

Climate Policy Integration as a Necessity for an Efficient Climate Policy

By

Per Mickwitz^{1*}, Silke Beck², Anne Jensen³, Anders Branth Pedersen³, Francisco Aix⁴, David Carss⁵, Nils Ferrand⁴, Christoph Görg², Paula Kivimaa¹, Christian Kuhlicke², Wiebren Kuindersma⁶, María Máñez⁴, Matti Melanen¹, Suvi Monni⁷, Hugo Reinert⁵ and Séverine van Bommel⁶

¹Finnish Environment Institute, Finland, ²Helmholtz Centre for Environmental Research (UFZ), Germany, ³NERI—National Environmental Research Institute, Denmark, ⁴Centre for Agricultural and Environmental Engineering Research, France, ⁵Centre for Ecology and Hydrology, United Kingdom, ⁶ALTEERRA at Wageningen University, The Netherlands, ⁷JRC-IES—Institute for Environment and Sustainability, Italy

*The corresponding author: per.mickwitz@ymparisto.fi

Abstract

Significant changes in production processes and consumption patterns are required if high-consumption societies are to tackle climate change. These changes will not be achieved unless climate change is taken into account in the general and sector-specific policies that underlie economic activity and general social development. When actors react to climate policies, they are also influenced significantly by other policies. The degree to which climate change issues are considered and integrated into existing policy areas is therefore a key issue, along with climate-specific measures such as emissions trading. The paper assesses the extent of climate policy integration in six European countries (Denmark, Finland, Germany, the Netherlands, Spain and the United Kingdom) and in some cases regions and municipalities and analyses measures and means for enhancing climate policy integration.

This study shows that climate change has a more prominent role in governmental programmes than ever before, and it is no longer delegated to just one minister, one ministry or a few institutions. The most recent national climate strategies recognize the need for, and are built on, climate policy integration to a much greater extent than was previously the case. At the local level, many large cities, as well as smaller

municipalities, have made climate commitments which are often more ambitious than commitments made at a national level.

More important than incorporating climate policy integration more deeply into policy strategies is extending it more fully to specific policy instruments. Across countries and regions, the need to deepen climate policy integration into spatial planning and governmental budgeting is common. In the countries studied, there are many inconsistencies between climate policy aims and other policy aims, which are rarely openly assessed. Mainstreaming climate policy opens up controversies such as the option of nuclear energy production or regulating the use of private cars. The study also shows that both mitigation and adaptation concerns all levels from the local to the global and that the interactions between levels are complex and multidirectional.

1. Introduction

If high-consumption societies are to tackle climate change, significant changes in production processes as well as in consumption patterns are required. Such transformations will require that climate change is taken into account in general and sector-specific policies, which underlie economic activity and general social development. When industry, energy producers or transport companies take action as a result of climate policies, they are also influenced significantly by other policies. If climate policies are not supported by other policies, the required transformations will not be achieved. The degree to which climate change issues are considered and integrated into existing policy areas is therefore a key issue, along with climate-specific measures such as emissions trading.

The general motivation of the article is to summarize and discuss empirical findings on features and conditions for better and more coherent climate policies and governance processes. More specifically, it aims to assess the degree of climate policy integration in six European countries, at national and local governance levels, and in relevant policy sectors like energy, traffic, spatial planning, research, etc. Based on the present state of climate policy integration, means – such as institutions, processes or measures – to enhance climate policy integration are suggested.

The next Section introduces the conceptual framework and the multi-case study approach of the study. In Section 3, this framework is applied to examine the degree and character of climate policy integration in the studied areas, while the discussion in Section 4 centres on investigating the implications of these findings for the future. The main conclusions of the study are presented in the final section which stress the

multi-level nature of climate policies and trade-offs and conflicts between different policy areas as key future challenges for climate policy integration.

2. The framework: A multi-case study approach combining different data sources

This article summarises the work of several case studies at different levels of governance, using a common overall theoretical framework for analysis (Table 1). All the case studies build on in-depth qualitative interviews and qualitative document analysis. The common framework builds on theories of multi-level governance (Bache and Flinders 2004) and of policy integration (Underdal 1980; Lafferty and Hovden 2003).

