

## **Inter-municipal coastal zone planning and designation of areas for aquaculture in Norway: A tool for better and more coordinated planning?**

### **Abstract**

Coastal zone planning raises issues that transcend municipal borders, in particular those related to designation of areas for aquaculture. The most recent trend in further integration in Norway is inter-municipal coastal zone planning. Nine planning processes in six counties, involving 65 municipalities, have been conducted in recent years. This study investigates how or to what degree inter-municipal cooperation enhances coastal zone planning in general and planning for aquaculture production in particular. By identifying what forms of cooperation are taking place in the nine processes we found that the inter-municipal coastal zone planning processes in Norway have resulted in full inter-territorial coordinated planning of the coastal zone in several cases. All processes have to a high degree, resulted in the coordination of the process and the development of common tools and standards, but also to a certain degree of coordination of content. This study therefore supports the assumption that inter-municipal coastal zone planning only will remedy some of the challenges of piece-by-piece planning of the coastal zone, particularly related to planning for aquaculture production. We contend that inter-municipal coastal zone planning contributes to a broader and more holistic perspective on the use of the coastal zone than the municipalities would otherwise have, and that this first generation of inter-municipal coastal zone plans may be a first step towards a more integrated approach to coastal zone planning.

### **Key words**

Inter-municipal cooperation, coastal zone planning, aquaculture, policy integration

### **Highlights**

- Inter-municipal coastal zone planning has increased integration
- Inter-municipal coastal zone planning remedies some of the challenges by municipal planning
- Integration is to a high degree related to process
- There is some degree of integration of content

## 1. Introduction

In this paper, we examine how inter-municipal coastal zone planning can contribute to better coastal zone planning in Norway. In Norway, municipalities have had the authority to allocate and designate areas for aquaculture production and other activities through municipal coastal zone planning for 25 years. This authority was given the municipalities through the revision of the Plan and Building Act of 1989 (Ministry of Fisheries and Coastal Affairs, 2009).

Coastal zone plans are tools for the use and development of municipal coastal areas. An important aim of coastal zone plans is to set priorities between user groups and to avoid uncoordinated or piece-by-piece development of the coastal zone (Stokke et al., 2009; Stokke et al., 2012). Balancing the interests of the growing aquaculture industry and other interests, such as those of fisheries, environmental protection and recreational use, is a major issue (Stokke et al., 2006). Aquaculture is a significant industry in Norway, with a production of more than one million tonnes of salmon in 2015 (Norwegian Seafood Council 2016). Production takes place in 170 of the 276 coastal municipalities. Continued development requires the allocation of new and larger production sites, and the establishment of new production sites and relocation can only take place in accordance with municipal coastal zone plans.

Municipal planning autonomy is restricted by the competence of national sector agencies in areas such as the environment, fisheries, navigation and veterinary affairs. Municipalities' autonomy is nevertheless considerable when it comes to deciding whether or not to designate areas for aquaculture in their coastal zone (Jentoft and Buanes, 2005; Sandersen and Nikolaisen, 2007). They are therefore considered the key for getting access to new sites (Norwegian Seafood Federation, 2013; Expert committee, 2011).

Municipal planning extends one nautical mile from the baseline into the sea.<sup>1</sup> For one fjord or coastal area there usually are several municipalities, hence several decision-making units and coastal zone plans. The borders between municipalities are often drawn in the middle of a fjord and areas designated for commercial or recreational activities in the coastal zone plan of one municipality affect and are affected by activities taking place in the neighbouring municipalities. This is particularly relevant for aquaculture production, where environmental and veterinary regulations require a certain distance between production sites.

