

Policy brief – Assessing low carbon transitions

Deliverable 6.4

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Key findings

- *New approaches are needed for assessing and evaluating low carbon transitions and transition policy.* This requires an understanding of broader socio-technical change and ex-ante analyses that stretch over longer time periods than is normally the case in policy evaluation.
- *It is important that the assessments not only study what has already happened or what can happen in the near-term, e.g. in terms of emission reductions or technology diffusion.* They should also analyse to what degree innovations and socio-technical systems develop in ways that makes society equipped and prepared for more long-term challenges. With too much focus on near-term and low-cost options we may create new lock-ins and risk lack of attention to solutions that are needed in the long-term.
- *Scenarios and analyses of possible decarbonisation pathways are important for exploring future challenges and options.* Society will develop and change in various ways in parallel to, and with implications for the viability of, low carbon transitions. Future decarbonisation pathways must be analysed against, adapted to and co-evolved with a changing context.
- *Transitions must be (i) monitored and (ii) policies evaluated, based on (iii) continuous knowledge and capacity building.* These are three key pillars from which to develop policy relevant insights. These can build on contributions from a range of actors (e.g. academia, civil society, and business) for different and critical perspectives. The potential scope and ambition of assessments will depend on the amount of allocated resources.



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Background

Policy evaluation is an important part of the policy cycle. Its role can be both to learn how policies can be improved in order to reach societal objectives and a way to increase the transparency and thus accountability of policymakers (Mickwitz, 2006). In addition, broader assessment approaches (including also non-policy aspects) could increase the opportunity to understand ongoing developments and existing barriers and opportunities for reaching a zero-emission future. These broader assessments might not be classified as policy evaluation in the traditional sense but could be highly *policy relevant*. In this policy brief we discuss different assessment types and perspectives that can be applied in the context of a low carbon transition.

Assessing low carbon transitions presents several challenges. There is a need to consider both near-time and long-time effects as these transitions are characterised by i) that many of the most

important climate effects will occur in a distant future, ii) the inertia of energy and industrial systems and iii) the time dynamics of technology development and innovation. During this time span many societal changes will unfold that have to be taken into account in reflexive assessment processes. It is important to bear in mind that low carbon transitions can occur along different pathways as previous research in REINVENT has illustrated (Bauer al., 2019). In addition, aiming at near zero emissions will need a different approach than used when evaluating short-term change with a focus on marginal abatement costs.

The character of climate change where the consequences are global but specific measures and responsibilities fall on national authorities poses a challenge for evaluation. How can we e.g., value the importance of technology transfer and policy spill overs that improves the opportunities for CO₂ mitigation outside national borders?

Different approaches to low carbon assessments

It is not possible to say exactly what an assessment should include or how it should be designed. This depends on the *purpose* of the assessment and the *resources* allocated. The purpose can differ depending on who does the assessment. A government agency might want to make the evaluation in order to learn how policies can be changed to meet governmental objectives more effectively. An NGO might want to use the assessment to criticise existing objectives and policies, while the researcher may be more interested in learning more about the barriers and opportunities for change or how the policy processes work.

The availability of resources will in turn be important with regard both to how broad and

deep the assessment can be and to what extent knowledge and other inputs from different stakeholders can be gathered. It is not possible to include all relevant factors and perspectives in an individual assessment.

The approach will also depend on whether the focus is the global, national, sectorial or project level. It can be noted that the conditions for change depend on different contextual factors. For example, Knoop et al. (2019) show in a REINVENT study that there are different drivers and barriers for change in different sectors. One consequence of this is that there are different factors to monitor depending on which sector is in focus.

A conceptual model for assessment of low carbon transitions

We propose a conceptual model for different types of low carbon transition assessments and how the different assessment types interrelate to each

other. The model takes its starting point in a perspective that recognises an important role for policies for realising low carbon transitions. It does

not, however, restrict itself to policy evaluation per se but also includes other *knowledge building processes*. Three different assessment categories – of which the first two are primarily following policy cycles – are identified and presented in Figure 1:

- Monitoring
- Policy evaluation
- Building domain knowledge

The conceptual understanding assumes that the assessments are expected to be of policy relevance for low carbon transitions. It means that overarching assessment criteria are affected but not necessarily determined by political priorities, targets and policies. Monitoring is understood as a process that is intended to inform whether society is on track for meeting the political priorities that are set up. Policy evaluation concentrates on the effects of relevant policies. General and domain specific knowledge building through research and other processes is important both for identifying assessment criteria, and designing relevant monitoring systems, including relevant indicators as well as policy evaluations.

In the conceptual assessment model, policy adjustments are expected to be informed by the monitoring process regarding *what is needed* and by policy evaluation with regard to *what works*.