[Insert table 1 here]

Based on the definitions of policy integration by Underdal (1980) and of environmental policy integration by Lafferty and Hovden (2003), **climate policy integration** is defined as:

- the incorporation of the aims of climate change mitigation and adaptation into all stages of policy-making in other policy sectors;
- complemented by an attempt to aggregate expected consequences for climate change mitigation and adaptation into an overall evaluation of policy, and a commitment to minimise contradictions between climate policies and other policies.

Some criteria are necessary in order to be able to assess the degree of climate policy integration (Table 2). Environmental policy integration has been widely studied and methods to assess its extent have been developed (e.g. Lenschow 2002, Jordan and Lenschow 2008). Organisations such as the OECD (2002) and the European Environmental Agency (2005a, 2005b) have also provided criteria and checklists for assessing environmental policy integration. The criteria used in this study are based on the definition provided above (for details see Kivimaa and Mickwitz 2006 & Mickwitz and Kivimaa 2007).

The first criterion is “the *inclusion* of climate change aims”. Some degree of “*inclusion*” is a prerequisite for climate policy integration and for the other criteria. Climate policy integration cannot exist without any inclusion, but a policy with positive unintended side-effects from a climate point of view can of course exist. Thus, if energy policy is renewed so as to decrease dependency on imported fossil fuels, or land use policy

is reformed because of extreme weather events, but the first does not consider mitigation of climate change and the second does not address adaptation, then neither represents climate policy integration. Rather, they exemplify policies with synergies for climate policy aims.

When integrating a policy, it is essential that different policy aims and instruments are consistent with each other; or, as expressed by Lafferty and Hovden (2003), there should be “*a commitment to minimise contradictions*”. Frequently compromises are achieved just by including many different aims in one policy. If this is done without trying to produce a consistent whole, one cannot truly talk about policy integration. The second criterion is thus, “*the consistency of the integrated climate change aspect in relation to other aspects*”.

In addition to climate change there are many other pressing societal goals and some of these are in conflict with the aims of mitigating and adapting to climate change. Some conflicts can be resolved by creating win-win options, while in other cases political choices have to be made. In these cases, the weight given to climate aims is essential for the ability of climate policy integration to promote mitigation and adaptation. The third criterion is thus “*weighting of the integrated climate change aspect with respect to other aspects*”.

A further element in assessing the degree of climate policy integration is to analyse policy feed-back mechanisms. This feed-back involves the degree to which specifications exist *ex ante* about how climate change aims of policy strategies are to be followed up and reported. Further, policy feed-back covers the actual assessment of climate change mitigation and adaptation in *ex post* evaluations of the policy instruments by which they were implemented. These aspects of policy feed-back jointly concern reporting on policy initiatives that engage with climate policy issues, and their effects on society, and thus the fourth criterion is “*reporting*”.

Finally, policy integration requires knowledge and resources – in the form of personnel, money or time. Recognizing the complex connections between policies and climate change mitigation and adaptation is not an easy task. Policy integration at all levels is consequently dependent on the know-how of the people involved, the time they are able to spend on these questions and the resources that they have at their disposal. The fifth criterion is thus, “*the resources for integrating climate change aspects*”.

[Insert table 2 here]

In Denmark, Finland, Germany, the Netherlands, Spain and the United Kingdom (Table 1), several policies (such as energy production or transport) were examined. In addition, some regions and municipalities were studied in detail (Table 3). A key principle of the study was triangulation. Four types of triangulation were used: multiple methods, multiple data sources, multiple analysts, and multiple theories (e.g. Scriven 1991, 364). To avoid the trap of oversimplification, it is vital that case-specific characteristics are fully taken into account. By undertaking a number of case studies that are individually tailored to national features and based on in-depth analyses by researchers with national knowledge and different disciplinary backgrounds, the study has taken advantage of maintaining a country- and context-specific understanding. At the same time, this approach enables introduction of new perspectives that emerge as result of parallel analyses using common concepts, frameworks and questions.

[Insert table 3 here]

3. Results: climate policy integration observed

3.1. Increased inclusion across countries, governmental levels and policy sectors

The aim of this article is to make a general assessment of climate policy integration across the six countries studied, by focusing on those general results which are established across countries, sectors and governmental levels. These are also the results that are most important with respect to further enhancing climate policy integration. This section presents how climate policy is becoming increasingly included into policy strategies and programmes. The caveats based on assessment with the other criteria are presented in the following subsections.