In recent decades, we have seen a move towards more integrated and ecosystem-based approaches to coastal zone management (Olsen et al. 2011; Cicin-Sain and Knecht 1998). Sustainable use of the coastal zone requires management approaches that include larger geographical areas and where decision makers consider the cumulative impact of different human uses on the marine environment (Forst 2009). Municipalities are therefore often too small and unsuitable for area planning in fjords and coastal areas (Ministry of Local Government and Modernisation, 2014; Expert committee, 2011). To secure a more integrated and ecosystem-based planning of coastal areas, in particular related to the growth of the

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<sup>1</sup> The baseline is the low-water line of the coast, and is used as the starting point to measure the territorial and other maritime zone of a state.

aquaculture industry, the coordination and integration of policies across municipal borders is needed (Bennett, 2000; Sandersen and Kvalvik, 2014).

Underdal (1980), in an early study on integrated marine policy states that the aim of policy integration is to promote consistency between policies in different sectors and at different levels; to improve the achievement of cross-cutting goals; reduce duplication in the policy-making process; and promote synergies through win-win solutions (Stead and Meijers, 2009). There are, however, a number of practical barriers and institutional constraints to policy integration, amongst them lack of knowledge and expertise and the protection of institutional autonomy and competence. This affects what can be expected from integration. Recognizing the barriers and determining the degrees of commitment to coordination among the actors involved helps explain lack of or weak integration and can also give insight into possible measures for its improvement (Andersen and Pierre, 2010; Feiock, 2009; Geerlings and Stead, 2003; Rayle and Zegras, 2012; Tornberg, 2012).

Several approaches for integration are possible: national, regional and/or inter-municipal. While national institutions in other countries have stronger leverage over the local level, the central government in Norway does generally not compromise local autonomy in questions of area planning (Andersen and Pierre, 2010).<sup>2</sup> Hence, in Norway, voluntary agreement is constitutive for the development of more holistic approaches to coastal zone planning in an area transcending municipal boundaries.

At the turn of the century, the regional level in the Norwegian political structure, the county councils, was considered to be the appropriate body to conduct and coordinate this kind of planning, and the government introduced regional level coastal zone planning as a tool to enhance integrated coastal zone management (Report to the Parliament, 1996). The aim of regional planning processes was to contribute to integration across municipal borders, public sectors and levels of government (*ibid.*). The county council, however, has only limited formal authority in area planning, and the regional master plans are merely guidelines and not legally binding for local municipalities or sector agencies. Hence, Hovik and Stokke (2007a, b), in their studies of three regional coastal zone planning processes in Norway, found a great deal of variation in the degree of integration and level of implementation of regional coastal zone plans. The difference was explained by the counties' different planning strategies (*i.e.* integration of different actors into the planning process) and actors' perceived payoff from participation (*i.e.* the distribution of power and interdependencies among the actors involved). The conclusion was that the integrative potential of the county council as coordinator and policy formulator in coastal zone planning is unpredictable, due to their limited authority, and that municipalities in general were reluctant to be bound by regional plans.

The most recent trend in further integration of municipal coastal zone planning is inter-municipal coastal zone planning. Nine inter-municipal coastal zone planning processes in six counties, involving 65 municipalities, have been conducted the last few years, and several

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<sup>2</sup> The exceptions are some control and regulation on issues like urban planning and environmental protection (Andersen and Pierre, 2010).

more are under way (Robertsen et al., 2014) (see Figure 1). This is encouraged by the government. The new Plan and Building Act, which entered into force in 2009, invites municipalities to engage in inter-municipal cooperation in area planning to a greater extent. The government generally advocates inter-municipal cooperation as a way to overcome the lack of planning expertise in small, rural municipalities. It is also encouraged when coordination across municipal borders is necessary to secure the integration of planning for the development of an area (Plan and Building Act, 2008 §9-1). Inter-municipal cooperation in coastal zone planning is also called for in the government's strategy for an environmentally sustainable aquaculture industry (Ministry of Fisheries and Coastal Affairs, 2009) and in the Reports to the Parliament on 'The world's leading seafood nation' (2013) and 'Predictable and environmentally sustainable growth in Norwegian salmon and trout farming' (2015). The Directorate of Fisheries (2013) also supports such a development, arguing that this would most likely improve the quality of the plans. This is also the position of the aquaculture industry (Harvold and Skjeggedal, 2012).

