The GHG policy overlocks the challenge to adapt to climate change and protect biodiversity

Eivind Brendehaug[1], Anders Tønnesen[2], Katrine Skagen[2] Kyrre Groven[1] Torbjørn Selseng[1] Edvard Sivertsen[3], Berit Time[3]
[1] Vestlandsforsking, [2]CICERO, [3]SINTEF Community

Abstract

To meet its obligations under the Paris Agreement, Norway has decided to cut its greenhouse gas emissions by 50-55 percent by 2030 compared to 1990 levels. However, the plan to achieve this goal does not consider how measures affect the conditions for achieving other sustainability goals. In the process of cutting greenhouse gas emissions, we therefore risk increased emissions, a weakened ability to adapt to climate change, and a weakened biodiversity. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has shown that human activity erodes species, ecosystems and resources important to provide us with food, water and a habitable environment. In other words, there is a great need to see policy for climate change mitigation (CCM), climate change adaptation (CCA), and biodiversity protection (BDP)in context (this paper's three policy themes), to promote consistency and not conflict between measures, and to achieve sustainability goals. In this paper we analyse national policy documents connected to the three policy themes and investigate to what extent and in what way coherence between these policy fields is addressed. We also analyse concrete development action in local land use planning, transport communication and building construction to assess how municipalities relate to the challenge of stimulating coherence between these policy fields. The analysis shows that greenhouse gas emission policy is integrated in the overall national policy and dominates as the main task in environmental policy. But the CCM policy takes less account of the protection of biodiversity and adaptation to climate change. The paper also presents how municipalities relate to the challenge of policy coherence and suggests how the national policy for emission cuts needs to consider the protection of biodiversity and climate adaptation, both at national and local level.

Introduction

The climate change challenge is high on the political agenda both nationally and internationally, but how does the policy to mitigate greenhouse gas (GHG) emission influence sustainable development, especially the need to protect biodiversity and adapt to climate change? Society adaptation to the changing climate conditions is often, understandably, in the shadow of the need to mitigate climate change. However, regardless of the international society success or failure to implement mitigation measures we need to adapt to the changing climate due to the inertia of the climate system. At the same time, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has shown that human activity erodes species, ecosystems and resources important to provide us with food, water and a habitable environment. There are important relationships between biodiversity and the climate system: Healthy ecosystems contribute to capture and store carbon dioxide and a stable climate is a precondition for healthy ecosystems. A working group with participants from IPBES and IPCC highlighted in 2021 the need to make better coherence and consistency between climate policy (mitigation and adaptation) and protection of biodiversity: "Measures narrowly focused on CCM and adaptation can have direct and indirect negative impacts on nature and nature's contributions to people" (Pörtner et al., 2021, p. 18). Nature-based solutions is often emphasized in this context, as win-win measures that simultaneously stimulate biodiversity, sequester and store carbon, and contribute to risk reduction of climate consequences such as heat waves and flooding. According to the European Environmental Agency (EEA), the concept is increasingly embedded in global and EU policy frameworks for sustainable development but, "better coherence across policy domains, prioritisation at EU level and more project design is still needed" (EEA, 2021, p. 9).

DiGregorio et al. (2017) identify four processes for effective climate policy integration in the land use sector; i) internal climate policy coherence between mitigation and adaptation objectives and policies; ii) external climate policy coherence between climate change and development objectives; iii) vertical policy integration to mainstream climate change into sectoral policies and; iv) horizontal policy integration by overarching governance structures for cross-sectoral coordination.

We understand the concept of policy integration in accordance with Underdal (1980), to integrate means to unify, to put parts together into a whole. Integrated policy, then, means

a policy where the constituent elements are brought together and made subjects to a single, unifying policy (Underdal, 1980, p.159).

Underdal's (1980) concept has been further developed and used to described environmental policy integration (EPI) and later climate policy integration (Lafferty & Hovden, 2003; Rauken et al., 2015). In Lafferty and Hovden (2003), the EPI concept was established as consisting of a horizontal and a vertical dimension. The vertical approach refers to the integration of policy measures into sectoral policies, while the horizontal approach refers to the integration of policy measures into broader planning frameworks, i.e. across sectors (Lafferty & Hovden, 2003; Rauken et al., 2015)(Reckien et al., 2019). With increasing demands for vertical integration (between national, regional and local level) the need for horizontal integration increases (Difi., 2014).

Lack of political commitment was identified as a reason for weak integration in an evaluation of three different national policy strategies for integration of environmental challenges, conserning sustainable development, CCA, and CCM, carried out in 15 EU countries (Casado-Asensio & Steurer, 2014). The study concluded that the different strategies were "administered processes" incapable of shaping governmental agendas or major political decisions. The strategies were more focused on awareness raising and communication than implementation and coordination of actual policies across sectors and levels. Interactions between policies and sectors were either not well understood or managed, or incoherencies existed due to political conflicts or ignorance within governments. More recent studies find political attention to be important, particularly for a horizontal approach to integration, to increase attention across sectors (Birchall, 2020; Rauken et al., 2015). Integration of environmental challenges requires clear political leadership, prioritization, and governance. Integration does not only require communication and coordination between sectors of society, what ultimately decides is whether there is power to ensure that integration will take place (Persson, 2007).