Climate change is currently one of the most important political issues in Europe and the political support for climate issues is clearly broader than it used to be. The most recent national climate strategies recognise the need for, and are built on, climate policy integration to a much greater extent than was previously the case. In addition, climate change policy is no longer delegated to just one minister, a single ministry or a few institutions. At the local level, many large cities, as well as smaller municipalities, have made climate commitments which are often more ambitious than commitments made at a national level.

Regardless of their political background, governments and prime ministers in the six countries studied have recently clearly declared that they will address climate change. The current societal and political attention paid to climate change has boosted the inclusion of climate change in governmental programmes and

strategies. This increased political attention has led to the issuing of new and more ambitious national mitigation strategies in all of the countries studied.

An emerging trend is the broadening of policy integration in terms of sectors, actors, levels and scales. Climate change goals are included into a wide variety of sectors (ranging from energy, transport and infrastructure to innovation, technology and educational policies). For example, whilst energy remains the focus of the 2008 Finnish national climate strategy, other policies are examined including: research, technology and innovation, education, consultation and communication, buildings and building, traffic, spatial planning and community structure, waste, and agriculture and forestry (Kivimaa and Mickwitz 2009). National governments are arguing more frequently that the enormous challenges of CO₂ emission reduction, storage and capture and the promotion of sustainable energy cannot be met by environmental or energy policies alone.

The increased emphasis on climate change is also reflected in new policy instruments or changes of existing ones. Climate policy integration has taken place within all types of policy instruments – regulations, economic instruments and information. The specific measures are, however, not yet of a magnitude that would be likely to bring about the declared policy aims. This could be due to timing, to symbolic politics or to the difficulties becoming apparent when planning the specific instruments.

Besides climate policy integration by national governments, there are several examples of regional and local governments that have included climate mitigation in their programmes and strategies. In many countries, e.g. Denmark, Finland, Germany and the United Kingdom, municipalities have developed their own strategies for becoming “carbon-neutral”. In some cases, this has been the direct consequence of national proposals; more frequently, it has been at their own initiative. Some large cities, e.g. Copenhagen, London and Rotterdam, have also formulated their own mitigation strategies and policies. Frequently, these policies even precede (in time) and exceed (in ambition) national mitigation strategies. In Denmark, for example, climate policy has at least partly “taken over” the role previously played by sustainability policies as the symbol of green policy orientation at the regional and municipal levels (Jensen and Pedersen 2009).

3.2. Consistency between policy aims is seldom addressed and the priorities are implicit

The question of consistency between climate objectives and other policy goals is rarely discussed in the general national strategies of the studied countries. There is even a tendency to conceal inconsistencies

between climate change issues and other issues, while potential synergies are highlighted. Consistency is largely dependent on how climate change is framed.

In recent years, governments have developed novel approaches to integrating climate change into sector policies. In Germany, for example, top-down and restrictive state interventions in production, consumption or transport structures have been increasingly contested and challenged by strong opposition from powerful target groups. As a result, climate policy integration has not occurred on issues where stakes were high and vital interests strongly affected. The rationale of the new approach is to decouple climate policies from the negative image created by restrictive policies, including prohibitions and bans. This turn from strong to soft regulation followed a reframing of climate change from a *threat* to a *chance* for the national economy. While in the 1980s and 1990s, climate change was perceived as a threat to the national survival and as a “job killer”. (Beck et al. 2009)

In 2005 the German coalition agreement viewed climate change as *“a driving force for: developing and marketing future-oriented technologies worldwide, enhancing energy and resource productivity and thus boosting the competitiveness of the German economy, creating new and secure jobs for well-qualified workers”* (Beck et al. 2009). The German approach can be characterised by its strong focus on the potential of technological innovations to solve environmental problems (Jänicke and Jacob 2006). It is based on the dual strategy of increasing efficiency and expanding the use of renewable energies and regenerative raw materials and thus broadening the energy mix. An innovation-oriented climate policy also includes a proactive government, demanding targets and a mix of instruments which influence the entire innovation cycle from initial research to achieving success on global markets. It combines economic policy instruments to indicate general directions, e.g. through emissions trading, and regulations.