Insert Figure 1 about here



**Figure 1: Inter-municipal coastal zone planning processes**

However, while the county councils do not have the authority to impose their decisions or priorities on regional sector authorities or on local municipalities, municipalities are generally careful not to give away decision-making power in the inter-municipal planning processes (Andersen and Pierre, 2010), just as with regional plans. Area planning (both on land and at sea) remains a field where the Norwegian municipalities have a great deal of discretion. They generally do not, therefore, commit themselves to a level of integration that involves joint decision making in planning processes, and inter-municipal cooperation in area planning is

relatively modest (Harvold and Skjeggedal, 2012; Leknes et al., 2013). We therefore see legal and institutional constraints to what will be achieved through the current inter-municipal cooperation processes in coastal zone planning in Norway and raise the question whether inter-municipal coastal zone planning is indeed a tool for better and more integrated planning of coastal zones in Norway. In particular we ask, whether inter-municipal coastal zone planning contributes to a higher degree of coordination of the designation of areas for aquaculture production, as this is a main reason for promoting inter-municipal coastal zone planning (Expert Committee, 2011; Report to the Parliament, 2013).

The paper is organized as follows. After a short description of the Norwegian aquaculture industry and area use, we briefly outline the legal basis for inter-municipal area and coastal zone planning in Norway. Then, an analytical approach is presented, wherein we make a distinction between different degrees or levels of integration of planning. This is followed by a description of the current inter-municipal coastal zone planning processes in Norway, with a particular focus on planning for aquaculture. Finally, we examine whether inter-municipal coastal zone planning has resulted in inter-territorial or coordinated planning and discuss the achievements and shortcomings of inter-municipal coastal zone planning in Norway. Based on this, we will draw conclusions on the prospects for a more holistic approach to aquaculture management in Norway.

Inter-municipal cooperation coastal zone planning in Norway is relatively new. This study analyses all the nine inter-municipal coastal zone planning processes up to October 2016. This study is based on the analysis of documents, including inter-municipal coastal zone plans, planning programs and interim reports, which describe the background, process and content of cooperation. Based on this analysis, we have conducted interviews with the leaders of the inter-municipal planning processes. In addition, this study is based on participation at regional meetings on aquaculture and area access with representatives from aquaculture companies, regional state authorities and county councils.

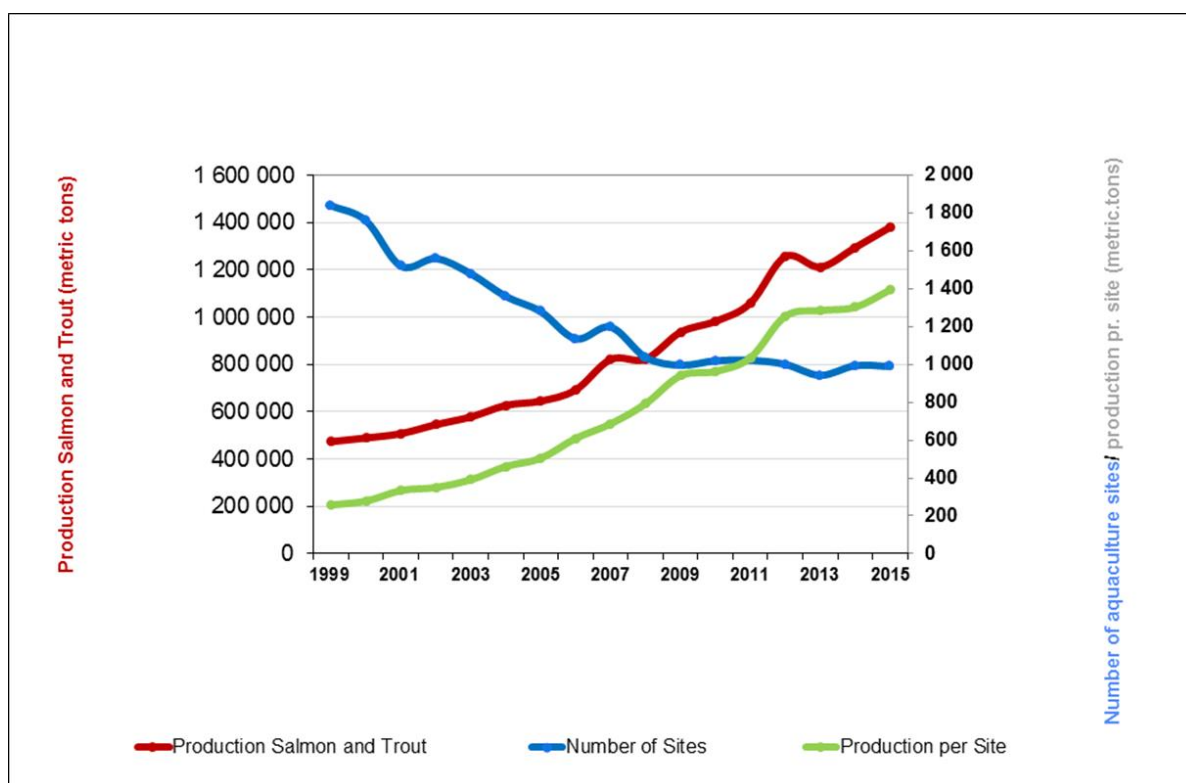
## **2. Norwegian aquaculture and area use**