The political-cultural context of the administrative body responsible for the implementation of the actual policy influences the understanding of the problem and the kind of solutions and measures developed (Reckien et al., 2019). Political attention is particularly important for a horizontal approach to integration, to increase attention across sectors (Birchall, 2020; Rauken et al., 2015). Every organization has its systematic biases of attention and practices resulting in some problems and solutions being prioritized over others (Schattschneider, 1960). At the national level, there is often a priority between the

policy fields, e.g. mitigation over adaptation, which intensifies the existing sectorized approaches at the local level (Landauer, Juhola, & Klein, 2019). Focusing on one domain, either mitigation or adaptation, may create a path dependency for certain policies, and a blind spot for others: *"When a community selects a policy path to follow, whether for social or economic development, or climate change resilience, missed opportunities and blindspots are sometimes created in the planning process, which can impact planning actions"* (Birchall, 2020). These findings emphasise therefore the need for national leadership to integrate CCM, CCA, and BDP.

National governments create prerequisites for integration at the local level. Local communities follow the rules and regulations (institutional scale) from national governments (jurisdictional scale), which limit the realization of integrated solutions at the local level described by Landauer et al. (2019): *"In Helsinki, national energy policy and mitigation, driven by strict regulations for the energy efficiency of building design, lead to higher priority of local administrations for mitigation measures, such as insulation, rather than adaptation measures, such as material durability improvements to protect buildings from floods." (Landauer et al., 2019).*

The countries with the most advanced integrated local climate change action plans (CCAPs) are UK and France, according to Grafakos et al. (2020). In these countries, the plans were produced in response to national regulations, which suggests that "municipalities provided with clear policy guidance from national government, are able to better allocate resources that are necessary to undertake CCAPs with stronger integration» (Grafakos et al., 2020). On the other side of the spectrum, Germany has recently decided that mitigation and adaptation should be treated separately, which obviously leads to a low level of integration at the local level. Higher levels of government, also the regional level, have a critical role through consultation processes, technical support and awareness-raising (Grafakos et al., 2020; Landauer et al., 2015).

When focusing on internal integration between CCM, CCA and BDP policy we could summarize knowledge status in following headlines:

- With increasing demands for vertical integration (between national, regional, and local level) the need for horizontal integration increases.

-National policy creates important prerequisites for integration at local level. Political commitment for policy change is needed.

- There is incoherence between the institutional, jurisdictional, and administrative scale for integration at the national level, leading to a lack of integration at the local level.

- Focusing on one domain, either mitigation or adaptation, may create a path dependency for certain policies, and a blind spot for others.

- The strong international and national focus on CCM can easily lead to neglecting of BDP and CCA, and in the worst case lead to contradictions, conflicting policies and measures.

- The perspective at the national level influences local level work for integration. Municipalities provided with clear policy guidance from national government, can better allocate resources that are necessary to undertake stronger integration.

The aim of this paper is to analyse to what extent and how policy for climate change mitigation (CCM), climate change adaptation (CCA), and biodiversity protection (BDP) is *internally* integrated in three society/policy sectors: transportation, spatial planning and building and infrastructure with the use of empirical data from Norway. We understand *internal integration* as the relationship between the three policy fields (mitigation, adaptation, and biodiversity protection) in the three sectors under study. We limit the analysis to not include how these policy fields relate to superior national policy and overarching governance structures for cross-sectoral coordination. Our claim is that the three policy fields are not well integrated in the sector policies. To the extent that these policy fields are not integrated we also search for reasons for lack of integration.

This paper's research questions are: Do national authorities claim integration between CCM, CCA and BDP and, in that case, how? If not integration is emphasised, why is it so? We expect to find explanations for lack of integration related to institutional and social dimensions (Biesbroek, Klostermann, Termeer, & Kabat.P., 2013).

Analysis perspective

As mentioned above we understand policy integration as processes for unifying current separate policies together into a coherent policy. Integrated policy, then, means a policy where the constituent elements are brought together and made subjects to a single, unifying conception (Underdal, 1980). Both Kiwimaa & Mickwitz (2006) and Lafferty and Hovden (2003) build on Underdal's (1980) concept policy integration as point of departure for their definition:

- the incorporation of environmental objectives into all stages of policymaking in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy;
- accompanied by an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimise contradictions between environmental and sectoral policies by giving principled priority to the former over the latter (Lafferty and Hovden, 2003: 9).

In accordance with this definition Groven (2017) highlights the important discussion of choosing a weak or strong understanding of EPI. In those cases where win-win is not possible because there are real contradictions between environmental goals and sector goals, it is required that environmental goals should take precedence. Groven (2017) argues for this normative view by referring to the most quoted definition of EPI by Lafferty and Hovden (2003: 9):

- the incorporation of environmental objectives into all stages of policymaking in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy;
- accompanied by an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimise contradictions between environmental and sectoral policies by giving principled priority to the former over the latter.

Lafferty and Hovden (2003) are in accordance with Underdal (1980) who emphasize three basic requirements for a policy to qualify as integrated: comprehensiveness, aggregation and consistency. These three requirements refer to consecutive stages of the policy-making process: comprehensiveness to the input stage; aggregation to the processing of inputs; and consistency to outputs. We adapt Underdal's (1980) model for policy integration as point of departure to describe the analysis model used in this project.

Comprehensiveness consist of four dimensions: time, space, actors and issues. With *time* a long-term view is meant as opposite to a short-range view. *Space* refers to "the extension of the geographical area for which consequences of policy decisions are recognized as relevant decision premises (Underdal, 1980, p 160). With *actors* the concept includes people with interest in the actual policy, both people the policy applies to, the management level and politicians. Finally, the *issue* dimension is meant to include "interdependent issues or issue aspects that is subsumed under a common policy framework" (Underdal, 1980, p 160). In our context the three thematic fields: CCM, CCA, and BDP, must be understood in this context and may be referred to as "issues". Focusing on the issue dimension we ask in this paper: **Is the challenge for coherence between CCM, CCA and BDP reflected in objectives and strategies and, do objectives and strategies emphasize coherence, and minimize hinders for coherence?**

