one indicator (EI1 2012). The robustness of EMC is still under debate (see Van der Voet et al 2005).

The problem with leaving the measurement issue open is that the dedicated debate on metrics will be laden with fundamental differences in perceptions of the overall frames of the problem. Such technical debate cannot do for creating a broader shared understanding on what resource efficiency is about. There is a risk that the technical discussion may ‘hide’ or simply avoid more fundamental questions.

10.2.3. Understanding uncertainty and foresight knowledge

The analysis of the Roadmap preparation reveals the conventional position of the EC towards the role of scientific knowledge. Science is expected to provide evidence for action and is called for when uncertainties emerge. The EC officials consider uncertainty and knowledge gaps a routine barrier to action. One of the officials observed: ‘it is certain that uncertainty will delay action’ (EI1 2012). The usual response to uncertainties and risk at the EC is that ‘more evidence is needed’. The established processes and institutional frames do not cater for alternative processes that could contribute Mode 2 or ‘foresight knowledge’ to the process.

Most officials had a pragmatic approach to uncertainty understanding that in policy or economy one never has a complete knowledge base, especially when tackling long-term challenges. The long-term visions cannot be fully substantiated with evidence for a simple reason that one cannot have evidence on the future. Some officials explicitly admitted that evidence to inform future vision would often have to rely on normative interpretations. Even if evidence base is shared, the conclusions on what is desirable and how to get there may differ between different stakeholders. We are entering the sphere of normative discussion of what is ‘desired’ and ‘preferred’. The notion of normative choice is a fundamental problem for the organisation like the EC that most often acts as a technocratic body comparing quantitative data on economic and social performance, but rarely, if ever, engages in a wider debate on alternative normative visions of how society should be.
The Roadmap calls for the transition prepared in ‘a timely, predictable and controlled manner’ (EC 2011). This may be seen as contradiction in terms. Innovation and major transformation are by definition risky and uncertain. The more radical they are the more uncertain they are likely to become. What follows is that any change or transition towards a future goal has to be done with incomplete knowledge. The vision building process should then be based on available knowledge supported by socially constructed expectation and vision about future. The latter has to be shared by those expected to take action. The Roadmap process did not include such process.

The lack of social construction and social learning in long-term vision exercises makes it vulnerable to criticism. Actors disagreeing with or undecided about the new frames of problem may, for example, instrumentally use the argument of the lack of robust evidence supporting the suggested course of action. The quality of evidence, however, is rarely the main basis for choosing the preferred future. As shown in literature and practice, shared preferences, social deliberation and imagination also play a role. Criticism of evidence base may just serve as a distraction from the underlying controversy or conflict. Science and modelling alone can neither solve such conflicts nor do for the social process of constructing common understanding of risks and uncertainties. This resembles arguments of Hoppe (2012) who argues that ‘puzzling’ is predominant in emerging policy fields where the problem is unstructured and the meaning of the problem is being negotiated. What follows is that this phase includes many normatively loaded arguments. In the case of resource efficiency, ‘puzzling’ seems to be influencing both policy process as well as its relation with knowledge and science base. The problem frames of resource efficiency are evolving and internally diverse.

In absence of policy consensus on frames, policy makers tend to have high expectations towards science and research to structure and measure the problem. The emerging frames of resource efficiency are not, and cannot be, matched by a single established scientific discipline. Scientific knowledge on resource efficiency is fragmented and of varying quality. Some EC officials tend to blame weak scientific evidence base for their limited capacity to persuade other colleagues or politicians to share their understanding and call for action. There are other reasons, however, that make it difficult to take action, notably the lack of shared sense of direction, different understanding of the problem and uncertainty about its future implications for different actors. The core uncertainty is not about precise measurement, but about understanding key impacts of the problem and future implications of strategic choices.
The EC Roadmap emphasises the importance of de-risking resource efficiency. It supports decoupling of material use from economic growth as an overall direction of change. Decoupling, however, can be interpreted differently and may have very different implications for different stakeholders. As the Roadmap process did not result in a common understanding or common sense of direction, it neither lowered the uncertainty nor de-risked the resource efficiency agenda on the level of individual economic actors. Broad agreement on intended ‘win-win’ strategy does not translate into the common problem and action frames shared by targeted stakeholders. The Roadmap and its process may have contributed to the early political process of creating a selective ‘community of purpose’ on resource efficiency but it did not lower the uncertainty of transition.

10.3. From argumentative alignment to ‘communities of purpose’

This section discusses whether emerging argumentative alignment between policy stakeholders may mobilise collective action. Evidence gathered in a relatively short period of time with a focus on the on-going policy exercise does not allow for strong statements in this regard. Therefore, this section focuses on stakeholders’ expectations towards the future and their views on potential effects of policy reframing.

10.3.1. Constructing communities of purpose

The reframing of resource efficiency agenda was instrumental in creating new policy narrative and frames of the challenge. The policy reframing was done with an explicit ambition to mobilise transition-oriented ‘community of purpose’. One Commission official explained the process of frame design and expected outcomes:

‘As an innovative policy maker, you need to create the vision and rightly balance it with a right coalition of stakeholders who can benefit from it. There are two key tasks in this process: getting people who can benefit from the new vision and targeting organisations with power. If the vision is rightly communicated and there are powerful economic stakeholders on-board, it can create the snowball effect and create political power behind the process. The policy can then create ‘stepping stones’ to the creation of power for coalitions’ (EI2 2012).

This is a thought-provoking reflection suggesting that the reframing is not a process of ‘policy as usual’. It requires ‘innovative policy makers’ to think forward and identify ‘right coalitions of stakeholders’ taking into account the dimension of
economic and political power. This is highly challenging in case of resource efficiency in which ‘sectors’ are in fact functional areas or value chains without existing governance or power structures and without easily identifiable key actors and change agents.

Perspectives from businesses approaching change from the value creation perspective confirm this reflection. For example, arguments on reducing water use by using water efficient showerheads coming from the shower gel producer may not be welcome by the producers of showerheads or consumers. The arguments will be perceived as problem displacement rather than a genuine argument to reduce overall water use (BIZ3 2012).

This seemingly banal example reveals a fundamental challenge of attempting to change systems without appropriate governance systems. ‘Who can speak for the system?’ is the question. The insights from interviews suggest that there is need for new systems and forms of organisation based on shared purpose and understanding. Empirical data and evidence is important but not decisive for such a process of building such systems. Persuasiveness and acceptability of arguments in the forming stages is based on exchanges and social learning rather than empirical data, however robust they are.

The approach described by the EC officials explicitly recognises that the political power can be in fact ‘constructed’ by the very design of coalitions that may reflect the functional character of resource efficiency challenge. On the other hand, this view does not recognise that, in order to mobilise stakeholders, the ‘vision’ needs to be constructed or at least shared by those who are expected to act on it. The assumption appears to be that the vision is first created and then ‘communicated’ to stakeholders by policy makers. The focus is on the ‘right communication’ rather than on creating common understanding.

In the context of the Roadmap, one of the EC officials admitted, the preparatory process did not ‘test resource efficiency on the policy market’ to see the reaction of different stakeholders, including Member States (EI2 2012). As a result, the predominately economic frames ‘backfired’ with environmental policy makers. This limited the ownership of the vision by targeted stakeholders risked undermining or delaying the process. As pointed by another policy maker, the lack of ownership and ‘commonality of purpose’ can also limit the trust between actors thus preventing future action (MS2 2012). ‘Commonality of purpose’ is in fact more important than ‘shared understanding’ that may be impossible to build in practice (ibid). Following lessons from the deliberative policy-
making and organisational learning, the ‘purpose’ in the new ‘coalitions of purpose’ should emerge from or at least be collectively validated and shared by this very coalition.

10.3.2. The limits to disruptive reframing of policy

The views from Commission officials reveal a rather restrained approach to advocating and mobilising ‘disruptive change’:

‘We should avoid supporting disruptive changes, though, until we are sure it can get a sufficient political support. People are mobilised easier to protect what they have. It is harder to mobilise people around potential benefits. Creating stories about future may be nevertheless the way to go. If you say that the things could be better, people may be more likely to change.’ (EI2 2012)

This statement is illustrative of the common perception of the institutional frames and political position of DG Environment. First, it indicated the perceived weak power position of DG Environment in the policy process. This is understandable given the reframing of resource efficiency made DG Environment enter economic policy area, in which they were but a peripheral player. It appears that policy reframing tended to seek only partial or generic argumentative alignment with economic actors, even if one of the implications may be leaving out some of the core arguments related to the pursued vision of change. It could be seen as a compromise based on the assumption that achieving even partial argumentative alignment is a step in the overall direction proposed by the new frame. This may explain the lack of internal coherence in policy narratives and the emergence of ‘narrative hybrids’ constructed with a rationale to align with targeted stakeholders.

Second, the approach reveals of a high risk-averseness disguised as ‘pragmatic’ or ‘realistic’ approach: disruptive changes are to be avoided until political support is assured. This shows the ambiguity of the EC’s transition narrative. On the one hand, there is an explicit reflection and rhetorical support for the notion of transition and radical change. On the other hand, there is no readiness to accept risks and uncertainties associated with the change process. The current institutional frames of the EC as well as the wider policy context are not environments enabling risky deliberative change processes. Third, the fear of political failure is based on the (well-grounded) assumption about change averseness of the existing institutional and action frames.

These findings have several implications for long-term policies. Overcoming the limits of institutional frames requires looking beyond the current organisational and governance processes. Based on the notion that the future can be ‘socially constructed’, one need not
only to construct shared visions but also build new ‘communities of purpose’ to create new loci of power behind the desired futures. The notion of communities extending beyond established governance structures appears strategic especially given the strong risk-averseness embedded in the current institutional frames of the EC. The role of policy change agents in the transition process is thus to mobilise new policy coalitions that could compensate for the ‘power deficit’ currently at the DG, exert pressure on other DGs and policy stakeholders to align with the vision and, in the longer term, influence action frames and institutional frames.

10.3.3. Beyond the Roadmap: the European Resource Efficiency Platform

The central tool the EC intended to use to mobilise stakeholders was the European Resource Efficiency Platform (EREP). The Platform was to follow up on the Roadmap. The expectation was that it would be key in providing an impulse for action. It was about ‘leaders showing the way’. One of the EC officials coined the platform an attempt to build:

‘(…) coalition of leaders whose voice will be heard easier that a voice of Environmental Commissioner and environmental NGOs. The story can be carried by business leaders, but also by investors who start seeing critical dependencies between resource scarcities and investments risks. We need to get signals coming from a growing minority of dynamic companies, which often call for more ambitious policy frameworks’ (EI12 2012)

One of the officials mentioned that they were not looking for a high degree of acceptability of Platform’s recommendations. The Platform intentionally avoided representatives of sectoral business associations or horizontal SME associations that ‘would defend their positions’. The selected leaders were to be independent and have ‘enough acceptability’ and ‘political weight’ to be heard. It was about mainly about action, looking for ‘demonstrators’ and easy to showcase actions (‘low hanging fruits’) on the ground. The recommendations were to be ‘tested’ on other DGs, the EP and the Council.

Despite lack of political power, DG Environment was quite hopeful of the mobilising impact of such a call for action. Opting for selective and action-oriented framework was both intentional and dictated by practicalities of running large-scale consultations. The DG had a limited capacity at the time to run broader process. Other stakeholders were, however, expected to get involved in on-line consultations (e.g. on resource efficiency indicators) and via an on-line platform featuring debates and polls. The business associations as well as national policy makers had reservations about the mandate of the
Platform and were puzzled by the expectations of the EC towards the outcomes. Some of them expected that the EC would take a stronger lead in the platform’s work, but in fact it was the EC that requested inputs and ideas from stakeholders (MS5 2012). These expectations were unrealistic given the overall approach to the process and the lack of internal consensus at DG Environment.

On the other hand, most stakeholders, especially business, appreciated the relevance and potential impact of such ‘early framing’. Interviewed business representatives argued there is a chance to benefit from the first-mover advantage by contributing to problem framing and problem definition early on. In this context, the Roadmap was viewed as one of the steps in a much broader change process. The economic arguments brought in the resource efficiency debate were considered by many instrumental to opening up a space for alignment of various actors and to create ‘commonality of purpose’. This way of framing of ‘resource efficiency’ offered an opportunity to combine many motivations and to resolve the traditional tension between economic or environmental considerations.