The growth of aquaculture has been tremendous, with a doubling of production from 600 000 tonnes of salmon in 2000 to more than 1.2 million tonnes in 2014. The export value in 2015 was 5 billion euro (Norwegian Seafood Council, 2016). At the same time, the number of aquaculture sites has been reduced from its peak in 2000 with 1800 sites to its current level of about 1000 sites. This nearly 50 per cent reduction of sites coincided with a 50 per cent increase in new licenses, as well as an increase in numbers of fish permitted for each licence (MTB: maximal allowed biomass) (Report to the Parliament 2015).<sup>3</sup> In this period, the production per site grew almost six-fold; from 278 to 1303 tonnes per site, as illustrated in Figure 2.

Insert Figure 2 about here

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<sup>3</sup> MTB in Finnmark and Troms is 945 tons, while it is 780 tons in the remaining counties further south.



**Figure 2. Growth in Norwegian aquaculture production 1999–2014**

Production is taking place along the entirety of the western and northern coastline. To continue to grow and improve production, the industry needs new and larger production sites and areas in deeper waters (Report to the Parliament 2015; Expert Committee 2011). This development is driven by technological innovations and hence a change from small-scale to large-scale production.

The area occupied by the aquaculture sites is not large when seen in relation to the entire coastal area. It amounts to only 0.5 per cent of Norwegian coastal areas inside the baseline when including safety and anchoring areas (Isaksen et al. 2012). However, this area is also used by and of interest to a number of other actors, such as other industries (fishing, land industry), transport, tourism and leisure interests, as well as environmental and conservation interests. The aquaculture industry's search for new production sites has therefore been referred to as a 'battle for space', where several legitimate interests are to be taken into consideration when municipalities are to decide whether and where to allocate new areas for aquaculture production (Hersoug 2013). The different interests are managed under different national acts and implemented by different administrative and political institutions, which all have a role to play in the municipal planning process (Sandersen and Kvalvik 2014).<sup>4</sup>

<sup>4</sup> The main acts are the Aquaculture Act, the Marine Resources Act and the Nature Managements Act. The main authorities beside the municipalities are the county councils, the Directorate of Fisheries, the Norwegian Coastal Administration, the County Governor and the Norwegian Food Safety Authority.