In the Netherlands, industrial sectors take part in the sustainability agreement signed with the government in 2007. Sector-specific “strategic roadmaps” or innovation agendas will be used to analyse how a target of 50 per cent energy savings in the production chain can be achieved by 2030. One idea in the Dutch 2007 “Clean and Efficient” mitigation programme is that standards that become stricter in the course of time stimulate innovations. Global and European standards would be preferable from a competitiveness point of view, but domestic standards can also be used in certain sectors – for new buildings, for example (Van Bommel and Kuindersma, 2008). A parallel reframing of the challenges of climate change is found at both regional and urban (local) level in Denmark. Here the most regional development strategies in the case areas articulate climate policy issues as a chance to redevelop industries based on regional experiences related to adaptation to extreme weather events, and as a chance to rearticulate the urban identity of

Copenhagen as the 'Global Climate Capital'. In the case of Copenhagen, climate policy issues were integrated in a general attempt to renew the spatial approach while at the same time aimed at emphasising energy saving ways of living as part of the city's history and culture (Jensen and Pedersen, 2009).

In the new (2008) Finnish Climate and Energy Strategy the first sector dealt with in the section on policy instruments and measures is 'research and development of technologies and innovations'. The starting points are the export potential of, and existing R&D traditions, in energy production, while the strategy also reflects the recent, more general perspective which stresses customer- and demand-based innovation policy. The strategy is very general, however, in specifying the nature of the innovation policy measures that will be taken. The challenge of achieving the stated aims will be huge, given the lack of climate policy integration in the 2008 National Innovation Strategy and the complete absence of climate change in the 2009 budget proposal for innovation policy, including the budget for the Finnish Funding Agency of Technology and Innovation (Tekes) (Mickwitz et al, 2009).

Despite the fact that the country studies focus on very different policy sectors (forestry, water management and transport), land use related questions appear to be a common source of conflict. This arises because land use in support of climate change mitigation or adaptation often competes with land use for other purposes. This creates a lack of consistency which can be explained in part by attempts to take into account and reconcile contrary political aims – such as economic development and nature conservation. The conflict between the goal of using biofuels to mitigate climate change and the goals of biodiversity as well as food production are common in several countries. Inconsistencies are also related to land use conflicts where adaptation would require areas to be used for water retention, but are competing with other potential uses such as urban development or industrial zones.

In the Netherlands, many trade-offs and conflicts between climate policy and other policies are concerned with land use and spatial planning. Adaptation measures, in particular, claim more space for water and dykes. In general, these claims compete with the space needed for agriculture, nature conservation, housing and other purposes. However, in some cases, these claims can be combined. An example is water storage in nature conservation areas. In some areas this is clearly possible, while in other areas it would be disastrous for the specific nature reserve. The Zuidplaspolder case of the Dutch country study even shows that water storage, housing and nature conservation could go hand-in-hand in the deepest polder in the Netherlands. Some national politicians wanted to prevent this apparent inconsistency with national climate change adaptation policy. However, specific research in this case showed that these combinations were

possible and even had advantages for climate change adaptation as compared to the previous agricultural land use (Van Bommel and Kuindersma, 2008).

Consistency is also relevant when it comes to the relationship between mitigation and adaptation. Whilst in some countries, the two were initially perceived as being contradictory and exclusionary options, adaptation to unavoidable impacts of climate change is seen as a second, complementary pillar of contemporary climate policy which supports the reduction of greenhouse gas emissions. Still mitigation and adaptation measures may compete for the same resources and political attention, and some adaptation measures may make mitigation harder and vice versa.

In cases where trade-offs persist and choices have to be made, the weight given to climate aims becomes crucial. Weighting is therefore an important criterion for assessing the degree of policy integration. It indicates the real strength of the willingness to implement declared commitments. Since 2007 in particular, in the countries included in this study, climate has become one of the key issues of governmental policies, along with employment, competitiveness and regional development, but these issues are usually not explicitly prioritised against each other.