A consistency policy is a policy in harmony with itself – "(…) one whose different components accord with each other" Underdal (1980, p 162). A consistent policy must be understood in a specific point of time because changing environment and information may demand for change in policy. A time perspective should therefore be indicated when talking about consistency. In this paper we ask: Is consistency between policy for CCM, CCA and BDP assessed? **Is action taken to minimize inconsistency, and how are consistency stimulated. We understand the difference between "consistency" and "comprehensiveness" as the difference between measures on one hand and objectives and strategies on the other, respectively.**

With **aggregation** Underdal (1980) mean not only "recognizing a broader scope of policy consequences - it also means basing decisions on some aggregate evaluation of these consequences" and, these consequences are evaluated from an 'overall' perspective rather than from the perspective of a sector. Integration of policy is not a purely technical exercise; but "it implies weighing interests and setting priorities" (Underdal, 1980, p.161). Weighing and prioritizing relate to one of Kivimaa and Mickwitz' (2006) five dimensions of environmental policy integration. These authors emphasise, as Lafferty and Hovden (2003), the need to prioritize environmental issues when there are other issues on the agenda. In this paper we ask: **are consequences between policy for CCM, CCA, and BDP assessed in relation to each other? How are the three policy fields weighted and prioritized in relation to each other when evaluating these consequences?**

Method

In this paper, the overall research question is whether integration between Norwegian national policy for protection of biodiversity and climate policy (mitigation and adaptation) has taken place, and how. Further, we ask: If integration has not taken place, what is the reason?

Previous research has shown weak integration of BDP in climate policy, especially the policy for reducing greenhouse gases. This weak integration influences the choice of method because biodiversity is strongly influenced by human use of land. Land use policy and spatial planning can show whether integration between our three policy themes takes place, and possibly why not. The horizontal dimension in the study is the relation between our three policy themes CCM, CCA and BDP. We have chosen sectors that are central to

spatial planning: transportation, tourism/recreation (operationalized by construction of cabins) and the building and infrastructure sector.

We are concerned about whether integration takes place in practice, in the way the land has been decided to be used, not limiting the study to just national policy. But, in this paper we limit the assessment to the national level, e.g. to the policy as it appears in key national documents and interviews of government officers. The vertical dimension between management levels is thus not included in this paper.

One can ask questions about why we have chosen the sectors transportation, spatial planning for cabins and building/infrastructure. There are other sectors that are also central in the use of land. The reason is partly the project team knowledge of these sectors from previous research, and partly due to proposals from participating municipalities. These reasons are legitimate for the choose of sectors.

The empirical data base consists of national policy documents and semi-structured interviews. We have selected documents to cover large parts of the policy cycle, from public inquiry that often form the basis for policy formulation to Government white papers and, to the Ministries' management award document (allocation letters) to the directorates. This gives a wide range in type of document, and we are aware different documents have different roles in the administration. A document that expresses the sector's policy will probably have less emphasis on cross-sectoral considerations. However, if such documents do not mention integration of our three policy themes at all it is an indication of lack of integration. All the documents are listed in a table, attached.

We perceive the award letters to express an operationalization of the actual policy. For that reason, we decided to conduct a more thorough comparison of five award letters from the different sectors. This provided greater insight into actual policy within the sectors and how they relate to the integration of CCM, CCA and BDP. The documents are analyzed based on Underdal's (1980) framework “Policy integration” discussed earlier, using the three dimensions: comprehensiveness (coherence), aggregation (consequences) and consistency constitute.

Nine semi-structured interviews are conducted to supplement the document analysis. Officers in these Ministries and Directorates are interviewed (numbers interview in parenthesis): Ministry of Climate end Environment (2), Ministry of Local Government and

Regional Development (2), Norwegian Environment Agency (3 as group interview), Norwegian Building Authority (1) and Statsbygg (1).

Results

Comprehensiveness

Based on the interviews and document analysis we find that on a general level the three themes are often mentioned, as well as connections between environmental and climate challenges is underlined. Further, asserting the need for a holistic perspective on policy and the need of viewing public management linkages and connections in a greater extent are also emphasized. However, few of the agencies integrate the issue areas in policy documents. For the most part CCM, CCA and BDP are treated as separate entities with separate objectives. And when treated more integrated, there may be a missing link from descriptions to goals and actions plans. The document National expectations to regional and municipal planning 2019-2023 exemplifies this (Ministry of Local Government and Modernisation, 2019).

Further, descriptions of integration are often general, which means that they can be applied for CCM, CCA and BDP, but also for other themes (Ministry of Local Government and Modernisation 2014; Planning and Building Act 2008; Ministry of Local Government and Modernisation 2019 exemplifying this). This means that few display a consistent integrated approach to the three issue areas, with the public inquiry on CCA being the main exemption (NOU2010:10). Few have the scope necessary to address a wide range of policy areas and issues, frequently settling for addressing the core issue. Overall climate policy objectives are often reiterated by agencies as guiding work and policy within the agency. As stated by a state interviewee:

> [N] ow there are separate goals for climate and biodiversity, so you cannot say that we have climate goals and biodiversity in the same goal, but where trade-offs are needed, we consider that internally and make sure we agree internally before they go out."

A clear distinction can be seen between different agencies in this study concerning the degree to which they emphasize integration. The policy-document comparison revealed clear variance in the degree of emphasis placed on the three topics. This was particularly

evident in the comparison of the five departmental award letters. While all address two or three of the topics (CCM, CCA and BDP), only the letter to the Norwegian Environmental agency emphasized overall comprehensiveness between actions, policy areas and state agencies in relation to these topics (Ministry of Climate and Environment 2022). The remaining four departmental award letters underlines national climate and environmental policy objectives (see Ministry of Local Government and Modernisation 2021, p.2-3), but in a less integrated manner. When asked about barriers for integrating the three issues an interviewee answered:

> One thing is the complexity [i.e. being a barrier for integration]. That you have more of a [measurement system] approach on climate and biodiversity could be a lot actually, and to sort of make consequences visible in a complex framing is demanding. And where the complexity and speed of the whole transition we must go through, hence that is a huge challenge really.