A common observation of the majority of interviewed external stakeholders and experts was that the EU level resource efficiency agenda was lacking support from ‘the right kind of alliances’ and had not used the opportunity to address the need to revisit the current governance framework. The Roadmap reflects the split between DG Environment and economic DGs and does not reflect on the governance structures that would be better suited to deal with long-term cross-cutting issues (EI2 2012, NGO1 2012). The lack of innovative governance mechanisms envisaged to implement the agenda could limit the effectiveness of the Roadmap (NGO1 2012). Some experts pointed to more pragmatic gaps in the document that decreases its practical impact on change processes. The Roadmap failed to show how the EC is going to use its own programmes (e.g. Framework Programmes for Research and Innovation, Structural Funds) to support the transition.

At the time the fieldwork for this research was conducted, the discussion on the Roadmap shifted towards discussing concrete actions (referred to as ‘demonstrators’) that could demonstrate economic opportunities of resource efficiency to a wider public. There is an assumption often voiced in the public debate that there is a common understanding of the challenge of resource efficiency and the overall direction of transition toward resource-efficient Europe is known. This case study does not support such statements. There are different understandings of boundaries and nature of resource efficiency challenge. The vision proposed in the Roadmap appears too generic to guide action. It appears that the process of creating shared understanding and a common vision still remains to be tackled.
D. Discussion and policy reflections
11. Discussion

The main question of this thesis was whether and how an explicit introduction of long-term societal challenges and future visions to formal policy narratives influences frames of the problem and discursive alignment of policy stakeholders towards the agenda. This chapter discusses findings, contributions and limitations of the study. The first section introduces the main findings and contributions. The second section discusses individual research questions and the last section considers limitations and possible caveats of the approach used in this research.

11.1. Key findings and contributions of this research

This research addressed three broad objectives responding to the identified knowledge gaps. First, it developed and tested a novel conceptual and methodological approach to interrogate long-term challenge driven policy narratives and processes. Second, it contributed to the situated knowledge on the relatively under-researched dimension of the EU resource efficiency policy agenda. Third, it tackled theoretical questions related to epistemic implications of including long-term societal challenges to public policy.

11.1.1. Novel conceptual and methodological approaches

The overall findings from this research suggest that methodological approaches used to critically analyse public policies need to be adapted to take account of their differing time horizons and complexity of the policy problem. Schön and Rein (1996) proposed that reflective policy analysis should be based on a ‘situated causal enquiry’ in which validity of causal inferences of policy frame are based on the ‘causal story’ and causal tracing of events (ibid: 202-203). This research argued that including future scenarios and visions to policy process requires further revisiting of conceptual and methodological approaches used to creatively design, collectively deliberate and critically examine policy narratives. Policy makers need to approach the process in a more robust way and consider designing the policy process using methods and tools specifically developed to tackle long-term issues (e.g. roadmapping or scenario development).

Importantly, analysing the validity of assumptions and inferences of future visions and policy scenarios needs to be complemented by assessing whether and how they resonate
(or how they are likely to resonate in the future) with strategies of key stakeholders. Understanding the potential for argumentative alignment could become a routine part of assessing feasibility of policy proposals. This includes questions such as ‘is the vision shared and owned by targeted audience?’, ‘are the expectations on future pathways in policy scenarios deemed plausible by key targeted stakeholders?’ or ‘can the policy process lead to creating commonality of purpose and commitment to action?’ The dimension of social learning is central. It also requires adapted skills set from policy makers who need to learn to manage risks and uncertainty associated with the long-term policy process.

Methodological approaches to assessments of long-term policies need to recognise that deliberative nature of new problem frames requires different approach to evaluation and assessment criteria. This confirms arguments of Funtowicz and Ravetz (1993) and Schomberg et al (2005) that socially constructed knowledge needs to be assessed against different criteria than knowledge resulting from ‘normal science’. This research suggests that is it not only this ‘anticipatory knowledge’ that requires an adapted methodological approach; long-term challenge-driven policies themselves need to be assessed on different grounds than ‘policies as usual’.

This research made a modest contribution in this context suggesting a method to critically enquire long-term challenge-driven policy narratives. The study introduced and applied innovative conceptual framework and methodological approach to map and analyse complex future-oriented policy narratives. The policy narrative framework analysis – POLFRAME – combines theoretical approaches from interpretive policy analysis, notably frames and narratives (Schön and Argyris 1994), and futures studies, notably causal layered analysis (Inayatullah 1998, 2002, 2006). The contribution of the framework is to combine the dimension of policy narrative and layered discursive analysis into one relatively simple structure (the POLFRAME matrix). The framework allows for mapping both historical (problem frames) and prospective pathways (vision frames) of the policy narratives. It has a dedicated focus on enquiring causal assumptions in the narratives. The latter allows for connecting and comparing historical and future theories of change emerging in the narratives. This is particularly relevant in the context of policies reoriented to include long-term societal challenges.

The framework can be used to analyse individual and aggregated narratives. It can also be used for comparative analyses of entire narratives or their selected elements (e.g. the line of argumentation, causal assumptions or the use of evidence). The approach could be used
to conduct comparative analyses of emerging or potential alignment or dissent among various formal and informal policy narratives. POLFRAME could be also used as a supporting tool in the practice of impact assessment (IA). The policy options constructed in the IA process could be assessed in terms of their potential to align or dissent with the position of stakeholders who are envisaged to play key roles in a given policy option. Similarly, the tool could contribute to designing policy visions and roadmaps especially in emerging areas where new stakeholder coalitions are expected to play key roles.

11.1.2. Contribution to the area-specific knowledge

The enquiry concentrated on the process of policy reframing in the case of EC ‘Roadmap to a Resource Efficient Europe’ (2011). The case study focused on the challenge of ‘resource efficiency’ that emerged as one of the main societal challenges in Europe 2020 strategy, the EU strategy for the period 2014-2020 (see Part C of this thesis). The EC put forward a ‘Flagship Communication on Resource Efficiency’ and the ‘Roadmap to a Resource Efficient Europe’ with a future vision of Europe in 2050 to elaborate on the challenge and the policy response. The research benefited from the unique insights from highly- and mid-ranked policy officials from the EC and national governments, politicians active in the EU debate on resource efficiency, companies and EU sectoral business representatives, leading academic experts, international organisations and NGOs.

The research gained new insights into how a complex challenge of resource efficiency was framed and reframed in the official and informal narratives constructed in the emerging EC resource policy. The case study looked at the historical development of policy frames with a focus on the period 2005-2012, with an empirical emphasis on the process of developing the EC policy roadmaps (2010-2012). The analysis included the reflection on the internal and external political context as well as on the wider institutional and meta-cultural frames (or worldviews) in the context of the EC.

The case study revealed significant differences in frames of resource efficiency employed by the European Commission in the 2005 Thematic Strategy and the Roadmap. The Roadmap scopes the challenge way broader likening it to a civilizational shift. The emerging EU agenda on resource efficiency was intentionally reframed to advance a new approach to environmental policy with an explicit view to make it persuasive for economic players in both public and private sector. The new generation of policy is to move beyond a tradition notion of environmental protection to embrace an overall objective of the systemic transition of an existing economic system to achieve decoupling of economic
growth from environmental impacts of the use of natural resources. The arrival of the grand societal challenges of Europe 2020 strategy set a wider context of this reframing.

While the study found evidence of significant shifts in scoping the challenge of resource efficiency, the reframing has not led to radical changes in underlying worldview and in deeper understanding of the process of societal change in official EC narratives on resource efficiency. Neither document questions assumptions on the relationship between humanity and nature, preserving the notion of nature as a commodity thus being subjected to economic growth. The understanding of the mechanisms and processes of a societal change is based on a rather simple understanding of change as a controllable and predictable process. It rests firmly on an assumption of rational behaviour of economic actors who react to incentives provided by markets and policies in a predictable manner. There is no reflection on risks and uncertainties linked to the process of societal transition.

The specific focus of the case study was to enquire the role and status of evidence and knowledge in the reframing process, notably in the context of developing a long-term transition vision. This was particularly relevant given the Commission’s explicit strategy to practice ‘evidence-based policy’. The enquiry proposes that the conventional approach to evidence-based policy when complex societal challenges are in focus needs to be adjusted to the specificities of the long-term challenge-oriented policies. The case study revealed strong expectations that intrinsic controversies and knowledge gaps of the resource efficiency agenda could be resolved by more scientific evidence. This reflects a belief in rational decision-making or – as some stakeholders suggested – a strong influence of interest groups wanting to hamper any major policy change by overemphasising the need of developing precise metrics prior to taking any action.

The case study confirms that public policy taking on major societal problems will be always accompanied with uncertainty and risk and influenced by a myriad of vested interests. In order to make a stronger case for difficult political choices in this and other similarly complex areas, the policy process needs to rely on many types of knowledge that are not necessarily a product of normal science. The latter implies shifting to a more a heuristic policy-making process where investing in a more robust scientific evidence base does not impede taking urgent actions based on imperfect evidence and a commonality of purpose shared by actors aligned with a future policy vision.
11.1.3. Theoretical perspectives on policy process

The thesis put forward research questions aiming at contributing to a theoretical discussion in policy studies, notably in relation to interpretive post-empiricist theories. The study added new dimensions to the debate on the reframing of policy and on the use of evidence in the specific context of policy processes tackling complex long-term challenges.

On policy frames and normative argumentation

The case study examined how long-term societal challenges and future visions are reflected on in policy narratives and frames. The mapping and investigation of policy narratives was conducted with the POLFRAME method (see Chapters 5.2.4 and 6.2), which was developed and tested for this research (see also discussion on research question A following this section).

In the analysed case, an explicit inclusion of the long-term societal challenge and visions to policy narratives added a new discourse layer to policy narratives and revealed normative assumptions, latent controversies and conflicts in the policy agenda. This prospective extension, however, did not lead to a profound reframing of the challenge of resource efficiency (see discussion on research questions B and C).

The change of rhetorical frames in the analysed policy process clashed with the existing institutional frames and organisational setting that led to watering down the policy agenda. This backlash could have been expected given the relative haste of producing the policy document and an exclusive character of the process. The depth and creativity of the vision building exercise in the analysed case were limited by the lack of internal political consensus, the limited organisational capacity as well as by the risk-averse organisational culture. The process did not create policy mobilisation that could effectively challenge the dominant frames. Many interviewed stakeholders considered the reframing of policy to emphasise the economic case for resource efficiency as an opportunistic reaction to the wider post-crisis political (e.g. Europe 2020 strategy) rather than a well thought-through and planned process. The latter confirmed the importance of institutional frames as a strong determinant, in this case a barrier, of the reframing of policy (Schön and Argyris 1994, Beck 2009) and confirmed their key role also in the case of reframing forward-looking policies.

Introducing the long-term vision to policy narratives may reveal or emphasise explicit and latent normative differences or controversies both between various policy narratives and within a formal policy frame (see the discussion on research question B). The analysis of
policy meta-narratives suggests that the broader the problem boundary is set, the more likely it is to take a normative stance on the agenda. Narratives with broad problem boundaries, extending to the level of society and economy, include explicit positions on future values and relations between society and nature. Narratives with narrower, often technical, problem boundaries also reveal implicit normative positions and cognitive assumptions. Their deeper frames can be deduced from their interpretation of the roots of the problem and the proposed future scenario of change. For example, the objective of improved material efficiency rests on the assumption that actions to enhance efficiency can be prioritised above conservation of resources. This reveals deeper perceptions on which elements of the system require a more urgent corrective action: the key problem is efficient manufacturing and competitiveness. The associated claim that efficiency improvements lead to environmental benefits in a longer-term confirms that in this narrative environmental problems are fixable by improving the current production system and are de facto not urgent. The explicit inclusion of the future vision to policy narratives reveals the underlying assumptions and makes the reflection on problem frames easier.

In the analysed policy case, the inclusion of the long-term vision to policy narrative introduced a broad normative statement on the desired future suggesting a strong stance on sustainable management of natural resources and a sustainable relationship between human kind and nature. The analysis has shown, however, that in its many statements the document remained vague on some key issues related to the policy agenda (e.g. position on absolute versus relative decoupling of resource use from economic growth) or have left out some other major problems (e.g. consumption patters). The internal inconsistencies, vagueness and omissions in the document revealed existing controversies and different positions on major issues within the EC and between policy stakeholders. While the official policy narrative included a generic normative vision, it did not fully translate it into implications for various economic and social actors.