The degree of policy integration is also dependent on the position and the relative weight and power of ministries or persons in charge. Environment ministries often lack the standing and weight of more influential departments – such as ministries of economic affairs – within government and in inter-departmental negotiations. When climate change became a prominent issue in Germany in 2007, Chancellor Angela Merkel and Environment Minister Sigmar Gabriel used the “window of opportunity”, made climate change “a matter for the boss” and demonstrated a willingness to take political leadership and to push climate policies. This increased the support shown by the entire government, and many ministries markedly increased their efforts to implement targets in their respective sectors (Beck et al, 2009). It has also become evident that the way in which authority and responsibility for the formulation of targets and implementation are defined and distributed matters.

3.3 Reporting sufficient for learning still not established and resources increased but inadequate

All European countries have well-established monitoring of e.g. emissions, temperatures and sea levels. This data needs to be linked into assessments of policy options before decisions are made and retrospective evaluations of the policies implemented. For example, monitoring CO₂ emissions from traffic

and the numbers of cars is not enough to be able to evaluate whether integrating climate aims into instruments such as car taxation or spatial planning is working as intended. In addition to data, assessment and evaluation requires an understanding of the essential socio-economic and environmental processes behind climate change mitigation and adaptation.

In general, the country studies reveal that evaluations are performed, but that there is much room for improvement regarding both ex ante assessments and ex post evaluations of climate change mitigation and adaptation measures. The German country study further demonstrates that cultural constraints can block effective evaluations. A systematic assessment of political actions is lacking in Germany since it is not embedded into the national policy style. Frequently, evaluations are conducted by the same ministries or departments in charge of implementation without much insight or independence. Needless to say, if the evaluation procedure is performed behind closed doors, and, in particular, if the target group for the regulation is involved in the evaluation process, there is a risk of a biased evaluation. One solution might be to create new units such as the Danish Climate Co-ordination Forum or the Spanish National Climate Council, which are allocated evaluation tasks.

Detailed implementation plans or sufficiently extensive financial commitments to climate change by governments are frequently absent in the studied countries – which can be seen as an implicit indication that climate change is a rather weak priority. In all of the countries, climate policy issues over the past few years have been allocated resources in both national and local budgets. In Spain, the majority of the resources are allocated to mitigation measures. In Denmark, the establishment of a Ministry for Climate and Energy with competency to coordinate national climate policies in it-self represents substantial resources. Such initiatives, however, do not prevent that in many cases there seems to be a substantial gap between the resources allocated in budgets and those actually required in order for measures to be implemented.

4. Discussion: the prospects for climate policy integration

4.1. The opportunity for extended climate policy integration

The recent climate policy declarations are not unique, climate change was already one of the top issues of international politics during the preparation for the Rio Conference in 1992, where the UN Framework Convention on Climate Change was signed. Why then would the situation be different now? First, the political support is broader than before. Second, the recent climate strategies recognise the need for – and

are built on – climate policy integration to a much greater extent than was previously the case. The scope for action is thus much broader. Third, climate change is not viewed as purely a problem with costs and lost jobs attached to it. More frequently climate change is reframed as an opportunity for innovations, for new enterprises and for profits. Fourth, the local experiences of extreme weather conditions combined with concrete local mitigation efforts have made the multi-level governance nature of any sustainable solutions obvious.

Climate policy integration can have a crucial role if countries actually intend to mitigate climate change and to adapt to its impacts. This will, however, require that:

- climate policy integration is efficient at multiple levels;
- the opportunities, but also the limitations, of reframing climate change as an economic opportunity are fully identified and utilised;
- the old discussions and conflicts that climate policy integration reopens can be handled;

These three factors will be discussed in the next subsections. In addition it is crucial that there are sufficient knowhow and resources for taking climate change into account when policies are formed and implemented. Climate policy integration also needs to become reflexive and accompanied with the monitoring, assessment and retrospective evaluations that such a learning process requires.

4.2. Efficient climate policy integration requires action at all levels

As showed, climate policy is nowadays widely included in governmental programmes and country strategies. Nevertheless the greenhouse gas emissions of many sectors and countries are increasing. In the cases where European countries have managed to reduce their emissions, it has either been due to general factors not caused by climate policy or it has been because they have not only issued general strategies but also implemented specific measures that have supported their strategic goals. General structural changes, such as the move from coal to gas in the United Kingdom and deindustrialization of Eastern Germany following the unification process have helped some countries to reduce their emissions. There are, however, a range of measures by which emissions can be reduced if specific action is taken and implemented. Making climate policy integration more efficient does not therefore primarily require more inclusion in governmental programmes and climate strategies. It above all requires that consistency is more directly and openly addressed, that climate change is given enough political weight, that reporting is undertaken and that resources for policy integration – both in the form of know-how and money – are

provided. In other words, climate policy integration at the level of strategies would need to become more firmly based on the other criteria for policy integration considered than merely on inclusion.