Several informants and documents underline that barriers for integrating CCM, CCA and BDP is the complexity of each of them, the competence needed to assess them in an integrated manner and the resources needed to implement such assessments in factual policy. One interviewee underlined that he had never experienced that climate white papers or similar documents stating that the three issue areas should be treated simultaneously. Instead, the following practice for scope was described:

> Typically, one makes steering documents describing how to reach a goal, and then the other elements become framework conditions or things you weigh up against [the main topic of the document] (…) I think maybe it's wise to make white papers in one area and have demarcations towards others, instead of making white papers giving answers to everything, but I may be wrong.

Still, approaches taking departure in the capacity of nature to handle societal and environmental needs exemplify policy integration. While different concept are used, they all have this core. The public enquiry on CCA exemplifies a strong integration of an ecosystem-based approach (NOU2010: 10), where the services a well-functioning ecosystem may provide serves goals for CCM, CCA and BDP in an integrated way. Similarly, the resembling concept nature-based solutions, used among others in the national guidelines for climate- and energy planning and adaptation planning (Ministry of Local Government and Modernisation 2018) exemplifies a strong basis for integration. In

the guidelines it is stated that if other solutions than nature-based solutions are chosen, an explanation of why this has not been chosen is required.

Consistency

Consistency between policy for CCM, CCA and BDP is addressed less compared to the other policy-integration categories handled in this study. Discussions and disagreements between different agencies are considered a normal and natural part of governance. The issues at hand are multifaceted and it is challenging to constantly assess and include each of them within decision-making processes. Trade-offs between goal-conflicts is a normal part of everyday life in ministries, and if necessary, they seek clarification from the upper political level. As noted by one interviewee:

> There will always be deliberations of differing views, both internally and externally, and that is a healthy part of the job and if there should be contradictions in plans and strategies. […] There will often be goal conflicts between different goals and strategies. That happens. It is, it is kind of like finding a balance between them

Several of the interviewees point out the necessity of trade-offs between different policy objectives and priorities. A clear example is the discussion surrounding biofuel, specifically substituting fossil fuel gas with biofuel based on palm oil. Such a shift would greatly contribute to the emission inventory partly by importing raw materials instead of domestic production, with several sectors and industries wishing to utilize biofuel. One informant interviewee emphasized how the fragmented knowledge base and varying framings of the issue was a core problem, different interests have different perspectives and the sum of it all does not add up. At the same time the government spends an extensive amount of money on saving the rainforest. The issue is best described in the words of the interviewee: "'We cannot put money into the same area that makes it more profitable to chop down rainforests'.

At the same time, the need for holistic solutions and more knowledge on goal conflicts is highlighted. For the most part the policy documents reviewed lack thorough assessments or descriptions of goal conflicts, if mentioned they relate to two of the three issue areas. For example, producing bioenergy (CCM) and loss of biodiversity (The Norwegian Environmental Agency 2019), or compact urban developmentas a possible goal conflict with CCA (NOU 2010:10), similarly, 'National Expectations describes challenges with compact urban development as a CCM measure with stormwater management as a CCA

measure (Ministry of Local Government and Modernisation 2019). The departmental instruction letter to the environmental agency is the one most emphasizing the need of working across issue areas and departments. When asked about the reasoning or background for such a phrasing, an interviewee explained: '[We] think it is important to see it in integration because you do not solve one without solving the other. Hence, if there is a goal conflict, the consequences of measures must be well clarified'.

A clear challenge for minimizing inconsistency between policy for CCM, CCA and BDP is the lack of knowledge on the interconnections between them, as well as the competence to overcome such barriers. On a practical level, the absence of a method for analysing and incorporating the various issue areas into policy measures is mentioned by several interviewees. Specifically, the difficulty of assessing between the policy areas or issues that are quantifiable and those that are not. Interviewees underlined how we lack a method for incorporating biodiversity considerations into socio-economic analysis, as explained by this interviewee: '[I]t is a bit easier with the [climate measuring system], where emissions can be calculated in CO2-equivalents up against a percentage level and a goal. But biodiversity does not have such an accounting system'.

Aggregation

There are several mechanisms in public management which may be used to integrate the three fields when assessing consequences of public policy. First is the Instruction for Official Studies and Reports (Ministry of Finance 2016) first implemented in 2000 and revised in 2005 and 2016. Its purpose is to establish a good basis for all state initiatives in order to optimize use of public resources and avoid contradictory measures. While the national authorities require these investigations to be made for all measures and public initiatives, the instruction makes clear that the scope of each investigation must be proportional with assumed effects of the measure. Among the six questions each investigation is to answer involves the positive and negative consequences of the measure. While loss of nature areas is mentioned in the Instruction's guidelines (The Norwegian Agency for Public and Financial Management, 2018) neither this or the Instruction itself highlights an integrated approach involving CCM, CCA and BDP, when consequences are to be evaluated. Still, the instruction was emphasized by several state representatives as a good tool for considering consequences in integration. As stated in one of the interviews:

> [W]e have developed our own method, and a proposal for projection tables [for integrated illustration of consequences] (…) We strongly emphasize that the Investigation instruction and the methodology described in this instruction must be the foundation.