The inclusion of the long-term challenge provoked an internal reflection on resource efficiency. Policy makers and officials engaged in often heated internal debates on how to frame ‘resource efficiency’ in the Roadmap. The broad scope of the challenge extended the debate to rethinking the overall rationale of environmental policy. The case study demonstrated that the process of reflection on policy frames might not lead to profound changes in formal discourse. In the analysed case, the intended radical change of policy frames was constrained by the dominant wider problem frames (i.e. economic growth, economic crisis and recovery) and institutional frames.
The cases study suggests that, if attempted from a weak political position, the reframing of policy may be compromised by the perceived need to adjust argumentation and language to align with the existing dominant frames of the targeted audience. This may make an attempted reframing general, risk-averse and strongly limited by existing institutional frames. The perception of where political power resides – and how it may shift in the future – in relation to both the subject and object of reframing is thus an important factor to consider. This finding resonates with the perspectives on the role of power as one of key determinants in the process of the reframing of policy (e.g. Schön and Rein 1994, Fischer 2009) and adds a notion of aligning policy frames with the anticipated or desired future power configurations in the envisioned future.

On evidence and policy learning

The case study confirmed that the reframing of policy influences the scope and nature of collection, interpretation and use of evidence (see discussion on research question D). In the analysed case, the process of selection and interpretation of evidence base was strongly influenced by the institutional frames and the dominant policy argumentation at the time of reframing: the main focus was to substantiate economic arguments supporting resource efficiency with evidence pointing to economic benefits or risks. On the other hand, the study also had evidence of new research findings that influenced prioritisation of issues within the overall policy agenda. The relation between the reframing and the use of evidence was thus not one-directional or straightforward (see discussion on research question F).

Adding the long-term challenge-driven perspective revealed stark differences in perceptions about the nature of evidence required to support the long-term vision and lead to alignment between different stakeholders. Policy officials within public administration were often institutionally bounded in their interpretations to prefer ‘scientifically precise’ evidence based on a broad formal scientific consensus. Actors with a more deliberative view on the process were prone to favour ‘directionally sufficient’ evidence that was expected to feed into emerging ‘commonality of purpose’ and future vision they wished to pursue. These different positions have significant epistemological implications. Literature suggests knowledge creation and decision-making processes responding to complex, uncertain and emerging problems cannot rely on routine or ‘normal’ approaches. Funtowicz and Ravetz (1993) introduced the notion of post-normal science that is better suited to deal with normative issues with systemic uncertainties and high decision stakes.
The process of the Roadmap preparation was not adapted to respond to the uncertainties and complexities of the challenge.

In the analysed case, there was no explicit debate and shared perception on the scope and the level of uncertainty related to the problem. The EC followed a ‘normal’ approach to the process and focused mainly on gathering data and expert views. The internal process of constructing evidence encountered many problems and knowledge gaps due to the virtual impossibility to obtain scientific knowledge about future challenges of resource efficiency. Despite encountering these problems, the EC did not change the overall approach to the process and consequently pushed for collecting more data. There was only a limited realisation that the complex nature of the challenge and the normative dimensions of the resource efficiency vision might require a wider participation and different types of knowledge and learning process. Using post-normal science terminology (Funtowicz and Ravetz 1993), the problem was approached with ‘applied science’ with elements of ‘professional consultancy’ methods; those were not appropriate to deal with high uncertainties and decision stakes involved in the agenda. As a result, there was no feeling of commonality of purpose or a shared future vision. The voices calling for extending peer community and creating commonality of purpose between stakeholders were raised mainly outside the EC but came also from several highly ranked EC policy makers.

The perception of constructing a shared understanding is closely related to the notion of social learning. Institutional and deeper meta-cultural frames were significant in shaping this process and views on what is ‘sufficient evidence’ for decision-making and what should be considered risky or uncertain. The relevance of the design and nature of ‘learning environments’ for the social learning process resonates with lessons from organisational learning (Lave and Wenger 1991, Agryris and Schön 1996, Wenger 1998). The organisational setting of the EC resembles a learning system designed to encourage single-loop learning that may effectively impede more profound changes (Agryris and Schön 1996). Despite outspoken ambition to mobilise stakeholders around the vision, the Roadmap preparation process did not create environment enabling social learning based on engagement and alignment of understanding of the challenge (see Wenger 1998). It neither used established methods routinely used in technology roadmapping exercise (see Phaal et al 2004). The process did not result in the shared ownership of the vision leaving many stakeholders puzzled about its practical implications.

The findings suggest that whereas constructing evidence-base for policy is always a process of interpretation (see Fischer 2009), the introduction of vision and explicit
prospective orientation to policy narratives adds a stronger (explicit and implicit) normative dimension to this process. Making normative visions is a domain of evidence and social learning as well as normative deliberation, persuasion, power and institutions that all influence interpretation of evidence. Fischer considers knowledge ‘the outcome of negotiation between those with expert knowledge and the actors in the everyday world, in particular those with political power’ (Fischer 2009). Adding a prospective dimension changes the nature of this ‘negotiation’ by including an explicit dimension of systemic uncertainty, creativity, imagination and social construction of future in which power relations may be different than now. This suggests that attributes of the assessment criteria of foresight knowledge could recognise issues such as the current and anticipated power position of policy actors (or current and anticipated proximity to power), alignment with dominant (problem, vision and institutional) frames and ownership of meaning.

This discussion strongly resonates with post-normal science debate (Funtowicz and Ravetz 1993). The long-term perspective adds to the systemic uncertainty associated with challenges. Interestingly, when the long-term visions are debated, the dimension of ‘decision stakes’ becomes less clear as the importance of future stakes is also the subject to interpretation, anticipation and social construction. The latter suggests that the perceptions of the future ‘decision stakes’ needs to be taken into account when the challenge and examining perceived uncertainties and risks associated with specific visions by stakeholders. The future research could examine, for example, how the level of future risk and uncertainties relates to the level of decision stakes.

**On instrumental reframing and alignment**

This study considered the reframing of policy as an intentional intervention by policy makers attempting to change the dominant policy frames and, in a longer term, influence actions of actors. The research demonstrated that policy makers adjusted policy argumentation in order to align it with problem and vision frames of the targeted groups of stakeholders (see discussion on research questions F and G). In the analysed case study, the reframing of policy was attempted from a relatively weak position of power. It was used to ‘probe’ the response from stakeholders to the new policy frame. Due to the lack of internal consensus, the new frames were generic or even – as one official put – ‘purposely vague’. The internal process in the EC did not achieve internal alignment. The exercise did not resonate as intended with targeted audiences. While welcoming the initiative, most of
interviewed external stakeholders found the EC Roadmap and its vision too broad to be a basis of a policy mediation process.

The reframing of policy advancing the long-term vision is a risky process. The case study suggests that its effectiveness depends on many factors, including ensuring the learning environment conducive to the desired change (e.g. ‘community of purpose’) and reaching the internal and, at least partial, external political alignment on the direction and the scope of change (see the discussion on research question G). The reframing process in the case of policies including a long-term vision requires an adapted approach to policy process (Schön and Rein 1994) as well as designing suitable policy learning environment (Lave and Wenger 1991, Agryris and Schön 1996, Wenger 1998).

Schön and Rein originally suggested reframing as a solution to existing controversies. This research looked at policy reframing performed with a forward-looking outlook that needed to take into account both existing and potential future controversies. Future scenarios and vision deliberation, in this context, is a normative process of social construction of policy scenarios in order to identify and anticipate future controversies, risks and uncertainties. Future scenarios in this context could be used to construct shared forward-looking ‘theories of change’, including common understanding on major causal assumptions in future pathways. In this context, a design of vision becomes a deliberative policy learning process in which ‘communities of purpose’ can emerge.

Figure 23 illustrates the proposed conceptual framework of the reframing of policy process that can be further explored in the future research. The flowchart uses key elements introduced in the POLFRAME approach and places it onto a timeline and in a wider policy context. The process takes place in a complex interaction with existing normative assumptions and beliefs, actions and practices, power and political strategies, and knowledge and expertise held by various actors engaged in the process. Policy frames co-evolve with their context, including institutional and meta-cultural frames.
11.2. Discussion on specific research questions

A set of research questions was put forward to elaborate the main research problem. The thesis addressed the following questions:

A. What are the main storylines, key arguments and underlying causal assumptions of policy narratives constructed as a response to long-term societal challenges?

B. How does an inclusion of a long-term challenge and a future vision influence storylines and argumentation in policy narratives?

C. How does an inclusion of a long-term challenge and a future vision relate to underlying normative and cognitive assumptions of policy narratives?

D. How does an inclusion of a long-term challenge and a future vision influence the use of evidence in policy narrative?

E. How does a reframed formal policy narrative relate to other existing frames responding to the same societal challenge?

F. What are mechanisms and motivations of an instrumental reframing of policy?

G. What are anticipated effects of an instrumental reframing of policy?
This section discusses main findings in relation to individual research questions.

A. *What are the main storylines, key arguments and underlying causal assumptions of policy narratives constructed as a response to long-term societal challenges?*

In order to answer this question, the research first examined how the challenge of resource efficiency is understood and scoped by various stakeholders involved in the EU public discourse. Second, in order to analyse various storylines, with their arguments and underlying causal assumptions, the research followed a step-wise approach introduced by the policy narrative framework analysis (POLFRAME). The main arguments and claims in policy narratives have been mapped onto the sequential narrative structure. The third step was to aggregate and compare meta-narratives of resource efficiency with varying scopes of the challenge and different overall objectives behind the future vision. A detailed analysis is conducted in Chapter 7 (sections 7.1-7.3).

Interviewed policy stakeholders differed substantially in how they understood and scoped the challenge of resource efficiency. Extreme standpoints on availability of natural resources oscillated between ‘imminent scarcity of resources’ and ‘abundance of supply’. The notion of ‘abundance of supply’, on the other hand, is linked with a contention that the Earth can supply any amount of resources needed by economy and society. Accepting the notion of ‘absolute scarcity’ can result in calling for the ‘limited use’ or, more recently, a ‘safe operating space’ based on the notion of the limited carrying capacity of the global eco-system. Although the public discourse appears to be shifting towards acceptance of scarcity and limits of resource use the interpretation of ‘limits’ remains strikingly different. Also the nature of limits differs depending on the type of resources. In terms of material resources, the actual discussion on the limits is focussed on the notion of reserves and conditional resources rather than the overall stock of primary resources. The interpretation of limits of carbon, water, land, mineral resources, biomass or biodiversity is very different due to different properties of each resource.

An important underlying issue are the perceptions on the relation between the planetary limits, growth and wellbeing. The case study suggests that the perspectives linking wellbeing with material growth often clash with the views supporting existence of planetary boundaries. Conversely, admitting the limits to the use of natural resources inevitably brings about the discussion on redefining the material basis of wellbeing. The underlying assumptions of problem frames of resource efficiency can be also analysed from a perspective of the fundamental relations of humans with nature. This relationship
could be summarised as an opposition between views holding that ‘nature is as a subordinate of human development’ and position that ‘nature is a fundamental basis of existence of humankind’. This resonates with Dryzek’s (2005) distinction between ‘Prometheans’ and ‘Survivalists’, where former believe in the possibility of endless material growth whereas latter subscribe to the view of limited carrying capacity of the planet. These underlying assumptions about systemic relationships influence the way different stakeholders frame resource efficiency ‘problems’ as well as how they approach the issue of change and future vision.

The second step was to aggregate various narratives into stylised meta-narratives with varying scopes of the challenge and different overall objectives behind the future vision (see Chapter 7.3 and Annex I). The problem boundaries range from the focus on process-oriented technologies, through a broadly understood production system up to a wider socio-economic model of production and consumption. The objectives range from improving access to natural resources, through improving resource efficiency up to the notion of resource sufficiency, implying an absolute reduction of resource use. The views of interviewed stakeholders covered the whole narrative spectrum confirming different understandings of the issue of resource efficiency. The case study reconstructed four meta-narratives of resource efficiency. The ‘Resource-intensive economy’ narrative is concerned mainly with ensuring access to natural resources for growing economy and society. The ‘Material-efficient economy’ focuses mainly on the technical and technological aspects of ‘resource efficiency’ agenda. The ‘Circular economy’ narrative calls for a radical overhaul of the production system and underlying business models to revolutionise the flow of resources through the economic system. The ‘Sufficiency economy’ narrative calls for the absolute reduction of consumption and broadens the narrative to include the fundamental questions of culture and values.

Setting specific boundaries of problem frames has significant consequences for the storyline of the overall narrative. In general, narratives aiming at adaptation of the current system, rather than at transformative change, focus on technical and technological shortcomings. Narratives with more ambitious change-oriented agenda, extend their discourse to system-level problems incorporating institutional lock-ins and path-dependencies or even cultural shifts. They also have more explicit and more elaborated future scenarios and visions. While narratives with a strong focus on production systems suggest technological solutions, broader visions emphasise more the need to change organisational models underlying the design of products and the use of technologies. This
does not mean that technological changes are not relevant; the focal area and agents of change are different.