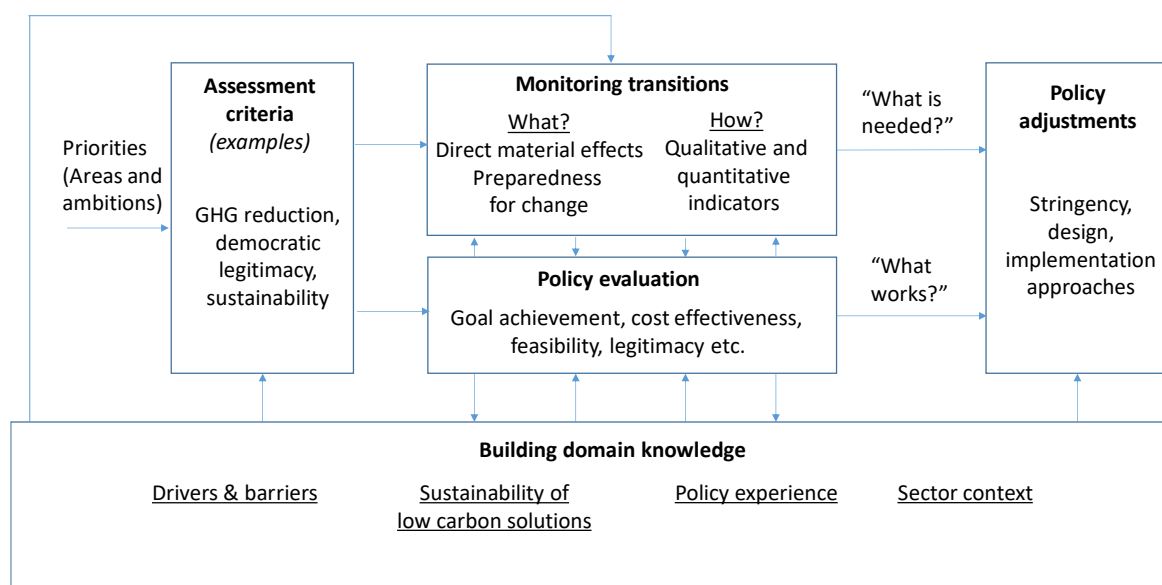
Together these processes could inform how both the *stringency* and the *design* of policies could be altered.

The assessment fields and criteria can in addition to climate change include, depending on priorities, factors such as industrial competitiveness, cost efficiency, distributional aspects, political participation and various legal aspects. The motivation for including such factors can be both because of some intrinsic values (e.g. democracy or equity) or their instrumentality in reaching the main aim of low carbon transitions.

The domain knowledge base could include knowledge of i) drivers and barriers for a low carbon transition, ii) the sustainability of various technologies, policies and practices, iii) previous policy experiences, and iv) contextual knowledge of the market, actors, mitigation technologies etc. in various sectors. All this information would help inform how policies can be redesigned for overcoming the barriers and enabling change in various contexts while safeguarding that the changes are not conflicting with other sustainability aspects.

The domain knowledge base will be important input to the monitoring process helping decide what indicators to monitor.¹ Monitoring could

Low carbon transition assessment – a conceptual figure



Conceptual figure illustrating how different types of knowledge production fit a policy context and relate to each other. Arrows illustrate interactions rather than specific policy processes.

¹ Indicators can be seen as variables constructed or selected to operationally represent properties of more or less well defined

“representation targets” (Lehtonen, 2012, See also Journard et al., 2011)

cover *direct outcomes* such as greenhouse gas emissions or diffusion of low carbon technologies. But with a long-term transitions perspective it is as important to look into the *preparedness for change* with regard to factors such as visions and expectations, knowledge, feasibility of policies and policy instruments (taking into account stringency as well as coverage and policy coherence), innovation networks, or the readiness of key technologies (Bergek et al., 2008).

Evaluation of policies can in turn cover several aspects beyond policy relevance and effectiveness (Mickwitz 2006) in line with the assessment criteria previously mentioned. It can evaluate the consistency of targets with overarching objectives as well as specific strategies, policy instruments or

policy packages. Policy evaluation can be in the form of ex post learning from how existing policies and policy instruments work as well as ex ante where future effects are assessed. To determine the role of policy instruments, in both the ex post and ex ante cases, it is useful to relate to a reference scenario. A specific challenge is to determine future developments as there are many potential developments in various sectors as well more general throughout society. Different types of scenarios can play a role, both internal scenarios, focusing on changes within the studied system limits and external scenarios which are directed towards developments outside the system limits (Börjesson et al., 2006). Analysing the effects of policies in different external scenarios allows for testing their robustness.

Who, when, and where?

The proposed model is intended as a heuristic for how to connect different types of learning, monitoring, and evaluations and as such can be applied at different scales and levels of governance and policymaking. While some aspects are most relevant for coordinating national level assessments, e.g. by central government committees focused on climate change mitigation and adaptation, other aspects are also highly relevant at regional and local levels.

The long-term commitment to knowledge building and policy adjustments is central as transition processes at all scales are characterised by radical uncertainty and requires continuous re-evaluation. Institutionalising a delegated responsibility for coordinating different types of assessments and appreciating their complementarity is thus key at all levels.

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