However, a clear challenge for integrated assessment of consequences between policy for CCM, CCA and BDP is the uneven knowledge basis and methodology associated with each of them. Both the document study and the interviews point to that CCM have stronger systems of indicators and reporting, giving a stronger basis for assessing consequences within this policy field. This was made clear in a public revision, published in 2022 by The Office of the Auditor General monitors the public sector. This public revision concluded that the lack of information about the effects of CCA measures, was associated with a system for measuring, reporting and evaluating (Office of the Auditor General of Norway 2022). When asked about what constitutes the largest barriers for handling the three policy fields in integration, a state representative answered: '[M]aybe knowledge about consequences – and it is often like this [i.e. that the knowledge base is insufficient]. These are quite big and complicated themes.' Or as stated by another state representative: 'I could maybe go as far as to say that it is easier to give assessments of what is quantifiable compared to what is not quantifiable.' The lack of quantifiable structures is also evident in the National Transport plan, where one of the goals is to develop an indicator system for BDP (Ministry of Transport 2021).

A comparison of the five award letters reveals a clear difference concerning assessment of consequences of CCM, CCA, and BDP in relation to each other. Four of the letters has no such descriptions while the one directed to the Norwegian Environment Agency throughout emphasizes the need for policy integration. Exemplifying this is the prioritized strategy for obtaining increased 'knowledge on measures positively influencing nature, climate and CCA (Ministry of Climate and Environment 2022: 9).

Last, international environmental classification systems for public and private institutions may provide methodologies for policy integration. Turning to the building sector, the BREEAM classification (Norwegian Green Building Council 2022) is central to Statsbygg, the Norwegian Directorate of Public Construction and Property. Statsbygg, is responsible for many of Norway's largest and most complex building and rehabilitation projects and their use of BREEAM-certification represents a promising structure for policy integration. Approximately 50% of the building space in current Statsbygg projects meets the criteria

of the two highest standards of the BREEAM environmental- classification system (Norwegian Directorate of Public Construction and Property 2021). Integrated with the EU taxonomy, the BREEAM criteria fully integrates the three policy fields CCM, CCA and BDP. As described by a Statsbygg employee: 'This means that there are numerous measures that must be implemented to reach that [BREEAM excellence] level. It is in this methodology, that a balance between a number of environmental aspects is found. And where all those [aspects highlighted in the research project are included]. So, in that methodology, they are reconciled with each other'.

Organizational steps

One type of organizational step for integration of the three policy fields is via the planning system. In the Planning and building act (2008) there are numerous descriptions to incorporate environmental qualities and societal security. These overall descriptions can be used to integrate CCM, CCA and BDP, but also other fields of policy. Several interviewees pointed to structures of this act, including its requirements of broad assessment of consequences in all planning cases. Both public inquiries in the document analysis suggest changes of the act, among others the incorporation of CCA in the precept of the law, (NOU2010:10) and the strengthening of CCA within the framework of public planning (NOU2015: 16) – in both instances the suggested changes were later implemented accordingly. Looking at a more sector-specific policy document, The national transport plan, steps are taken to broaden the criteria for transport-project assessments (Ministry of Transport 2021). In addition to an overarching criteria of socio-economic profitability, the project portfolio is to be assessed on a broader range of criteria including among others: effects on biodiversity, climate emissions from land-use changes and landslide protection measures. While promising, systems for such landslide protection measures are in many cases in early stages. Among these is a biodiversity indicator of which the plan makes clear will be prioritized to develop.

Organizational steps for integration also involve ways of cooperating within and across public agencies. In Norway, the Ministry of Climate and Environment have the overarching responsibility for climate- and environmental issues, coordinating across other, more sector-specific ministries. Accordingly, the agency under this ministry, the Norwegian Environmental agency, has a similar holistic and coordinating role. This is evident in the award letter from the ministry to the agency – compared to the other instruction letters, the addressing and expectations of policy integration are much clearer. Explicitly, and

emphasized by several interviewees, is the main expectation of 'seeing the different environmental challenges in integration, with each other and with the global environmental challenges, and in integration with other societal challenges and goals (Ministry of Climate and Environment 2022:4). As emphasized by this interviewee, such overall requirements have consequences: [That the integration] has been set so clearly on the agenda through our overall steering documents, makes us all very aware of seeing things in conjunction'. Internally, in the Norwegian environmental agency, this is materialized in cross-section teams working evaluating systematically whether and how a given task needs to be solved with inputs from different policy fields. While the cross-section teams had been in place for a while, they seemed to have gained momentum in recent years. This work has also been facilitated by the so-called environmental-economy project, involving work of highlighting and pricing various sets of effects.

Last, experimentation and innovation projects represent arenas which may lead to organizational steps for integration. An example of this is the project 'Environmental data of the future' (Menon Economics 2021), aiming for improved data quality and accessibility across topics and administrative units. Another policy innovation are the Urban Growth agreements, where the three levels of government enter a cooperation via urban contractual agreements (see e.g. Tønnesen et al. 2020 and Westskog et al. 2020). It involves state co-financing of large public-transport investments and in addition requirements for all parties to align their land-use policies to obtain zero-growth within person transport. While having a broader scope and involving a broader range of actors than previous transport-infrastructure packages, they do not represent an integration of the three policy fields. According to one of the informants, this arrangement is highly CCM focused, to less degree involving CCA and almost not touching upon BDP.

Discussion and conclusion

Operationalising policy integration – narrow and broad frames

The interviews and document analysis reveals a tension and a discussion concerning how policy integration is best ensured in public governance. Put simply, it involves the extent to which all three themes should be treated in policy documents and governance networks, or more separated but with good linkages between them.

This can be related to a more overall discussion of broad and narrow framing. While an integrated framing may be desirable, it may also pose a challenge to implementation as

more components and actors are brought in and the need of balancing competing demands may increase. A very narrow framing and sector-specific approach, on the other hand, might fail to address more overall governance challenges.