The policy narrative framework analysis revealed shared argumentative spaces between narratives but also fundamental differences within underlying worldviews and understanding of the roots of the problems. The most significant overlaps are in the first-order problems. All the meta-narratives, perhaps to a lesser extent sufficiency economy, depart from economic first-order problems such as high prices of materials. Convergence of narratives in pointing to similar first-order problems (here growing prices and material scarcity) and the associated claims of economic opportunity were a common starting point of many storylines. The case study argues that the centrality of specific problems in the public discourse depends on what is considered most urgent and by whom at a time of constructing the frame. In the context of economic recovery the voice of business players and economic and financial ministers were considered most relevant and thus the storylines were constructed and arguments to align with their narratives. This confirms a highly situated nature of policy frames.

The case study suggests that the reframing of policy in emerging challenge-driven policy areas will tend to seek argumentative alignment with the dominant policy frames and specific audiences, even if one of the implications may be watering down or even leaving out core arguments related to the new frame. This mechanism of argumentative alignment can partly explain the lack of internal coherence of many policy narratives and the emergence of ‘narrative hybrids’ combining seemingly conflicting claims (see Chapter 9.3 for the analysis).

The reflection on similarities and differences of meta-narratives reveals that various narratives are closely interconnected and co-evolve. Storylines may be constructed in opposition, build on one another or merge several narratives. Narratives constantly clash and intertwine in response to events and changing contexts. Policy narratives can be thus seen as ever-evolving socially constructed policy scenarios that move up and down ‘argumentative ladder’ depending on how they align with the current and emerging discourse coalitions and, on the other hand, on their relation towards the dominant institutional and meta-cultural frames (on the latter see also discussion on research questions F and G).
B. How does an inclusion of a long-term challenge and a future vision influence storylines and argumentation in policy narratives?

The research examined whether and how adding a long-term challenge and a future vision to policy narrative influence storylines and policy argumentation. The case study revealed that the long-term vision with its call for the radical change of the current socio-economic system introduced the notion of uncertainly and risk to the policy discourse. Business faces uncertainty and risks linked to radical innovation, volatile commodity prices and material scarcity. Scientists tend to agree their current models fail to capture complexities of mechanisms and impacts of resource use and social change. Civil society organisations are concerned with the challenge of changing the current consumer behaviour. Policy makers face the above problems while struggling to incorporate the notion of future sustainability into policies driven mainly by the short-term economic and financial concerns.

The case study indicated a rather shallow prospective orientation in the formal policy discourse in a sense that the focus on future was largely *tokenistic* and limited to including ambitious, yet generic, vision statement and several non-binding targets (see Chapter 9.2 for the analysis). The reflection on how to reach the vision was rather limited and did not include dedicated scenarios or other critical reflection on alternative pathways supporting the vision. The formal discourse was stretched between two dimensions: the general political vision of future society and economy in a distant future and the concrete feasible solutions needed *now* (‘low-hanging fruits’). The lack of the ‘middle ground’ between ‘now’ and ‘then’ was striking. The vision put forward a ‘signpost’, but pathways on how to get there were not deliberated. Neither did the debate extended to ponder on what would be the negative implications of the postulated transition for the stakeholders whose current activities do not coincide with the proposed direction of change.

The EC officials developed the future vision used in the Roadmap internally without a broad involvement of targeted stakeholders. Evidence gathered for the case study suggests that the vision was not shared even internally within the Commission. The process of vision building did not follow a formal foresight strategy and did not benefit from foresight methods. One could argue that appropriating a futures term ‘roadmap’ was misleading as to the actual nature of the process, which did not follow a robust roadmapping strategy (see Phaal et al 2004, Phaal and Muller 2009). Interestingly, interviews revealed that both experts and business stakeholders expected a deeper and more concrete debate on the future vision and, more importantly, the possible pathways of change. There were expectations that DG Environment would come up with a more prospective document
resonating other long-term documents present the debate (such as the 2050 vision of the WBCSD). The lack of focus on the process of transition (how to get from here to the vision) was a subject of criticism. One could argue that although the new narrative layer was constructed, it remained largely unexplored. Adding a long-term challenge and vision to the policy narrative did influence policy discourse, but it did not lead to a profound reflection on future vision and pathways and to deeper shifts in dominant problem frames.

C. How does an inclusion of a long-term challenge and a future vision relate to underlying normative and cognitive assumptions of policy narrative?

The question explored whether and how an inclusion of a long-term challenge, with its inherent uncertainty, relates to underlying normative assumptions and beliefs about the policy problems. Extending the discourse to interpretations and statements on preferred future or emerging risks might unmask various cognitive and normative assumptions held by various stakeholders. The question should be seen in the context of the unexplored research questions identified in the literature review of interpretive policy analysis (Schön and Rein, Fischer, Hajer and others; see Chapter 2), notably on implications of the prospective extension of policy narrative on policy discourse and frames.

The case study revealed both explicit and implicit normative assumptions in the argumentation supporting the formal narrative of the Roadmap and the analysed meta-narratives of resource efficiency (see Chapters 7.3 and 9.2 for a full overview). In general, policy practitioners and stakeholders interviewed in the course of this research openly argued that normative arguments played a stronger role and were more visible in the policy debate addressing a complex long-term challenge. The analysis of the formal narrative in the EC Roadmap and aggregate narratives – or meta-narratives – of resource efficiency revealed various underlying normative assumptions behind different visions of resource efficient economy and society. The assumptions were brought to the surface by incorporating visions to the narratives, which by definition included normative statements about the desired futures.

The analysis of meta-narratives in the case study suggests that the broader the problem boundaries are set (from the production system to the planetary system in the case of resource efficiency), the more explicit become the normative assumptions and ideological visions about future societies and economies (see Chapters 7.2 and 7.3). The material efficiency narrative, for example is limited mostly to the use of resource in the production process. The normative assumptions in this narrative are implicit and need to be derived
from the overall objective of economic growth and the limited concern with the levels of final consumption. The narrative is deeply rooted in the Promethean worldview of progress (see Dryzek 2005), in which human ingenuity and technology will resolve the problems. The sufficiency economy narrative, on the other hand, departs from the notion of finite planetary system and its implications for our way of life. These broad boundaries lead to explicit deliberations on the fundamental questions of culture and values.

Normative aspects in the long-term policy narratives confirmed that policies are not rational constructs made by rational agents. This is in line with general premises of the interpretive policy analysis. Post-empiricist policy analysis (see for example Fischer 2009) is based on the premise that any policy process is driven by interpretations based on both empirical evidence and normative assumptions. This study does not allow for claiming that the forward-looking policy orientation means stronger influence of normative assumptions on the actual policy frames. It is argued, however, that normative assumptions are likely to be more explicit when policy narratives include long-term visions.

In the analysed case, policy narratives constructed around the explicit long-term vision reveal both explicit and implicit normative assumptions behind the policy argumentation. The inclusion of the long-term vision to the policy narrative introduces an openly normative statement on the desired future, which gives a ‘normative orientation’ against which the policy narrative is constructed. This prospective extension may reveal or emphasise explicit and implicit differences or controversies between and within existing policy frames.

D. How does an inclusion of a long-term challenge and a future vision influence the use of evidence in policy narrative?

The research demonstrated that the reframing of policy had a clear influence on both selection and interpretation of evidence used to support the formal policy argumentation (see Chapters 7.4 and 10.3 for the analysis). The reframing of policy shifted the discourse on resource efficiency towards economic benefits and risks. Following this new framing, policy stakeholders searched for and selected evidence in support of the new policy argumentation, notably supporting the ‘business case’ of resource efficiency.

Although the initial idea for reframing was partly influenced by the prior evidence on economic benefits of resource efficiency, the findings suggest that new evidence was not the main cause of the overall policy shift. Looking for new positive ways to engage economic actors in environmental agenda was perceived as the way to keep the
environmental policy among the priority strategic fields in the post-crisis times. Environmental policy had to be perceived to have an economic rationale and a sound ‘business case’. Selection and interpretation of evidence to support this frame was deliberate. Interviewed experts pointed to the fact that the selection of the headline indicator of the Roadmap expressed as a ratio of GDP over DMC (Domestic Material Consumption) symbolically summarised the predominantly economic frames of resource efficiency. This interpretation resonates with Fischer’s (2009) notion of metaphorical meaning of numbers that can reveal the dominant frames.

On the other hand, new evidence on resource productivity and environmental pressures and impacts was instrumental in indicating priorities within the resource efficiency agenda. This was the case of indicating most resource intensive sectors as well as indicating specific areas of concern such as food waste. New knowledge did lead to a changed policy perception of the problem boundaries (evidence-based frames). All in all, the relation between the reframing of policy and evidence-base was not one-directional or straightforward. The case study revealed, however, a deliberate effort to collect evidence to support the dominant economic frames of the Roadmap.

This research further examined whether and how including a notion of a long-term challenge to policy narrative influences the scope and nature of evidence base of policy. The assumption was that empirical evidence would have to be differently interpreted and/or different type of knowledge and expertise would be needed to support future policy scenarios and visions. The research enquired whether and to what extent new interpretations and/or new evidence has indeed been used in the process of policy formation. The question builds on the deliberative approaches to foresight knowledge based on the notion of post-normal science (Funtowicz and Ravetz 1993). The case study revealed that adding a prospective dimension to the policy debate uncovered gaps in evidence and knowledge and stark differences in understanding of what constitutes ‘sufficient evidence’ to support policy choices. The long-term policy orientation with its complexity and uncertainty had implications for the use of evidence and expertise.

The significance of the knowledge gap was perceived to have different implications by different stakeholders. Indeed, the reframing revealed differences in opinions among experts, business and policy makers on what constitutes ‘sufficient knowledge’ to inform long-term strategic decisions and on how measure ‘resource efficiency’. Commission officials often perceived resource efficiency as a field with a relatively weak evidence base, especially compared to climate change. Uncertainty and the perceived lack of wide
agreement among scientists and experts were interpreted as a weakness. The latter reveals an implicit understanding of scientific knowledge, which is close to the position of ‘normal science’. One of the officials used a metaphor of compensation in which normative arguments and persuasion are to appear in the debate because of the lack of facts and uncontroversial scientific body of knowledge on resource efficiency (EI1 2012). Uncertainty about future in this reasoning meant ‘more normative arguments’. The need for a different approach to constructing policy evidence when addressing long-term societal challenges was not explicitly discussed or realised in the process.

The approach to evidence in the analysed case study was strongly influenced by institutional frames of the European Commission and wider context of the EU policy-making. The lack of democratic mandate was thus compensated by the rational and evidence-based approach to decision-making. This creates a paradox as what is seen as a compensation for the lack of democratic legitimacy in fact takes the EC processes even further away from the democratic deliberation of action. From the perspective of organisational learning (Argyris and Schön 1996), this resulted in a very restricted policy learning environment that did not encourage transparent processes of democratic deliberation, hid the argumentative interpretation in the plethora of internal and external consultation processes, and/or left the deliberative interpretation to external experts by commissioning studies or reports. Despite being capable of a critical reflection on the above implications, most of the interviewed EC officials considered the institutional frames an inherent part of their working environment that one should comply with.

Interviewed experts, business, policy advisers within the EC as well as, curiously, politicians had a different approach to the problem of ‘sufficient evidence’. Approaching a complex long-term challenge, in their view, needs to focus on constructing commonality of purpose and a common sense of action. In this context, several experts suggested the notion of ‘directionally sufficient’ or ‘directionally certain’ evidence, which can be constructed despite the lack of absolute precision in measurement and based on a consensus on the common purpose and ambition. Also this discussion is resonant of post-normal science (Funtowicz and Ravetz 1993) that considers the social construction of knowledge and involvement of ‘extended peer community’ central for strategic processes tackling complex and uncertain problems. Crucially, however, the perception on what is ‘uncertain’ in this context is also socially constructed and may reveal power clashes between different actors holding conflicting action frames and future visions of society and economy. This reflects a more deliberate change-oriented approach to policy evidence that
is to serve a longer-term vision rather than supporting arguments oriented towards building short-term coalitions and political or economic gains.

The results of the case study pointed out that the selection and use of evidence for the long-term policy vision reflected institutional frames and normative standpoints and the future visions of society and economy. The notion of ‘evidence-based policy’, in this context, may be misleading in a sense that it emphasises a rational process of policy-making based on a rational use of knowledge. The rational position towards evidence-based policy is not well catered for facing complex problems of uncertain nature that require making normative choices often in absence of scientific evidence. A more deliberative approach would need to focus as much on evidence base as on building the shared understanding and commonality of purpose among key stakeholders. This understanding would then provide a common ground for the shared vision and enable the mobilisation of stakeholders around the agenda.