Yet, even more important than incorporating climate policy integration more deeply into policy strategies is extending it more fully to specific policy instruments. This means new policy instruments as well as changing the way in which the present instruments are shaped and implemented. The need to deepen climate policy integration into spatial planning and governmental budgeting is common across the countries. It is important, however, that it does not just become a question of changing planning and budgeting processes – these processes are just means – but that the climate aspect in fact changes actual land use plans and the funds allocated. Furthermore, these changes need to be such that mitigation and adaptation, by companies and individuals, are actually enhanced.

There is considerable potential to turn budgets into climate policy instruments. Budgeting reflects power and through budgeting consensus may be generated, but conflicts are also made (Wildavsky 1986). Our assessment of the current state of climate policy integration in annual budgeting is largely in line with more general assessments of green budgeting (e.g. Wilkinson et al. 2008); significant opportunities exist since integration is not generally taking place in practice currently. If budgeting is going to integrate climate change objectives, it has to be integrated not just into the preparation of the budget, but into all stages of the “budgeting life cycle”, i.e. planning expenditure priorities; formal adoption of the budget; implementation of the budget; monitoring, evaluation and reporting; and revenue raising (Wilkinson et al. 2008). The general mechanisms for all stages are in place, and in some cases have even been made stronger recently. What is lacking is sufficient climate-specific knowledge and the political will to integrate climate aims in the budgeting life cycle.

Climate policy integration also needs to be more fully incorporated into a multi-level governance framework. Too frequently, both mitigation and adaptation are seen as concerning just one policy level or, if several levels are concerned, they are viewed as simply a top-down control problem. The following statement by Tol (2005, 573) is quite typical for the single level perspective: *“Mitigation is primarily a matter of national governments in the context of international negotiations. Adaptation is primarily a matter of local managers of natural resources, and individual households and companies, in the context of a regional economy and society.”* Both mitigation and adaptation concerns all levels from the local to the global and, as demonstrated by the study, the interactions between levels are complex and multidirectional.

The aims declared by municipalities are far in advance of national ambitions. More importantly than just examining intentions, it is clear that in many mitigation-related decisions the conditions are generally set locally or the decisions are even made by municipalities. Local authorities usually develop land use plans that greatly influence the need for mobility and possible modes of mobility, including the extent and form of public transport. Municipalities also greatly influence the possibilities of different forms of energy production and, through procurement, energy use. It is beyond doubt that mitigation is also an issue for local politicians and administrations, as well as for those making decisions at the national, EU or UN level.

Although specific adaptation measures are applied locally, other levels are also relevant. The incentives for adaptation measures are largely affected by resources and regulations, e.g. insurance laws and rules, decided at the national or EU level. If adaptation to climate change is to be integrated into policies that affect agriculture or water, the EU level has to be included because the Common Agricultural Policy and the Water Framework Directive set vital frameworks in these fields.

4.3. Climate policy integration and the reframing of the climate problem into an economic opportunity

The way in which an issue is framed affects the solutions proposed. It is therefore important to recognise that climate change has recently been reframed in many countries. Whereas climate change used to be seen as a “limited” environmental or energy issue, it is now more frequently viewed as an encompassing issue which provides opportunities for innovations, new businesses and profits.

During the 1990s, the manner climate change was discussed and institutionalised differed from country to country. In most European countries, the political debates on climate change started in the late 1980s or early 1990s. For example, the Dutch National Environmental Policy Plan (NEPP1), presented in 1989, explicitly considers climate change, but it is mainly presented as an emission problem. At the 1990 Finnish National Environmental Meeting, the climate problem was clearly recognised by the prime minister; at the same time, the national difficulties related to reducing CO₂ emissions were also stated (Holkeri 1990). In Germany, climate change was originally perceived negatively and framed as a “catastrophe” requiring immediate action. In terms of both energy and the environment, climate change was perceived as a threat to the national competitiveness and a source of unemployment

Recently climate change has been reframed as a “business opportunity” and an “innovation opportunity”. The idea being promoted is that so-called win-win opportunities may benefit industry and the climate alike

and result in both mitigation of (or adaptation to) climate change and increased competitiveness. Innovation opportunities are being highlighted in several countries, including Denmark, Finland, Germany, the Netherlands and the United Kingdom. A parallel – and in some ways even more radical – reframing of the climate change issue that has taken place in Europe can be seen in the Obama and Biden (2008) energy plan presented during the U.S. presidential campaign, as well as in Obama's earlier writings (2006) and his early actions as President (Román and Carson 2009).