Lack of cross-sectoral management is emphasized by the Norwegian Directorate for Public Administration and ICT (no Digdir). The need for, and requirements for, vertical coordination, both within the state sector and between the state and the municipality, make it more difficult to succeed with coordination across public sectors. This is partly since the administration is organized with strong sector ministries, and that the system does little to encourage such coordination (Difi, 2014).

The Office of the Auditor General in Norway refers to the same conditions in its thematic revisions of the activity of central government, and several research projects have shown the need for cross-sectoral coordination in Norwegian politics and administration (Brendehaug et al., 2016).

However, it may not be a question of either broad or narrow framing. In a study of water security Cook and Bakker (2012), argue for the two being complementary rather than mutually exclusive. Following this approach, broad ambitions of integrating the three fields of policy should be accompanied with more narrow approaches operationalizing the ambitions. Also touching upon this, Bache et al. (2015) emphasise the need of translating meta-policy to more specific measures on the ground (for example in municipalities), via intermediate structures and concepts.

Several interviewees expressed concern that covering too many areas or issues could make policy documents complex and extensive. As an interviewee described above; typically steering documents, for example white papers, describe how to reach one specific goal, and then the other elements become framework conditions to weigh up against the main topic of the document. Particularly one of the documents analysed, the Guidance for climate- and energy planning explicitly makes a thematic demarcation to narrow the focus (The Norwegian Environmental agency 2019). Here it is stated that the document concerns measures of climate- and energy planning, and not CCA. On the one side it could be argued for such an approach based on the need for narrowing the frame. However, with this demarcation there is a discrepancy with the overall national guidelines, where all climate-, energy and CCA are included (Ministry of Local Government and Modernisation, 2018).

Further, the ecosystem-based approach may exemplify such an intermediate concept and a narrowing operationalization of overall ambitions of CCM/CCA/BDP-integration. In the documents analysis the public inquiry on CCA (NOU2010:10) stands out in terms of describing and simplifying the ecosystem-based approach. It points to the need for maintaining four types of services: Supply services (e.g food, water and building materials), Regulating services (e.g. flood protection and carbon storage), Cultural services (e.g. place for recreation), and Supporting services (e.g. recirculation of nutrients). Handling these dimensions holistically would involve an integration of CCM, CCA and BDP in public management. In line with Cook and Bakker (2012) it is not integration in itself which is to be emphasised, but what it may achieve – well-functioning ecosystems.

Sectoral organization and whole of government approaches

As shown, the Ministry of Climate and Environment and its associated Environmental agency have a different role compared to other ministries and agencies by having the overarching responsibility for climate- and environmental issues in Norway. This was particularly evident in the integrated approach found in the award letter, where the Ministry of Climate and Environment described its expectation to the Norwegian Environmental agency (Ministry of Climate and Environment 2022). This can be described as a 'whole of government approach', meaning that complex cross-section tasks are not sought solved within one administrative unit, or section, but across them. It fits well with the distinction between wicked problems and tame problems. While a tame problem may be hard to solve, the stakeholders are typically few and in the end there will be concrete result that solved the problem (Conklin 2005). In contrast, wicked problems, involve many stakeholders - with different views on what the problem is and what the solutions should be. Following this, it makes sense for the environmental ministry to apply a whole of government approach when seeking to balance potentially competing demands relating to CCM, CCA and BDP.

Emphasis on the need for all of government approaches does not exclude sectoral politics, the two should be seen in integration. Hence, whole of government approaches should be applied in relation to cross-cutting and complex issues. It does not imply turning away from sector-responsibilities of ministries and agencies. Seemingly, the task becomes one of working within own sector, while simultaneously taking others into account in an integrated manner. As described by one interviewee: '[T]here are some sector principles which can be problematic. To sit within own sector, working on ones own

theme, without seeing this in integration with adjacent sectors'. Hence, similarly to the relationship between narrow and broad framing described above, the also whole of government and sectoral approaches two should be conceptualized as complementary rather than mutually exclusive.

Although the need for cross-sector governance is mentioned of national politician it is still difficult to practice due to the strong sector organization of central government. The analysis of national documents shows that it is first and foremost management documents designed by the Norwegian Environment Agency and / or the Ministry of Climate and the Environment that see the climate challenges and biodiversity in context. We interpret this so that if there is anyone in the state administration who has ownership to ensure that climate policy considers biodiversity, then it is these policy and administrative units. However, these agencies have also the responsible for policy documents related to climate change. But, in these climate documents the integration of climate and biodiversity is often less emphasised. We have two interpretations of this discovery: one on the international dimension, and one on the principle of sectoral responsibility. Norway is linked to the EU's climate policy through the EEA agreement. This means that the EU's climate policy governs the formulation of climate policy in this country. International co-operation beyond the EU also sets the preconditions for national policy. The climate negotiations from Rio in 1992 until today have attracted attention and influenced national policy more than the challenges of biodiversity. The second possible explanation for the fact that climate documents do not emphasize interaction with biodiversity, even though the environmental authorities are behind these documents, may have to do with the sector responsibility principle. The principle was formulated when the Norwegian Parliament adopted the plan for follow-up of the report from the Brundtland Commission (Ministry of Environment, 1989), and is a strategy which means that the individual sector (the ministry) is responsible for coordinating environmental inspections without shakes the authority of the various ministries or governing instruments of the environmental protection authorities (Reitan, 2001). It seems that the same strategy has been chosen for climate policy. Quota and taxes is central measures in climate policy, measures governed by Ministry of Finance. This may help to explain why consideration for biodiversity a priority in the formulation of climate policy is not, because the Ministry of Finance does not seem to perceive nature and biodiversity as important in climate policy. Persson (2007) holds that environmental Policy Integration, which is based on Underdal's (1980) concept Policy integration, does

not detect conflicts and different interests in society, and that power is central to understanding which interest wins.