In general, the reframing of policy appears to have influenced the scope and nature of evidence collected to underpin the new policy argumentation. The relations between changes of policy argumentation and available evidence were dialectical and iterative. First, new evidence and findings on the use of natural resources were among factors that influenced the initial idea of the new policy frames and the rise of resource efficiency on the political agenda. This evidence was then simplified and absorbed in the high-level policy argumentation. The headline arguments on resource efficiency and economic gains were thus included to policy speeches and documents. This in turn triggered off further search for suitable evidence supporting the new official line of argumentation. On the other hand, the case study indicated instances in which new research findings had influenced the scope and the prioritisation within the overall policy area.

In the areas with a high level of uncertainty, policy officials following a rational approach to policy process may feel institutionally bounded to give preference to ‘scientifically precise’ evidence based a wide scientific consensus. A deliberative process, on the other hand, would focus on constructing shared understanding and using ‘directionally sufficient’ evidence. The latter approach considers evidence base in policy as a social learning process rather than a repository of codified knowledge.

In the analysed case, adding a long-term challenge-driven perspective revealed differences in opinions on what constitutes a ‘sufficient’ evidence base for a long-term strategy and vision between different stakeholders. Varying perceptions on the systemic roots of the
problem and resulting views on its urgency had an influence on the perceived need and level of detail of evidence necessary for taking decisions.

E. How does a reframed formal policy narrative relate to other existing frames responding to the same societal challenge?

This question aimed at comparing the reframed formal policy narrative with existing frames of the problem (see Chapter 9.3 for the comparison). The research investigated whether and to what extent new policy arguments aligned or diverged with understandings and meanings underlying existing problem frames. It aimed at identifying emerging areas of ‘discursive affinity’ between narratives that could become a space for new or modified discourse coalitions (Hajer 1993). The comparative analysis of the formal policy narrative and meta-narratives of resource efficiency revealed a complex picture of policy narratives with many different sub-storylines on specific issues. The analysis indicated areas of convergence (or affinity), divergence as well as, importantly, ambiguity in relations between the formal policy narrative and the meta-narratives of resource efficiency.

In general, the formal policy narrative was intentionally framed to appeal to the economic actors (see discussion on research questions F and G). The economic rhetorical frames were designed to align with the dominant economic and political discourse of growth and economic recovery. Environmental concerns were among key problems of the narrative, however, they were not emphasised as strongly as the economic dimension and presented through the lenses of economic opportunity or cost. As a result, the policy narrative aligns with growth-oriented discourses of circular economy and material efficiency. Interestingly, in parallel it introduces the future vision of humanity respecting the absolute limits of resource use and co-existing with nature.

The formal discourse may thus appear to be shifting towards the acceptance of the notion of absolute limits to resource use. By limiting itself to general statements (or very specific references on selected resources), however, the text is open to various interpretations. The narrative is most ambivalent about limits when referring to natural resources that are also commodities (e.g. metals and minerals) but it passes stronger sustainability messages in the case of resources such as land or eco-system services. The question of limits appears but is introduced vaguely or is not explicitly referred to whenever it risks diverging too much from the main economic frames of the document. More fundamentally, the outspoken support for monetising of all natural resources and an almost exclusive focus on ‘economic value’ in the document, suggested even stronger economic frames of the problem.
In general, the narrative analysis demonstrates an apparent alignment of the formal policy narrative with both growth-oriented argumentation as well as with the notion of environmental limits. This raises the question about an internal coherence of the formal narrative. The narrative may appear rhetorically coherent by emphasising the win-win approach. The ambiguity and gaps in the Roadmap suggest, however, that the attempt to align with both the dominant growth-oriented economic problem frames as well as with environmentally considerations come at the cost of the internal coherence of the policy narrative. Achieving the internally coherent narrative would require making fundamental choices and taking stronger positions on potential conflicting issues between economic and environmental objectives. By remaining ambivalent about the overall environmental goal while strongly aligning with the growth-oriented economic discourse, the EC Roadmap de facto further reinforces the dominant economic frames and gambles about the interpretation of its environmental objectives.

F. What are mechanisms and motivations of an instrumental reframing of policy?

This question focused the reframing of policy considered an intentional change of policy argumentation by policy makers wishing to align it with the targeted audience (see Chapter 10 for a detailed analysis). The approach builds on Schön and Rein’s (1994) concepts of frame design, reframing and frame reflection (see Chapters 2.2 and 5.2).

The EC Roadmap was explicitly considered an early-stage ‘argumentative instrument’ to bring forward new economically oriented frames of resource efficiency with an expectation to align them with arguments of economic actors with a perceived power to act upon them. The intentional reframing of policy aimed at creating the shared understanding and emphasised a common interest in order to connect targeted stakeholders. The policy makers designed the new policy frames with an intention to align with frames held by progressive business and economic decision makers. The underlying idea was that if ‘business case’ of resource efficiency were convincing, then it would give a boost to the reframed environmental policy. Resource efficiency was reframed as a win-win strategy with a strong emphasis on ‘economic wins’ in a short-term. This notion was confirmed by the analysis of the Roadmap text and interviews that pointed to the predominance of pro-growth economic arguments in the document.

Reframing emphasised short-term economic benefits and largely ignored explicit references to potentially conflicting or divisive issues. The action frames were set to be ‘purposefully vague’ due to the lack of internal consensus on the problem and vision and to
a perceived uncertainty about the reception of frames by both internal (other DGs of the EC) and external stakeholders. This lack of internal consensus limited the potential for designing a well-defined vision and action plan; the focus was more on problem frames and preparing a ground for future alignment by reframing the issues as an economic opportunity. The ‘purposely vague’ problem and vision frames were difficult for the targeted stakeholder to relate to.

The case study demonstrated an attempt to change policy frames by the instrumental use of policy language and arguments of the dominant growth-oriented economic frame, which could be paralleled to trying to change the dominant system of power from inside of this very system. An interesting finding from the case study, that contributes to the original concept of reframing of Schön and Rein (1994), is that policy makers took into account not only the current dominant frames of the targeted audience, but also reflected on the future frames and associated emerging power relations that would support the future vision. The targeted stakeholders included both actors perceived as powerful in the current system as well as those whose role may grow in the future.

G. What are anticipated effects of an instrumental reframing of policy?

The question explored the potential effects of the reframing of policy narrative (see Chapter 10 for the detailed analysis). In general, introducing the long-term horizon together with a broad scope of the challenge made stakeholders rethink and reconsider how they view the issue of resource efficiency. As the limited time of the empirical research made it impossible to examine longer-term effects of the Roadmap, the focus was on the pre-conditions of effective policy reframing and on the short-term effects of the exercise. The literature review suggested that the reframing of policy may lead to alignment between policy and targeted stakeholders provided there is (1) shared understanding (not necessarily agreement!) of what is the policy problem and vision as well as (2) when there is a perception among the targeted stakeholders that the proposed action and vision frames are in line with their strategies. In other words, using Argyris and Schön’s (1996) ‘theories of change’, the reframing of policy needs to be based on assumptions and causal inferences that are understood and shared by targeted policy actors.

The results of the case study suggest that the alignment potential of the Roadmap was limited by the lack of shared understanding of what was the key policy problem. There was no feeling of ‘shared ownership’ of the Roadmap’s vision internally and outside the EC.
The Roadmap’s frames were considered too generic and ‘vague’ to enable more substantive ‘argumentative alignments’.

The preparation of the document did not follow an explicit roadmapping methodology. The use of term ‘roadmap’ can be misleading for expert audiences who know roadmapping from technology planning or foresight practice (see Phaal et al 2004, Phaal and Muller 2009). The biggest gap in the analysed policy document is the absence of a reflection on future pathways and the lack of timeline of concrete actions that are to lead to the future vision. The document limits itself to listing short-term actions and goals (2012-2015), general 2020 milestones and 2050 vision. The timeline between 2020 and 2050 is left blank. The interviewed EC officials could not explain the origins of the use of the term in the title of the document. The simplest explanation offered was that the term ‘roadmap’ was used in the Flagship communication on resource efficiency (EC 2011b) where the Roadmap was first announced.

In terms of short-term effects of the reframing, the publication of the Roadmap influenced external stakeholders insomuch as to take a position towards it and reflect on what resource efficiency meant for them. At the time when the empirical enquiry was conducted, however, there was no sign of a broader shared understanding of resource efficiency. Many stakeholders considered the Roadmap as an early voice in the debate. The broad scope of the resource efficiency challenge resulted in a very general document with the ‘grand vision’. As a consequence, the document led to a similarly generic response from stakeholders. The process did not design an environment or produce incentives that would favour early stakeholder alignment around the reframed policy vision.

11.3. Limitations and potential caveats of this research

Theoretical perspective

This research followed an interpretive constructivist approach to policy process. It may be criticised on the similar grounds as the overall approach, notably in relation to the issues of relativity and generalisability of its findings. The choice of the theoretical approach was made with the full deliberation (see Chapter 5.1 for the explanation). While reading the classical works introducing an alternative to positivist policy analysis, I felt that they corresponded better to what I have observed in my own professional work of contributing to policy studies, impact assessments and evaluations for public authorities. Policy processes are deeply situated in their context and cannot be explained by universal laws.
They do not follow mechanistic rationality or linear causalities. If this is the nature of the very subject of enquiry, it needs to be enquired as such. Therefore, I embraced an approach that explicitly recognises the normative situated nature of policy process. Interpretive approaches offer valuable insights on the specific cases they enquire as well as allow for drawing conceptual generalisations useful in both policy analysis and practice.

**Research strategy**

This study focuses on a single critical case study. This approach had its advantages and shortcomings (see Chapter 5.1.3 for a discussion). Giving a full attention to one case allowed for an in-depth analysis. It did not inhibit obtaining useful findings and observations. Without a doubt, conducting more policy cases studies evolving in similar context (e.g. other EC Roadmaps) would further contribute to this research area. (Chapter 12.2 on future research suggests exploring a comparative dimension.)

**Specificity of the EU context**

A critical comment much linked to the above point is the uniqueness and specificity of the policy process and the institutional context of the European Commission. The criticism can be addressed with the general arguments responding to the critique of performing single case studies. Clearly, the findings are situated in the specific context of the policy process; however, their implications are relevant for any policy area challenged with responding to complex societal challenges. Policy learning from this or any other case study needs to be reflective (see Schön and Rein’s ‘reflective transfer’), thus ‘translated’ into the specificity of other policy contexts.

**My role as a consultant and practitioner**

Finally, for the last 10 years I have worked as a consultant and researcher in projects funded by the European Commission. Since early 2010, I have coordinated the Eco-Innovation Observatory (EIO), a major DG Environment-funded activity on eco-innovation trends in the EC. The debate on eco-innovation, albeit led by different directorate with DG Environment, has been closely related to the resource efficiency discourse. In my professional career, I have come across a number of respondents interviewed for this case study. This professional involvement made my access to the research area privileged, but also may be seen as a caveat.

In order to respond to any potential criticism related to my professional position, I have applied a rigorous research practice and ethical considerations throughout the enquiry. All
empirical material collected was duly documented, explicitly validated by respondents and anonymised in the thesis. The respondents were informed that their testimonies would be anonymised prior the interviews and at the time of requesting the validation of interview transcripts. In all my communications with respondents, I have used the University email to clearly distinguish my academic and professional affiliations.

11.4. Further research

The future research will aim at applying the policy narrative framework analysis (POLFRAME) developed in this study. The method could be further tested and elaborated by introducing comparative perspectives and by extending time horizons of enquiry.

Learning from comparisons

The present research compared discourses emerging in response to a selected challenge. One of the assumptions behind the concept and the method was, however, that it could be replicated in other contexts and provide the basis for cross-case comparisons. The proposed policy narrative framework (POLFRAME) analysis can be used across different policy areas and in relation to different policy problems. The method could be also used to compare policy measures with differing time horizons; this would allow to further explore the question on whether and how the time horizon of policy measure influences policy frames. Comparative research on framing resource efficiency, for example, could be based on case studies from different geographical contexts (countries, regions, cities). The study could also interrogate and compare policy narratives and frames proximate to resource efficiency e.g. climate change, biodiversity etc. Comparisons of unrelated topics but addressed in similar contexts could also reveal interesting insights (e.g. about the role and dynamics of institutional frames and learning environments in policy design). The comparative dimension would strengthen the theoretical deliberations as well as practical findings useful for policy practice.

Time matters: reflection on reframing dynamics and effects

The empirical research conducted for this study had a limited time span, which made the analysis effects of reframing limited to early responses and anticipated outcomes and impacts. In order to add a temporal perspective to the narrative, the case study extended to analysing the historical evolution of the topic.