Aquaculture displaces other activities, but aquaculture production sites also influence each other. In particular, the spread of diseases and parasites is critical (Expert Committee 2011). The dispersion range of diseases seems to be the main limiting factor for sea-based fish farming. The scope of this will vary with prevailing regulations and the increasingly complex modelling of physical and ecological parameters, such as currents, offsetting distance and environmental impact. The Food Safety Authority regulates the required distance between production sites, which generally is 2.5 km between farms, 5 km between farm and slaughterery (Norwegian Food Safety Authority 2015). The most recent initiative is to divide the Norwegian coast into production zones, divided by so-called fire gates without aquaculture (Report to the Parliament 2015). This zoning, if adopted, will come on top of the existing area regulation for aquaculture and will become a challenge for existing site structure. Further, the government can, based on the environmental status of a zone, determine whether to allow an increase or even downsize in a particular zone. Today the dominant factor for evaluation of the environmental status of a production area is the number of sea lice on the salmon in the cages; however, the environmental status under and in the vicinity of the fish cages is also monitored. In other words, the restrictions related to the industry itself are a clear limiting factor for access to new areas for aquaculture production, and the last four years there has not been any growth in the production. The municipalities' willingness to allocate areas to aquaculture is also critical. In recent years, many municipalities have become reluctant to allocate new areas to aquaculture based on environmental concerns (often the effect on wild salmon) and limited economic returns to the municipalities from the very profitable industry.<sup>5</sup> Areas for aquaculture are designated by the municipalities through their coastal zone planning and are a condition for setting up new production sites.

### **3. Legal foundation for inter-municipal area planning in Norway**

According to the Directorate of Fisheries, most coastal municipalities today have a coastal zone plan, but many plans are old and outdated (Directorate of Fisheries, 2014). For instance, the plans often include areas allocated for aquaculture (A-sites) that no longer are suitable for aquaculture production, because of stronger veterinary and environmental regulations, and the large-scale production of today's aquaculture production, which requires larger production sites with good currents and specific depth conditions. About half of the municipal plans have therefore recently been or are in the process of being revised, several in inter-municipal processes (ibid.).

The new Plan and Building Act, which entered into force in 2009, contains a clear invitation to municipalities to engage in inter-municipal cooperation: 'Two or more municipalities should cooperate on planning pursuant to this Act when it is expedient to coordinate planning across municipal borders' (§9-1). The planning work shall be directed by a board consisting of an equal number of representatives from each municipality, unless the municipalities agree otherwise (§9-2). Participating municipalities may delegate to the board of the inter-municipal

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<sup>5</sup> For an analysis of this, see for instance Hersoug and Johnsen (2012) and Sandersen and Kvalvik (2015).

cooperation the authority to make decisions regarding the planning process, which has been vested in the municipalities. However, each municipal council shall make final planning decisions for its area (§9-3). The municipalities therefore do not need to transfer any authority to the inter-municipal planning board, but may do so to ensure professional focus, continuity and progress.

The regional planning authority (the county council) or central government authorities may request municipalities to enter into inter-municipal cooperation when it is considered necessary to safeguard and discharge important national and regional considerations and functions that extend beyond the individual municipality (§9-1, 3). Correspondingly, a majority of municipalities may request regional planning authority to take over the planning work as a regional master plan, on the basis of planning work that has been conducted (§9-4). Inter-municipal planning can also be initiated as the implementation of a regional planning strategy (§9-1, 3) or the central government authority may decide that the planning work shall be continued in the form of a regional master plan (§9-4 and 9-7). Still, neither of these approaches affects the municipalities' right to make final planning decisions for its area and hence does not compromise local autonomy. The main differences between municipal and inter-municipal area planning are listed in Table 1.