Policy recommendations

From this study three main policy recommendations emerge. **First**, is the need of developing the knowledge base for CCA and BDP. Both the document analysis and interviews reveal there being more mature systems for measuring status, effects and goal achievements within the policy field of CCM. Further, interviewees point to how governance is facilitated and how it is easier to advocate a policy field when it is possible to quantify cost and goal achievement. CCM is clearly facilitated by having many of these systems in place. Our study finds initiatives and innovation relating to better quantification of CCA and BDP. We recommend that this work is highly prioritized as it is essential both to heighten the status of these policy fields, and because it is a key to better integration of CCM, CCA and BDP. **Second**, public officers will continuously have to make choices concerning how to best ensure policy integration. As discussed above, the use of narrow and broad frames, as well as sector-specific and whole-of-government- approaches, should be viewed as complementary and not mutually exclusive. Public officers need to seek good balancing of the two governance approaches, be it in the writing of policy documents or when establishing governance networks of financial support schemes. Fundamentally, the goal should be to reveal the benefits of policy integration and facilitate action for political decisionmakers. **Third**, focus needs to be on what integration of CCM, CCA and BDP is to obtain. Ecosystem- and nature-based approaches exemplify this. Here, policy integration is projected as a tool to achieve a goal of well-functioning nature systems, with the multiple benefits this may give. In this way, policy integration may be facilitated by a stronger understanding of how this may benefit both nature and society.

References

References

Bache, I., Reardon, L., Bartle, I., Flinders, M., Marsden, G., (2015): Symbolic meta-policy: (not) tackling climate change in the transport sector. Polit. Stud, 63(4), 830–851.

Biesbroek, G.R., Klostermann, J. E. M., Termeer, C. J. A. M., & Kabat.P. (2013). On the nature of barriers to climate change adaptation. Reg Environ Change, 13, 1119–1129. doi:https://doi.org/10.1007/s10113-013-0421-y

Birchall, S.J. (2020). Coastal climate adaptation planning and evolutionary governance: Insights from Homer, Alaska. Marine policy, 112. https://doi.org/10.1016/j.marpol.2018.12.029

Brendehaug, Aall & Dodds (2016): Environmental policy integration as a strategy for sustainable tourism planning: issues in implementation. Journal of Sustainable Tourism, 25(9), 1257-1274. http://dx.doi.org/10.1080/09669582.2016.1259319

Casado-Asensio, J., & Steurer, R. (2014): Integrated strategies on sustainable development, climate change mitigation and adaptation in Western Europe: communication rather than coordination. Journal of Public Policy, 34(3), 437-473.

Conklin, J., (2005). Dialogue Mapping: Building Shared Understanding of Wicked Problems. John Wiley & Sons Inc..

Cook, C and Bakker, K (2012). Water security: Debating an emerging paradigm. Global Environmental Change 22(1), 94–102. https://doi.org/10.1016/j.gloenvcha.2011.10.011

Di Gregorio, M., Nurrochmat, D. R., Paavola, J., Sari, I. M., Fatorelli, L., Pramova, E., . . . Kusumadewi, S. D. (2017). Climate policy integration in the land use sector: Mitigation, adaptation and sustainable development linkages. Environmental Science and Policy,64,35-43. doi: https://doi.org/10.1016/j.envsci.2016.11.004

Difi. (2014). Mot alle odds. Veier til samordning i norsk forvaltning. Difi-rapport 2014:07. Retrieved from Oslo: dfo.no/rapporter/mot-alle-odds-veier-til-samordning-i-norsk-forvaltning

EEA. (2021). Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction. https://www.eea.europa.eu/publications/nature-based-solutions-in-europe

Grafakos, S., Viero, G., Reckiend, D., Trigg, K., Viguie, V., Sudmant, A., Graves, C., Foley, A., Heidrich, O., Mirailles, J. M., Carter, J., Chang, L. H., Nador, C., Liseri, M., Chelleri, L., Orru, H., Orru, K., Aelenei, R., Bilska, A., Pfeiffer, B., Lepetit, Q., Church, J. M., Landauer, M., Gouldson, A., & Dawson, R. (2020). Integration of mitigation and adaptation in urban climate change action plans in Europe: A systematic assessment. Renewable and Sustainable Energy Reviews, 121. https://doi.org/10.1016/j.rser.2019.109623

Groven, K. (2017). Kommunane og klimautfordringa. Ein studie i lokal klimagovernance i Norge. (Ph.d.-avhandling). Norges teknisk-naturvitenskapelige universitet (NTNU).Trondheim.

Kiwimaa, P., & Mickwitz, P. (2006). The challenge of greening technologies: Environmental policy integration in Finnish technology policies. Research policy, 35(5), 729-744.

Lafferty, W. M., & Hovden, E. (2003). Environmental Policy Integration: Towards an Analytical Framework. Environmental Politics, 12(3), 1-22.

Landauer, M., Juhola, S., & Klein, J. (2019). The role of scale in integrating climate change adaptation and mitigation in cities. Journal of Environmental Planning and Management Research News, 62(5), 741-765.

Menon Economics, (2021). Investigation of Environmental data for the Future. Rapport. Menon- Publication nr. 153/2021. Oslo. Menon.

Ministry of Environment. (1989). Environment and Development. Norway's implementation of the world commission report. (Meld. St. 46 (1988-89)). Oslo. Ministry of Environment.