Further research should aim at covering longer periods in its empirical analysis that would allow for repeating the fieldwork to gather new material from policy makers and other
sources. This would permit a deeper reflection on the design, dynamics and effects of instrumental reframing across policy cycle as well as enquire changes in institutional and meta-cultural frames. This approach could also link the investigation of policy narratives to evolutionary perspectives in institutional economics and the innovation system perspective in innovation studies.

**Practical contribution to policy assessment and evaluation practice**

The approach featured in this study can be used in evaluation and impact assessment practice. In the case of evaluation, the approach could add interpretive depth to the analysis of the logic of intervention (e.g. inputs-output-outcome-impact model). This would imply constructing logics of intervention – or impact pathways – as perceived by different policy stakeholders and enquiring reasons underlying differences and potential conflicts.

The process of constructing and analysing alternative policy options in the practice of ex ante impact assessment (IA) could benefit from developing policy narrative frameworks underlying each considered option. Of particular importance for the IA would be to enquire *explicit and implicit* causal assumptions in policy options and their underlying ‘theories of change’. The IA could also benefit from a more transparent process of comparisons and selection of policy options that the use of policy narrative framework could support.

Furthermore, this research suggests that assessment criteria used for the long-term policies need to be adapted to take into account uncertain and deliberative nature of future policy scenarios and vision. The classic criteria as efficiency, efficacy or relevance would need to be revisited and new criteria could be considered in relation to the deliberative potential of policy options (e.g. assessment of the potential for the prospective stakeholder alignment in support of various policy options).

**Narrative frameworks and transition management**

The case study analysed an attempt to reframe policy by introducing an ambitious future vision and a transition agenda. The proposed structured approach to the frame analysis could be used to analyse and compare (aggregate or individual) narrative frameworks in emerging *niches* and existing *socio-technical regimes* in the multi-level perspective and the transition management (see e.g. Rotmans et al 2001, Geels 2005, 2010, Kemp et al 2007, Schot and Geels, 2008). This approach can be used to map and anticipate areas of potential alignment and dissent between emerging niches and regimes as well as between niches.
themselves. The interpretive analysis could reveal how different actors in the system understand complex problems. It could also show how different stakeholders anticipate evolution of niches, regimes and the landscape. The notion of landscape in the interpretive approach would be socially constructed thus perceived differently by different actors in the system.

**Narrative frameworks and governance**

The enquiry identified institutional frames and organisational structures among key factors that determine the process and effects of the reframing of policy. Both factors are closely linked with the process of policy change and policy governance. Future research on policy frames and reframing, especially in the context of ambitious transition policies, could examine more specifically how the reframing of policy influences and is influenced by the dominant modes of governance. Governance system could be thus considered as a social learning system that may enable or inhibit intended social learning and wider societal transitions (see e.g. Bringezu and Bleischwitz 2009, Hoppe 2011). Insights from an in-depth discursive analysis could provide a valuable contribution to the reflective process of designing and evaluating policy learning environments and new modes of governance established to enable societal transitions.
12. Policy reflections and recommendations

12.1. Embracing normative deliberation in the long-term policy

A future vision is a normative statement. Policies with a long-term vision tackling emerging societal challenges need to explicitly become a process of normative deliberation. Given the uncertain and unfolding nature of future, policy visions and scenarios are based on both extrapolations and interpretation of historical trends as well as on creativity and imagination about what is desired or what is feared about the future. This deliberation is a process in which empirical data and normative assumptions blend together. Future-proof policy process needs to embrace the normative nature of visioning. Given the risk and uncertainty of future, the policy needs to benefit from knowledge and deliberation on what is expected and likely to happen by many stakeholders. Designing vision frames should be co-developed with policy stakeholders with different understandings and stakes in the process. This is to ensure that stakeholders become ‘shareholders’ of meanings, interpretations and commitments in the vision (Lave and Wenger 1991). Such shared vision will be more likely to influence their action frames towards the overall goals of policy.

What can policy makers do in practice?

Incorporating the notion of the deliberative nature of policy processes can support various steps in the overall policy cycle. First, policy makers could dedicate part of the policy design process to systematically map and critically analyse different perceptions of challenges the policy addresses. This should include cognitive and normative assumptions underlying arguments, existing frames and evolution of power relations, the use of evidence as well as the overall theory of change and causal inferences underlying policy narratives. This also requires an ongoing self-reflection from policy makers. The policy narrative framework analysis used in this research could be one of the methods to perform such mapping.

Second, key findings on differences in perceptions could be shared and discussed with key stakeholders with a view to building a common ‘understanding of differences’ and to point to areas of the existing and potential alignment or ‘commonality of purpose’. This process will reveal different perceptions of risk and uncertainty as well as areas of controversy and
conflict. The process will also add an interpretive layer to the conventional policy intelligence based mostly on empirical data and expert interpretations of data. The key purpose is to take into account stakeholders’ perspectives on the problem. The process will help to anticipate emerging coalitions that may support or oppose specific visions and scenarios as well as identify possible trade-offs, compromises and areas for further work. This exercise can help policy makers to create the ‘windows of opportunity’ allowing to shift the policy in a desired direction and to build new networks or ‘alliances’ supporting the vision of change.

Third, with a robust understanding of how different actors approach and understand the boundaries of the challenge and systemic problems, the policy process is better prepared to attempt policy reframing. Having invested in mapping and comparing various understandings and existing frames, it is easier to prepare and run the visioning process and to anticipate and mobilise areas where argumentative alignment or conflicts emerge. Here the rationale moves to identifying common concerns, commonality of purpose and concrete future strategic opportunities. This is a basis of the future vision shared with key stakeholders.

It is important to ensure that emerging communities of purpose share both understanding of a desired direction of change and the way to monitor the progress towards the vision. Agreeing on a common direction may be a painstaking process; however, if successful, it will result in partnerships bound together by a shared perception of an opportunity, common interest as well as shared perception of emerging risks. While policy should strongly promote a single general direction of change (e.g. decoupling), it should also promote competing visions and pathways to achieve the goal. This will make the policy more adaptive to unforeseen trends or events.

The vision frame design and the process of policy reframing need to account for the role of institutional frames and associated power relations. An ambitious, yet strategically sound, policy reframing should, on the one hand, support new change-oriented coalitions and set in motion a longer-term task to redesign institutional settings that inhibit future vision and, on the other hand, smartly adjust to the existing institutions and dominant power structures not to mobilise to a strong opposition at early phase of reframing.
12.2. Towards a policy learning system

This research demonstrated that the nature of policy evidence needed to support long-term policies and vision is different from the evidence base of short-term decisions. The study argued that developing evidence base of policy is as much about collecting information and expertise as it is about moderating and framing argumentative interpretation of what constitutes policy problem. Extending the time horizon of policy creates a larger room for interpretation and imagination. It also makes uncertainty and risks commonplace in policy deliberation.

The concept of an evidence base needs to be revisited if it is to support design and implementation of long-term policies. Embracing interpretive approach implies that, apart from empirical data and codified knowledge, the policy process needs to be explicitly accompanied by a deliberative policy learning process. This is a process intimately linked with deliberating and implementing future vision. Policy learning is ultimately a process, which allows for an agreement on what is a ‘sufficiently robust’ evidence for the shared vision. Scientific knowledge is important in this process but it is far from being a sole element of this agreement. Even the best scientific knowledge alone will not mobilise a coordinated action. ‘Foresight knowledge’ constructed for a policy vision needs to be situated in a specific context, tailored for the specific challenge and include the notion of shared understanding of future risks and uncertainties (see ‘ownership of meaning’ above).

This study argues that models and impressive databases will not substantially improve forward-looking policy process unless they are empowered by the deliberative policy learning process. A policy model that is to support innovation and systemic transition has to embrace uncertainty and normative visions as its fundamental elements. It has to accept that the problem of uncertainty cannot be fully ‘solved’ by generating new knowledge. The different perceptions of uncertainty should be confronted, collectively reconstructed and managed. Policy must be prepared to dealing with the implications of systemic uncertainty.

Developing ‘evidence base’ in this context is not only about technical capacity to collect and analyse data, but it is also about appreciating different interpretations of data and building a shared understanding among key stakeholders. In the context of future challenges, the process needs to focus on shared understanding of the implications of what is known and what remains uncertain about societal challenges and their impacts. This calls for an integrated approach to monitoring and evaluation of policies that incorporates
both a system of data collection and dedicated policy spaces to confront different and construct shared interpretations of evidence.

As evidence base needs to embrace the social nature of ‘anticipatory knowledge’ and become a wider deliberative policy learning process. By clarifying the underlying (aligned or conflicting) assumptions and theories of change underlying policy frames, the social learning process makes future scenarios and visions robust and prepares the ground for ‘communities of purpose’ to emerge.

*What can policy makers do in practice?*

First, there is a need to critically reflect on assumptions and claims underlying codified knowledge in the evidence base of policy (e.g. databases, models, assessment methodologies). More critical attention is needed in the process of selecting, interpreting and linking evidence with policy arguments. Policy makers and officials should explicitly take into account specific contexts and assumptions in which evidence used to support certain policy decisions is created and interpreted by different organisations. Policy makers themselves are not exempt from this critical reflection.

Before engaging external stakeholders, policy makers should make an effort to ensure that the internal understanding of the problem is internally coherent and shared. Diverse, often conflicting, interpretations of the same policy objective by different ministries or even units within the same public organisation are not unusual. An effort should be made, however, to align the frames and position internally or – as a minimum – put forward clear alternatives before putting forward policy documents into public debate. The process of creating an internal alignment needs to include a dialogue involving key members of the organisation. Depending on the nature of the process, the dialogue may result in a formal document expressing the formal position or alternatives, but it is the process that is instrumental for building an internal shared understanding and the ‘commonality of purpose’ of involved actors. The purpose of this process of critical reflection is to build a better appreciation of meanings of various statements and numbers used in policy narratives. The collective reflection on the assumptions behind data and empirical evidence will reveal different understandings of the problems. This implies ‘unboxing’, or reconstructing, implicit assumptions underlying indicators and models. Revealing assumptions behind data extrapolations or modelling used to construct future scenarios and vision is especially relevant if it is to provide a useful contribution to the deliberative policy learning process. Given policy vision is to be shared by a wide group of
stakeholders, the process of selecting, treating and interpreting evidence needs to be transparent and, whenever feasible, participatory. This can contribute to building mutual trust in constructing future visions.

Second, there is a more fundamental need to rethink and re-organise the approach to generating and organising policy intelligence. The argument is to approach policy intelligence as a deliberative policy learning system rather than a system searching mainly for an instrumental validation of a given course of action. This means redesigning both approaches to gathering and interpreting evidence as well as to the wider institutional setting and organisational environment in which policy learning takes place. The former could imply enlarging theoretical and methodological bases of policy foresights, evaluations and impact assessments (to include interpretive approaches, amongst others). The latter is linked with a larger agenda of organisational and institutional change (see also below) that would create better conditions for organisational learning within the policy organisation as well as engage wider learning communities involving external actors and stakeholders.

12.3. Towards policy innovation and the new modes of governance

The case study demonstrated that existing dominant institutional and meta-cultural frames are likely to inhibit novel ambitious policy frames. In order to shift the dominant frames, policy makers need to explicitly reflect on how to change – or to innovate - underlying institutional or meta-cultural frames of current practices.

Policy makers interviewed for this study had an understanding of the need for a different approach to policy design in the context of long-term policy and vision. They realised that there was a ‘window of opportunity’ to shift the discourse on resource efficiency. This understanding, however, did not substantially influence the actual process of drafting and consulting the EC Roadmap. The design and preparation process was organised essentially as in the case of any other EC communication. The needed ‘policy innovation’ on how to design and ‘reflect’ on vision frames was curbed by the conservative institutional arrangements (institutional frames), the lack of the internal political consensus as well as by the practical constraints of time and capacity.

The process of designing the change-oriented vision frames could be compared to the innovation process in which readiness (here ‘frame readiness’) of innovation (here ‘novel frame design’) is being assessed in the ‘proof of concept’ process (here ‘proof of frame’).
In innovation processes, radical innovation is often blocked by systemic lock-ins and by incumbents whose dominant position may be threatened by the new solution. In the reframing of policy, new action and vision frames that are not aligned with existing institutional frames are prone to be watered down or appropriated by the dominant discourse.