Insert Table 1 about here

**Table 1 Municipal versus inter-municipal area planning**

	<b>Municipal Process</b>	<b>Inter-Municipal Process (Plan and Building Act, Chapter 9)</b>
General description	Ordinary planning on sea and land	Collaborative process involving several municipalities
Purpose	The Plan and Building Act gives municipalities the responsibility for planning for the coastal and land area	More effective process with more resources, human capital and knowledge Inter-territorial integration
Participants	One municipality Authorities (e.g. county council) Stakeholders (e.g. business interests, residents)	Several municipalities Authorities (e.g. county council) Stakeholders (e.g. business interests, residents)
Process	Driven by municipal administration or consultancy	Organized as project owned by the participating municipalities. Coordinated by project manager(s) or consultancy, generally participation from all municipal administrations
Political processes	Political processes planning committee Municipal council adopts the plan	Inter-municipal planning committee with one political representative per municipality Each municipal council adopts the plan for their municipality
Final product	Municipal plan	Each municipality adopts the plan for its part of the coastal zone (= the same as in municipal planning)

#### **4. Approaches to inter-municipal planning**



Most theories of policy integration have focused on the vertical integration of different levels of government and the horizontal integration of different sectors' authorities at the same level of government. However, the need for inter-territorial integration between neighbouring authorities is also evident, and this has become common in fields such as transport and area planning (Busscher et al., 2013; Geerlings and Stead, 2003; Rayle and Zegras, 2012; Tornberg, 2012; Hovik and Stokke, 2007a, b). In this study, we will use theories of policy integration to analyse inter-municipal coastal zone planning processes in Norway.

There are different models for inter-municipal cooperation, varying in their degree of formalization and integration. Peters (1998) describes coordination as a continuum, where one end describes a situation where actors are aware of each other's activities and try not to duplicate or interfere in each other's activities and the other describes a situation with tighter control and some means of enforcing jurisdictional controls over disputed turf. In line with this reasoning, Geerlings and Stead (2003) and Stead and Meijers (2009) distinguish between three levels: policy cooperation, policy coordination and policy integration. Hovik and Stokke (2007a, b) in their study of regional coastal zone planning in Norway and the effort to integrate relevant actors, i.e. regional sector agencies and municipalities, have summarized this as coordination through exchange of information, coordination of the process and coordination of content.

We operate with three forms of policy integration. *Policy cooperation* simply implies dialogue and information sharing between autonomous organizations working to accomplish individual operating goals. *Policy coordination* involves a higher degree of integration through the establishment of joint organizational structures and decision making processes, where the aim is to make the actors involved adjust their policies. This process is more transparent than in mere policy cooperation, and the actors working through policy networks attempt to at least avoid policy conflicts and preferably to achieve mutually enforcing and consistent plans. Finally, *policy integration* is founded on the idea that some issues cannot be solved in isolation and that a coordinated response from a variety of actors is necessary. Policy integration therefore implies joint attempts to create synergies between policies by creating win-win situations and the use of the same goals to formulate policy (Geerlings and Stead, 2003; Stead and Meijers, 2009). Policy integration can involve an uneven distribution of benefits and will involve a higher degree of bargaining and compromise to set common standards and reach unified solutions than the other types of inter-municipal cooperation. According to Andersen and Pierre (2010), inter-municipal cooperation has 'become an attractive strategy of enhancing local-level organizational capacity and efficiency, without violating the norms of local autonomy'. Local governments however tend to prioritise less demanding types of coordination, avoiding arrangements that reduce political autonomy, resources and power for the sake of distant benefits (Andersen and Pierre, 2010). Based on this, one should assume that the municipalities involved in inter-municipal coastal zone planning to a higher degree cooperate in the first phases of the planning process, with exchange of information, common data collection and the like, but to a little degree works towards a unified solution in the last phase when concrete decision about area use and priorities have to be made in the plan maps (i.e. designating areas for different activities, in

particular aquaculture). Inter-municipal planning therefore will only partly remedy the challenges posed by the existing uncoordinated municipal planning of the coastal zone. Consequently, one should expect inter-municipal coastal zone planning to be more in line with levels one and two of coordination and involve level three of policy integration to a lesser degree.

The characteristics of the successive levels are illustrated in Table 2. The lowest level poses the least threat to municipal autonomy but is also the form of inter-municipal cooperation least probable to solve the challenges of uncoordinated municipal coastal zone planning.