Ministry of Finance. (2016). Instructions for Official Studies and Reports. Oslo: Ministry of Finance. https://www.regjeringen.no/globalassets/upload/fad/vedlegg/statsforvaltning/utredningsinstruksen_eng.pdf

Ministry of Local Government and Modernisation. (2014). National guidelines for coordinated living-, area- and transport planning. Oslo: Ministry of Local Government and Modernisation

Ministry of Climate and Environment, 2022. Award Letter 2022 for the Environmental Agency.

Ministry of Local Government and Modernisation (2018). National Guidelines for climate- and energy planning and climate adaptation.

Ministry of Local Government and Modernisation. (2021). Award Letter 2021 - Norwegian Building Authority.

Ministry of Transport (2021).National Transport plan 2022-2023 (NTP). Oslo: Ministry of Transport.

Norwegian Directorate of Public Construction and Property (2021). Norwegian Directorate of Public Construction and Property Annual rapport 2021.

Norwegian Green Building Council (2022). BREEAM-NOR v6.0 for new buildings. Technical manual SD5076NOR. Last updated 17.03.2022.

NOU 2010: 10 (2010). Adapting to a changing climate: Norway's vulnerability and the need to adapt to the impacts of climate change.

NOU 2015: 16 (2015). Stormwater management in cities and as a – as a problem and a resource. Oslo: Ministry of Climate and Environment.

Office of the Auditor General of Norway (2022). Investigation of the governments work with climate adaptation of buildings and infrastructure. Document 3: 6 (2021-2022). Oslo: Office of the Auditor General of Norway.

Persson, Å. (2007). Different perspectives on EPI. In M. Nilsson & K. Eckerberg (Eds.), Environmental Policy Integration in Practice. Shaping Institutions for Learning. (pp. 25-48). London: Earthscan.

Planning and Building Act (2008). Act of 26. July 2008 No.71 relating to Planning and the Processing of Building Applications.

Pörtner, H. O., Scholes, R. J., Agard, J., Archer, E., ..., & Ngo, H. T. (2021). IPBES-IPCC co-sponsored workshop report on biodiversity and climate change. Retrieved from

Reitan, M. (2001). Den nye miljøpolitikken og de etablerte institusjonene. In B. S. Tranøy & Ø. Østerud (Eds.), Den fragmenterte staten. Reformer, stat og styring. Gyldendal Akademisk.

Rauken, T., Mydske, P. K., & Winsvold, M. (2015).Mainstreaming climate change adaptation at the local level. Local Environment, 20(4), 408-423. doi:10.1080/13549839.2014.880412

Reckien, D., Salvia, M., Pietrapertosa, F., Simoes, S. G., Olazabal, M., De Gregorio Hurtado, S., . . . Feliu, E., … Heidrich, O. (2019). Dedicated versus mainstreaming approaches in local climate plans in Europe. Renewable and Sustainable Energy Reviews,112, 948-959 doi:https://doi.org/10.1016/j.rser.2019.05.014

Schattschneider, E. E. (1960). The semisovereign people. New York: Holt, Rinehart and Winston.

Tønnesen, A., Knapskog, M, Uteng, T.P & Øksenholt, K.V. (2020). The integration of active travel and public transport in Norwegian policy packages: A study on 'access, egress and transfer' and their positioning in two multilevel contractual agreements. Research in Transportation Business & Management,40. https://doi.org/10.1016/j.rtbm.2020.100546

The Norwegian Agency for Public and Financial Management. (2018). Guidance Notes on the Instructions for Official Studies: Instructions for the preparation of central government measures. https://dfo.no/sites/default/files/fagomr%C3%A5der/Utredningsinstruksen/Guidance_Notes_on_the_Instructions_for_Official_Studies.pdf

The Norwegian Environmental Agency. (2019). Guide Climate- and energy planning. Retrieved 16.05.2022 at; Klima- og energiplan - Miljødirektoratet (miljodirektoratet.no)

Underdal, A. (1980). Integrated marine policy: What? Why? How? Marine policy (4), 159–169.

Westskog, H., Amundsen, H., Christiansen, P. & Tønnesen, A (2020).Urban contractual agreements as an adaptive governance strategy: under what conditions do they work in multi-level cooperation?, Journal of Environmental Policy & Planning, 22:4, 554- 567.

Attachment

Document	Type of document	Responsible agency
Adaptation to a changing climate (NOU 2010:10)	Public inquiry	MCE
Stormwater in cities and towns – as a problem and resource (NOU 2015:16)	Public inquiry	MCE
Plan and Building Act, the Plan section	Law	KDD
Plan and Building Act, the Building section	Law	KDD
The Building code	Regulation	KDD
Climate and energy guide	Supervision	DoE
Award document to Norwegian Building Authority (Directorate)	Allocation letter	KDD
Award document to Norwegian Environment Agency (Directorate)	Allocation letter	MCE
Award document to Statsbygg	Allocation letter	KDD
Award document to Norwegian Directorate for Civil Protection	Allocation letter	MJPS
Award document to The Norwegian Public Roads Administration	Allocation letter	MT
Award document to Railway Directorate	Allocation letter	MT
Stortingsmelding nr. 28(2011-2012) Good Buildings for a better society.	White paper	KDD
Stortingsmelding nr.20 (2022-2023). National Transport Plan	White paper	MT
Stortingsmelding nr.13 (2020-2021) Climate plan 2021-2030	White paper	MCE
Stortingsmelding nr. 14 (2015-2016) Nature for life - Norwegian action plan for biodiversity	White paper	MCE
State planning guidelines for coordinated housing, area and transport planning (SPR)	Policy doc.	KDD
National expectations to regional and municipal planning 2019-2023	Policy doc.	KDD

MCE: Ministry of Climate and Environment
KDD: Ministry of Local Government and Regional Development
DoE: Directorate of Environment
MJPS: Ministry of Justice and Public Security
MT: Ministry of Transport