The study suggests that the process of policy design in the case of the long-term policy vision could benefit from approaches developed by organisational learning and foresight. These practice-oriented traditions both suggest that if the vision and strategy are not ‘owned’ and ‘shared’ by key stakeholders, especially in areas with vested interests, the process is unlikely to result in alignment of understanding, let alone, in alignment of action. Similarly, the process of policy learning has to be catered for diverging, often conflicting, motivations and rationalities. It needs to move forward without conclusive evidence. The long-term policy is not about ‘rational choice’: it is about the social process of constructing shared understanding, purpose and direction. Again, lessons from organisational learning come relevant: there are no shortcuts in organising such ‘learning spaces’ (see Wenger’s community of practice and Argyris and Schön’s learning environments). Organisational learning takes time. So does policy learning and institutional change.

The current model of public administration organised in silos does not reflect the complex and dynamic nature of challenges faced by today’s economy and society. The implications of societal challenges, such as resource efficiency, are pervasive and require attention and coordinated action from many traditional ministries or DGs in the case of the EC. The EC RE Roadmap suffered from the internal conflicts and the existing institutional setting effectively discouraging collaboration between different services. This resulted in the lack of internal coherence of the agenda and pointed to the low capacity to resolve differences of various positions towards the problem with the EC. In order to respond to societal challenges more effectively, the organisation of the public sector has to become more flexible and less compartmentalised. The internal collaboration is the first step, but in order to develop a capacity to respond to new challenges and become resilient over time, bureaucracies need to become learning organisations.

Learning governments will proactively search for partners and operate in a close relationship with key social and economic stakeholders. One key way forward is to create and facilitate strategic alliances with progressive stakeholders to safeguard ‘innovation spaces’ responding to specific challenges, which can demonstrate examples of feasible
alternatives to policy- or business-as-usual scenarios. Creating such stakeholder alignment is not a one-off exercise. The process bears resemblance to social learning. The latter requires specific conditions and routines if they are to result in constructing mutual trust and shared understanding between stakeholders. Policymakers need to safeguard long-standing ‘learning spaces’ that offer sufficient independence yet are functionally linked to the policy deliberation. The challenge and prerequisite for such communities is to directly connect them with the process of policy design.

*What can policy makers do in practice*

The ambition to change governance and institutional frames needs to be based on a long-term strategy. This process may start by finding a niche and by mobilising a purposeful selection of a small group of stakeholders. The exercise should focus on constructing the commonality of purpose, building mutual of trust and the perception of interdependence between the targeted stakeholders. Strong leadership behind the vision of change is fundamental. This process can take place in spaces parallel to existing formal hierarchical organisational structures. It may create an early alignment of small group of actors who may act as advocates of the proposal at later stages of the process (*agents of change*).

Importantly, the process of change should build stakeholder alignment taking into account both current and future power relations and interdependencies between key actors sharing the future vision. The early alignment should include stakeholders who are expected to be key players in the future alongside a small group of present incumbents (see EIO 2013).

The attempt at institutional reframing is bound to meet strong opposition from early stages of the process. Excluding some major incumbents in the early policy mediation phase is a major risk, which is, however, necessary if the result of the exercise is to be something more than a status quo or incremental change. The policy mediation process can become more inclusive only at the later stages when the vision has mobilised first collective action. Conflicts will be impossible to avoid, therefore, the reframing of policy needs to be accompanied by a strategy on how to manage disputes and opposition. An early investment in understanding of narrative frameworks held by various stakeholders, as this study suggested, will yield valuable insights and help to anticipate where opinions are likely to align and where controversies and conflicts may arise.
Annex I. Policy narrative frameworks of resource efficiency
### Figure 24. Resource-intensive economy – resource wars

<table>
<thead>
<tr>
<th>Frame reflection</th>
<th>Argumentation</th>
<th>Facts and empirical evidence</th>
<th>Causal assumptions</th>
<th>Cognitive and normative determinants</th>
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</thead>
<tbody>
<tr>
<td>Meta-narrative</td>
<td><strong>First-order problems</strong></td>
<td></td>
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<td></td>
<td>High prices of resources</td>
<td>Data on fluctuating and/or growing prices of resources: the incentive to ensure access to resources by exploring new reserves and investing in new technologies</td>
<td>Industry depends on resources to be competitive in the global market. Competition and rivalry for natural resources influences markets.</td>
<td>Earth’s natural resources (or stocks) have physical limits but they are abundant and largely sufficient. Nature as a ‘servant’ of human development and economic growth. Human system superior to ‘nature’ (hierarchical relation) and de facto separate from natural system (calling environmental impacts ‘externalities’ confirms the notion of nature being separate or external). Environment can be ‘managed’ and ‘repaired’. Economic and social benefits from the use of resources have priority over potential environmental impacts of their use. Environmental because environmental impacts are often concentrated far away from where benefits are consumed. World in a constant battle for survival and power. Others are inevitably rivals in a battle for resources. Relationships based on power struggles and fear of loss of control that leads to limited trust. Those with resources are safer and less vulnerable to the outside shocks which ensures economic and political stability.</td>
</tr>
<tr>
<td></td>
<td>Difficult access to resources and dependency on imported materials</td>
<td>Data on material cost in company’s cost structure: as above</td>
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<td>Key resources available mainly in developing and emerging countries, often in politically unstable countries. Environmental protection is too stringent given extraction technologies are clean and safe. Technologies not sufficiently developed to extract feasible resources. Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources.</td>
<td>Data from geological surveys: interpretation serving the argument of abundance of resources at least in the medium-term (argument that reserves are continuously redefined with technological progress and new discoveries) Long-term material flow analysis going back to the beginning of XX century, often correlated with the growth of GDP and population (interpretation as above indicating that more resources are needed to satisfy needs of the growing population). Population trends and rising middle class in emerging economies: interpreted as the trend towards growing demand and competition for resources Information on new or planned extraction activities and facilities of global competitors: interpreted that Europe cannot afford not to get involved Data on trade of commodities: to support the argument on dependency on import of resources Wider economic trends, notably growth: interpreted as an argument for loosing economic leadership to emerging economies endowed with resources</td>
<td>Economies and societies depend on earth’s resources. The limited access to resources endangers economic competitiveness and well-being in Europe. In the longer-term this may further contribute to the loss of power of Europe on the global arena.</td>
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<td></td>
<td>Systemic deficiencies</td>
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<tr>
<td>Frame reflection</td>
<td>Argumentation</td>
<td>Facts and empirical evidence</td>
<td>Causal assumptions</td>
<td>Cognitive and normative determinants</td>
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<tr>
<td>Scenarios of change</td>
<td>Europe cannot afford to disregard that fact that it depends on resources, especially for energy production. Secondary and renewable resources may be an alternative but only in a longer term. The focus should be on assuring competitiveness of economy. Need to innovate technologies to get access to so far unexplored resources and territories. Technological advancement will ensure minimal environmental impacts (e.g. clean coal, closed-loop extraction) Innovation leading to substitution of fossil fuels (preference for major advanced technologies such as nuclear fission rather than decentralised small scale solutions) Policies to support better access to resources and frame economic relations with resource-rich countries to allow access to resources. New horizons for the narrative: extracting materials from urban mines and landfills</td>
<td>Data from geological surveys: interpretation serving the argument that with technological progress and better access the level of reserves is much higher; emphasising the role both old, e.g. coal and ‘new’ resources e.g. shale gas; indicating that easier to access and higher grades available in the so-far unexplored regions e.g. Greenland; also arguments on urban and landfill mining (overlap with circular economy) Case-based data on innovative technologies (often based on tested technologies or prototypes) as a proof and promise of technological solution (often with a fully fledged EIA analysis) Use of LCA indicators to measure impacts but pressure indicators on e.g. material consumption refuted as unusable (radical opposition against measuring unused extraction) Data on fluctuating and/or growing prices of resources and geological surveys: to support the argument that investments in new technologies are needed; also interpreted to emphasise technological, economic and political nature of the problem that can be overcome Economic valuation of resources available in the so-far unexplored places or previously unattractive grades. Underlying that technological progress has allowed to redefine remaining deposits</td>
<td>Investment in new technologies and international agreements will improve our access to resources as well as decrease environmental impacts associated with extraction. Technologies allow to access so far inaccessible resources</td>
<td>Deep belief in technological progress and political bargaining as a solution to resource problems. Environmental impacts can be managed and contained. Environmentalists exaggerate risks and precaution needed. Technological progress will ensure access and can ‘buy us time’ to find (a break-through technological) solution in the future (e.g. new centralised energy generation technology such as nuclear fission). Belief in human ingenuity thriving in the current market-based liberal system. Myth that humanity will overcome problems and rise again as in the past. Deliberate use of (political and technological) power to gain access to resources. Dominating interests: countries and companies relying on benefits from extraction, industrial mass production as well as technology developers. Intention to largely preserve political, economic and social model (consumption still at the very heart of it)</td>
</tr>
<tr>
<td>Future vision</td>
<td>Technology-based economy and society. Technological innovation ensures that problems related to access to resources and energy and associated environmental impacts are resolved. Benefits from efficient extraction allow to withstand global competition and to test alternative technologies and resources, notably to substitute fossil fuels. Economy based on material growth and consumption. Models and projections on resource use: suggesting the new reserves will be sufficient to support growing demand provided newly discovered reserves are exploited with better technologies. Critical reactions to evidence suggesting the contrary.</td>
<td>Access to resources ensures economic growth and well-being. The current economic and social system can continue if (1) access to resources is ensured and (2) technologies improved.</td>
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</table>
## Figure 25. Material-efficient economy – doing more with less

<table>
<thead>
<tr>
<th>Frame reflection</th>
<th>Argumentation</th>
<th>Facts and empirical evidence</th>
<th>Causal assumptions</th>
<th>Cognitive and normative determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Meta-narrative</strong></td>
<td>Framing empirical evidence and normative claims</td>
<td>Constructing and interpreting meanings of facts, empirical evidence and anticipated trends</td>
<td>Assumptions on historical and future causal mechanisms</td>
<td>Interpretation of cognitive and normative assumptions underlying arguments, evidence and causal claims</td>
</tr>
<tr>
<td><strong>First-order problems</strong></td>
<td>High prices of resources&lt;br&gt;High share of material cost in the operating cost&lt;br&gt;Low material productivity&lt;br&gt;Difficult access to resources and dependency on imported materials&lt;br&gt;Environmental impacts</td>
<td>Data on fluctuating and/or growing prices of resources, especially materials (as the incentive to improve material efficiency)&lt;br&gt;Data on material cost in company’s cost structure; as the incentive to improve material efficiency&lt;br&gt;Growing population and rising middle class in emerging economies: as an indicator of growing demand and competition for resources.</td>
<td>Companies depend on resources. Competition and rivalry for natural resources and resource-efficiency oriented technologies influences markets.</td>
<td>Nature as a ‘resource’ supporting economic growth and wellbeing.&lt;br&gt;Human system superior to ‘nature’ (hierarchical relation) but systematically linked to natural system by the dependence on resources.&lt;br&gt;Humankind manages nature&lt;br&gt;Benefits from the use of resources are more important than impacts of their use but harmful impacts should be avoided if possible.&lt;br&gt;Market-based approach to relations between humankind and nature where nature is attributed economic value&lt;br&gt;World as a constant battle for survival in a competitive world. Others are inevitably rivals in a battle for resources and access to resource-efficient technologies. &lt;br&gt;Relationships based on power struggles and fear of loss of control that leads to limited trust. Those with resources and technology edge are safer and less vulnerable to outside shocks.</td>
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</tbody>
</table>
| **Systemic deficiencies** | Production systems based on the model of unsustainable resource-intensive processes and products<br>Inefficient infrastructures, technologies, products as well as business models and management practices.<br>Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources. | Geological surveys (interpretation serving the argument of unstable access and uncertainties of data on reserves and deposits).<br>Data on fluctuating and/or growing prices of resources; supporting arguments on untapped potential of material efficiency and consideration<br>Material flow analysis: long-term material consumption supporting the argument of growing materials consumption; material efficiency indicators measured as ratio of GDP and domestic material consumption DMC to support argument that so far growth of material productivity did not lead to absolute decoupling; this is also compared to growth in labour productivity to support an argument that cost of labour resulted in high labour productivity; an argument that resources are critical, excessive dependence on access to resources is a strategic risk, need to improve efficiency<br>Economic indicators and trends (e.g. GDP) (interpreted as an argument for looking for other sources of economic growth). | Economies and societies depend on earth’s resources thus they should use them productively. Resources ensure economic growth and wellbeing.<br>The limited access to resources coupled with relatively low resource productivity is a barrier to economic competitiveness.<br>In the longer-term this may further contribute to the loss of power and technological leadership on the global arena. | }
<table>
<thead>
<tr>
<th>Frame reflection</th>
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<th>Causal assumptions</th>
<th>Cognitive and normative determinants</th>
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</thead>
<tbody>
<tr>
<td>Scenarios of change</td>
<td>Mix of incremental (but widely diffused) and radical technological and non-technological innovations leading to higher resource efficiency in production</td>
<td>Economic opportunity of efficiency quantified as material and energy cost savings to be obtained thanks to resource efficiency (often related to resource prices)</td>
<td>Better technologies are expected to improve resource productivity leading to the cost reduction and enhanced competitive advantage.</td>
<td>Belief in technological progress focussed mainly on efficiency and productivity. Environmental impacts can be managed and contained. Efficiency believed to be an argument to win over environmentalists.</td>
</tr>
<tr>
<td>Vision frames</td>
<td>Innovation leading to substitution of critical materials, also with bio-based materials</td>
<td>Data on fluctuating and/or growing prices of resources: to support arguments that the prices will be growing in the future; Geological surveys: estimates on how long will the resources last with current consumption patterns;</td>
<td>Incremental innovation to diffuse widely and lead to high aggregated savings. Resource efficiency to reduce environmental pressures at least compared to the current production patterns.</td>
<td>Belief in human ingenuity and win-win solutions without changing the current paradigm. Myth that humanity will overcome problems and rise again as in the past but indication that the paradigm of industrial development may change.</td>
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<td></td>
<td>Policies to support development and diffusion of innovative technologies and to influence resource pricing (market-based mechanisms)</td>
<td>Case-based data on performance of innovative technologies and processes (often based on tested technologies or prototypes and generalised assuming maximum diffusion): to support an argument and a promise of technological solution</td>
<td>Resource efficiency to reduce environmental pressures at least compared to the current production patterns.</td>
<td>Deliberate use of (political and technological) power to gain access to critical resources.</td>
</tr>
<tr>
<td>Future vision</td>
<td>Technology-based economy society. Technological and non-technological innovations ensure that problems related to inefficient use of resources are resolved. Both growth and relative decoupling thanks to high resource productivity</td>
<td>Material flow analysis: compared to growth in labour productivity to support the argument that high cost of labour resulted in high labour productivity; it is implied by parallel that higher cost of resources would result in higher resource productivity;</td>
<td>The current economic and social system can continue if we ensure access to resources and improve technologies.</td>
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<td>Models and projections on resource use (suggesting the resources will be sufficient to support growing demand provided newly discovered reserves are exploited with better technologies)</td>
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<td>Data on resources available in the so-far unexplored places or previously unattractive grades presented with the estimated economic value of these deposits.</td>
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**Figure 26. Circular economy – towards zero waste**