The complete integration of climate aims into technology and innovation policies may be challenging, as demonstrated by earlier research into environmental policy integration in technology policy in Finland (Kivimaa and Mickwitz 2006). Even when environmental aims were largely included in policy strategies and mainstreaming was declared, it was not fully achieved in specific decisions. Instead, environmental aims were largely separated into specific research and development programmes and largely ignored in other programmes or funding decisions. The innovation turn of climate policy requires that climate policy integration is fully extended from general strategies to specific policy instruments.

The current emphasis on win-win solutions and innovations provides new opportunities, but it may also conceal trade-offs and cause new conflicts. Thus, not all conflicts can be resolved by technologies or innovations, and innovation processes may sometimes happen very slowly. It is frequently the case that the innovation-based climate policy approach is focused solely on technological innovations, largely ignoring process and social innovation. The focus on marketable technological solutions marginalizes or even excludes the impacts of climate change on nature, such as the loss of species, where technical fixes are not available from the adaptation debate. Although the current emphasis on economic opportunities contains some limitations and risks, the failure to explore these possibilities would be even more risky. When energy or emissions become more expensive, as a result of climate policies, countries and firms that have not developed more energy efficient products and processes and cleaner energy production technologies will not be competitive. Not all countries, regions or firms can, however, win in a competition of relative advantages. It is already evident that the firms and sectors most closely locked into technologies that require much energy and produce CO₂-intensive products, or which have not invested in this type of R&D, often oppose innovation-based climate policy.

4.4. Climate policy integration reopens and reframes old discourses and conflicts

When climate policy is integrated into an increasing number of policy sectors such as energy and transport, many old controversies and conflicts are reopened and reframed. The extended use of hydropower and the

construction of bridges, roads and waterways have all recently been promoted by arguments related to climate change. According to the initiators of the bridge across the Fehmern Belt between Southern Denmark and Germany, it would reduce CO₂ emissions because the fixed link would reduce congestion and produce less CO₂ than the current ferries. However, the plan did not take account of the increase in traffic that usually follows the construction of new infrastructure.

In many ways the greatest conflict that has been reframed through climate arguments is the debate on the construction of new nuclear reactors. In the past, risks of radioactivity leakages from power plants or waste storage sites were the focus of the discussion. Recently, the argument that nuclear energy is a possible solution to the problem of reducing CO₂ emissions has become prominent in many European countries. This has been the case in Finland, Germany and the Netherlands. Nuclear power is still highly controversial, both politically and socially, and the outcomes have varied in these countries.

The discussion on climate change adaptation is also linked to existing policies and old or ongoing discussions. In the studied countries, adaptation is largely framed as a water issue (e.g. Van Bommel & Kuindersma 2008, Máñez et al. 2009). By highlighting climate change adaptation as a water management issue or even as a spatial planning issue, other aspects of climate change adaptation are excluded or receive much less attention. When discussing spatial adaptations to climate change, policy-makers often prefer quick and technical solutions, such as – in the Netherlands – building higher and stronger dykes and not building in low-lying polders. These solutions are only partial, however. Building higher and stronger dykes may solve the problem of higher water levels but it does not help other sectors such as agriculture, nature or tourism to adapt (Hajer 2007).

What do the presented examples reveal? Some would claim that they show that climate mitigation has been included and integrated successfully into all kinds of policy decisions. Others, however, would argue that mitigation or CO₂ reduction has been hijacked and misused by economic interest groups and other policy sectors. These examples also demonstrate that if climate change is linked to highly contested sectors such as energy and transport, reframing in terms of climate change implies a redistribution of benefits and costs as well as power. The expectation of this redistribution is one source of opposition – but many of the old discussions reopened by climate change also involve significant value-based or ideological conflicts. Nevertheless, by integrating climate change considerations, these discourses may change. Climate change considerations may also alter the importance given to different positions or reframe even more thoroughly the whole discussion, as in the case of the Finnish debate that resulted in the approval in 2002 by the Parliament of the application for constructing a new nuclear power plant.