<table>
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<tr>
<th>Frame reflection</th>
<th>Argumentation</th>
<th>Facts and empirical evidence</th>
<th>Causal assumptions</th>
<th>Cognitive and normative determinants</th>
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<tbody>
<tr>
<td><strong>Meta-narrative</strong></td>
<td>Framing empirical evidence and normative claims</td>
<td>Constructing and interpreting meanings of facts, empirical evidence and anticipated trends</td>
<td>Assumptions on historical and future causal mechanisms</td>
<td>Interpretation of cognitive and normative assumptions underlying arguments, evidence and causal claims</td>
</tr>
<tr>
<td><strong>First-order problems</strong></td>
<td>High prices of resources, Environmental impacts, Difficult access to resources and dependency on imported materials, Dependency on imported materials</td>
<td>Data on fluctuating and/or growing prices of resources (as the incentive to improve material productivity). Data on economic potential of using waste and secondary materials, including end-of-life product flows, interpreted to emphasise the problem of unexplored economic potential of re-use. Data on material cost in company’s cost structure: as the incentive to change business and to start re-using materials.</td>
<td>Companies depend on resources. Competition and rivalry for natural resources and resource-efficiency oriented technologies influences markets.</td>
<td>Nature as a scarce resource supporting economic growth and wellbeing. Human system is part of a planetary system. Humans are responsible for managing the resources. There is a need for a dynamic balance between nature and humankind. Humankind can imitate nature. Humans do not have pretence to own resources. There is a strong recognition of value of nature (valuation is systemic taking into account eco-system). World as a complex system of mutually dependent actors. Hierarchies and horizontal networks co-exist. Actors are competitors and collaborators in the struggle to ensure access to primary and secondary resources and resource-efficient innovations. Those with resources and resource-efficient technologies are safer and less vulnerable to outside shocks in the future.</td>
</tr>
<tr>
<td><strong>Systemic deficiencies</strong></td>
<td>Economic systems based on the model of unsustainable resource-intensive growth. Mismanaged material flows, inefficient business models and value chains as well as poor infrastructures, technologies, products. Population growth, growing affluence and economic development in emerging countries makes them fierce competitors for resources.</td>
<td>Material flow analysis: long-term material consumption supporting the argument of growing materials consumption due to persistence of linear economic models; often correlated with population trends and GDP growth. Growing population and rising middle class in emerging economies: as an indicator of systemic problems and irreversible trends. Economic indicators (e.g. GDP and employment): interpreted as an argument for weaknesses of linearly organised economies and societies. Geological surveys: interpretation serving the argument of limited access and uncertainties of data on reserves and deposits.</td>
<td>Excessive consumption endangers well-being.</td>
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<tr>
<td>Frame reflection</td>
<td>Argumentation</td>
<td>Facts and empirical evidence</td>
<td>Causal assumptions</td>
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<tr>
<td><strong>Scenarios of change</strong></td>
<td>Industry pioneers to build competitive advantage based on the circular models in short-term. In the mainstreaming phase, system innovation to support performance-oriented business models and closed-loop systems of production and consumption. This requires both technological and non-technological innovations as well as policies to support the shift (including adapting resource pricing). The consumers will gradually shift to new models. IT and social media will play an important role in this change.</td>
<td>Data on fluctuating and/or growing prices of resources; as an indication of resources difficult to access in the future; interpreted to emphasise future economic opportunity. Data on waste, end-of-life product flows, and secondary materials (currently very patchy) interpreted to emphasise the potential of re-use. Evidence from the currently implemented product-service models interpreted as a ‘pervasive shift’ in consumer behaviour (e.g. bike-sharing models). Case-based data on performance of innovative technologies (often based on tested technologies or prototypes) as a promise of technological solution.</td>
<td>Resource scarcity and environmental standards to remain and to be a driver of change. Assumption of the pervasive shift in consumer behaviour (from ownership to access) although ‘cultural resistance’ is a barrier. Information technology and social media expected to support the shift.</td>
<td>Belief in progress and human ingenuity. Assumption that humanity can redesign social and economic systems. Assumption (myth) that humanity can act rationally to overcome problems. Assumption that human relations to artefacts (notably ownership patterns) can change by design. Culture can be redesigned and reprogrammed. Deliberate use of (political and technological) power to gain access to critical resources.</td>
</tr>
<tr>
<td><strong>Vision frame</strong></td>
<td>Economy and society re-organised to close the loops of material flow. Humankind minimises use of natural resources by maximising durability and re-use to ensure growth and prosperity. Dematerialised growth: absolute decoupling thanks to system innovation.</td>
<td>Models and projections on resource use (suggesting the resources will be sufficient to support growing demand provided newly discovered reserves are exploited with better technologies). Data on resources available in the so-far unexplored places or previously unattractive grades presented with the estimated economic value of these deposits.</td>
<td>Growth-based economies can continue if we ensure that growth is dematerialised.</td>
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<tr>
<td><strong>Future vision</strong></td>
<td>Data on resources available in the so-far unexplored places or previously unattractive grades presented with the estimated economic value of these deposits.</td>
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</table>
### Figure 27. Sufficiency economy – new consumption culture

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<tr>
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<th>Facts and empirical evidence</th>
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<th>Cognitive and normative determinants</th>
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<tbody>
<tr>
<td><strong>Meta-narrative</strong></td>
<td>Arguments and storylines framing empirical evidence and normative claims</td>
<td>Constructing and interpreting meanings of facts, empirical evidence and anticipated trends</td>
<td>Assumptions on historical and future causal mechanisms</td>
<td>Interpretation of cognitive and normative assumptions underlying arguments, evidence and causal claims</td>
</tr>
<tr>
<td><strong>Problem frames</strong></td>
<td>Excessive consumption</td>
<td>Data on environmental impacts</td>
<td>Companies depend on resources. Competition and rivalry for natural resources and resource-efficiency oriented technologies influence markets.</td>
<td>Humankind is part of a nature and as such is not in a superior hierarchical relation to nature. If anything, humans depend on nature and its (eco-system) services to survive.</td>
</tr>
<tr>
<td><strong>First-order problems</strong></td>
<td>Environmental impacts</td>
<td>Data on fluctuating and/or growing prices of resources (as the incentive to improve material efficiency). Data on market cost in company’s cost structure</td>
<td></td>
<td>Current civilizational model leads to a constant battle for survival. Relationships based on power struggles and fear of loss of control that leads to limited trust. Those with resources and resource-efficient technologies are safer and less vulnerable to outside shocks.</td>
</tr>
<tr>
<td><strong>Systemic deficiencies</strong></td>
<td>Social and economic systems based on the model of unsustainable growth and consumption-based culture. Market has failed to account for negative environmental effects (‘externalities’) of this model. Population growth, growing affluence and economic development in emerging countries creates additional pressures and impacts on environment.</td>
<td>Data on fluctuating and/or growing prices of resources (as the indicator supporting arguments on market- and policy-failure) Economic indicators (e.g. GDP) (interpreted as an argument for loosening economic leadership)</td>
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<tr>
<td><strong>Scenarios of change</strong></td>
<td>Social innovation to support sustainable lifestyles and limited consumption. System innovation to support performance-oriented business models and closed-loop systems of production and consumption. Policies (including resource targets) to support social innovation and system innovation to influence resource pricing</td>
<td>Models and projections on resource use (suggesting that population growth with current levels of consumption will lead to scarcities and irreversible impacts)</td>
<td>Case-based data on alternative consumption models (scaled up to support an argument that the models can support growing population)</td>
<td>Belief that system-level transitions can be implemented by design. Rejects myth that human systems can parallel nature’s self-organisation but is based on a belief that humans can implement and sustain self-restrained system.</td>
</tr>
<tr>
<td><strong>Vision frames</strong></td>
<td>Humanity uses resources only when needed to satisfy human needs. Key role of local decentralised economic and social models based on self-sufficiency.</td>
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<td>Humans do not have pretence to own resources. There is a strong recognition of value of nature (valuation is systemic taking into account eco-system, socio-economic and cultural aspects). The relations are based on respect and care based on the understanding of human’s dependence on nature. Deliberate use of (political and technological) power to start transition.</td>
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<td>No growth: society and economy in a dynamic balance.</td>
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References

A. Stakeholder interviews

All interviews were anonymised. Unique code was attributed to each respondent. The in-text citations consist of a code referring to the type of stakeholder, the reference number and the date of interview, e.g. ‘EI2 2012’ consists of ‘EI’ standing for a respondent from European institution, ‘2’ referring to the reference numbers and ‘2012’ which is the year when all interviews were conducted. The citation codes are introduced below.

**European institutions - EI** (European Commission, European Parliament, EU agencies)

2. EI2 2012  7. EI7 2012  12. EI12 2012 (note not validated)
5. EI5 2012  10. EI10 2012  15. EI15 2012 (no formal note)

**Member states – MS** (MS governments)

16. MS1 2012  18. MS3 2012  20. MS5 2012
17. MS2 2012  19. MS4 2012

**International organisations – IO** (international organisations)

21. IO1 2012  22. IO2 2012 (no formal note)

**Business representatives – BIZ** (companies and business organisations)

24. BIZ2 2012  27. BIZ5 2012
25. BIZ3 2012  28. BIZ6 2012

**Experts - EXP** (including academic respondents, researchers and consultants)

30. EXP1 2012  34. EXP5 2012  37. EXP8 2012
31. EXP2 2012  35. EXP6 2012  38. EXP9 2012
32. EXP3 2012  36. EXP7 2012  39. EXP10 2012
33. EXP4 2012

**Non-governmental organisations – NGO**

40. NGO1 2012  41. NGO2 2012  42. NGO3 2012
B. Official documents and speeches


C. Books, reports, chapters and articles


Kemp, R; Loorbach, D, Rotmans, J (2007) ‘Transition management as a model for managing processes of co-evolution towards sustainable development’. The


D. Websites

EC, Online Resource Efficiency Platform (OREP):
http://ec.europa.eu/environment/resource_efficiency (visited 18 December 2013)

The Ellen MacArthur Foundation: http://www.ellenmacarthurfoundation.org (visited 18 December 2013)

Transition Network: http://www.transitionnetwork.org/ (visited 18 December 2013)