5. Conclusions

There is a clear political opportunity to address climate change more broadly than ever before. In order to make the most of this opportunity, however, it is crucial that climate change be integrated into decision making on issues such as energy security, transport and land use planning and that it is also taken into account in the responses to the economic recession. Furthermore, since strategies and programmes seldom shape societies and transform economies on their own, successful climate policy integration require:

- climate policy integration is efficient at multiple levels;
- the opportunities, but also the limitations, of reframing climate change as an economic opportunity are fully identified and utilised;
- the old discussions and conflicts that climate policy integration reopens can be handled;
- proper institutions and sufficient resources are assigned;
- climate policy integration becomes reflexive and that the monitoring, assessment and retrospective evaluations that such a learning process requires are undertaken.

The social and economic activities that lead to greenhouse gas emissions or vulnerability to climate change are very complex. Although research can contribute to an increased understanding of these processes, climate policy will always need to be formulated in a context dominated by uncertainty and ignorance. Climate policy integration – at all levels, from the EU to the local – should therefore be reflexive and able to learn from past experience. This means that the processes by which climate concerns are integrated into sectoral policies should be based on careful pre-assessment. In order to develop the policies adopted and implemented, however, policies should also be retrospectively evaluated from a climate perspective to a greater extent than hitherto.

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Table 1. The empirical material analysed

Country¹	Interviews	Focus group discussions /Social experiments	Documents analyzed
Denmark	11	-	38
Finland	18	1 (8 participants)	34
Germany	33	-	30
The Netherlands	7	-	61
Spain	36	3 (40 participants)	32
The U.K.	6	-	90
In total	111	4 (48 participants)	285

¹ For more details on the country specific materials see: Denmark (Jensen and Pedersen 2009), Finland (Kivimaa and Mickwitz 2009), Germany (Beck et al. 2009), the Netherlands (Van Bommel and Kuindersma 2008), Spain (Máñez et al. 2009) and the U.K. (Reinert and Carss 2009).

Table 2. Criteria to assess policy integration

(Based on Kivimaa and Mickwitz 2006).

Criterion	Key question
<i>Inclusion</i>	To what extent are direct as well as indirect climate change mitigation and adaptation impacts covered?
<i>Consistency</i>	Have the contradictions between the aims related to climate change mitigation and adaptation and other policy goals been assessed and have there been efforts to minimise revealed contradictions?
<i>Weighting</i>	Have the relative priorities of climate change mitigation and adaptation impacts compared to other policy aims been decided and are there procedures for determining the relative priorities?
<i>Reporting</i>	Are there clearly stated evaluation and reporting requirements for climate change mitigation and adaptation impacts (including deadlines) <i>ex ante</i> and have such evaluations and reporting happened <i>ex post</i> ? Have indicators been defined, followed up and used?
<i>Resources</i>	Is internal as well as external know-how about climate change mitigation and adaptation impacts available and used and are resources provided?

Table 3. Policies, regions and municipalities studied in detail in the different countries

Country¹	Policies	Regions	Municipalities
Denmark	Transport policy	Zealand	City of Copenhagen
Finland	Transport policy	Kymenlaakso	Town of Kotka
	Innovation policy	Helsinki Metropolitan Area	City of Helsinki
Germany	The high tech strategy	The Vereinigte Mulde	City of Eilenburg
	Flood protection		City of Grimma
			Village of ErlIn
The Netherlands	Water policy	The province of South Holland	The five municipalities in the Zuidplaspolder City of Rotterdam
Spain	Water policy	Valencia	
The U.K.	Forestry policy	the Scottish Highlands	

¹ For more details on the country specific materials see: Denmark (Jensen and Pedersen 2009), Finland (Kivimaa and Mickwitz 2009), Germany (Beck et al. 2009), the Netherlands (Van Bommel and Kuindersma 2008), Spain (Máñez et al. 2009) and the U.K. (Reinert and Carss 2009).