Insert Table 2 about here

**Table 2. Level of integration in inter-municipal planning**

<b>Level of integration</b>	<b>Activities</b>	<b>Outcome</b>
<b>Policy integration</b>	Coordination of content	Joint, well-coordinated plan
<b>Policy coordination</b>	Coordination of process	Joint organizational structures and decision making tools
<b>Policy cooperation</b>	Coordination as dialogue	Exchange of information

In the case of inter-municipal coastal zone planning in Norway, then, we examine whether we see (1) integration of content (joint or well-coordinated plans)—in particular related to allocation of area to aquaculture, (2) integration of the process and development of joint organizational structures (as opposed to established separate procedures), or (3) merely dialogue and information sharing.

## **5. Inter-municipal coastal zone planning in Norway and policy integration**

The objectives for cooperation in the inter-municipal processes seem to be quite similar, according to planning documents. Main objectives are to contribute to a more holistic perspective on interests in the coastal zone in the region and to develop more integrated plans for its use. In all documents increasing pressure on the coastal zone and the need for updated data on use and usability for different activities are stressed, especially for the aquaculture industry. Some aims of the planning processes therefore include clarifying which areas are suitable for aquaculture, identifying conflicting user interests and prioritising. In several planning documents, ambitions to achieve a more ecosystem-based and sustainable use of the coastal zone are highlighted. The common acquisition of information and establishment of a common knowledge base and common criteria for management are held to be essential for a more integrated approach to coastal zone planning. Creating joint plan descriptions and planning maps is part of all projects, including developing common routines and standards for management and the use of similar planning tools (technology/software). Building competence and improving planning documents are also stated to be advantages of inter-municipal planning, that will ease future planning.

The nine Norwegian inter-municipal coastal zone planning processes follow more or less the same path, but there are differences, not only related to degree of coordination, but also the number of municipalities taking part in each process, the progress and the time used. The greatest number of municipalities in one process is 13, while the smallest number is 2 (see Table 3). One municipality participated in two processes that covered different fjords in the municipality.<sup>6</sup>

Most of the inter-municipal planning processes were initiated after the new Plan and Building Act entered into force in 2009. The exception is the Lyngenfjord process (number 1 in the table), and also a former inter-municipal process in Helgeland that took place from 1993 to 1996 (the new process is number 4 in the table). The latter informed the work of the revision of the Plan and Building Act where the need and premises for inter-municipal area planning were established (Bennet and Skjerdal 1996).

The shortest process took less than two years, while two processes that started in 2012 are still not complete (as of October 2016), by far exceeding their set timeframe. Five of the plans have been adopted. Three are or soon will be subject to public hearing. One planning process, that of Sør-Trøndelag (number 2 in the table) did not result in the adoption of an inter-municipal plan but rather a ‘suggestion for regional guidelines’. Despite an objective to do so, the steering group considered the area to be too large to plan for and decided that municipalities should not develop a common plan map. It is therefore not a traditional, legally binding, coastal zone plan, but a process and strategy plan for further implementation in the municipalities, more like the regional plans adopted by county councils.<sup>7</sup> It should be noted that this was the first inter-municipal planning process initiated after the adoption of the new Plan and Building Act. The process involved 11 municipalities, and there was a great deal of uncertainty on how to actually conduct such a process. In the eight remaining processes, common planning maps have been developed, and in seven processes new areas for aquaculture have been suggested.

Table 3 gives a short summary of the nine processes and the level of integration. ‘Degree of policy cooperation’ is considered based on dialogue and information sharing among the municipalities. ‘Degree of policy coordination’ is considered along four dimensions; to what degree the municipalities have established joint organizational structures; whether the boards of the inter-municipal planning process have been delegated planning authority regarding the planning process; to what degree there is cooperation on information gathering; and to what degree the municipalities develop similar planning tools. ‘Degree of policy integration’ denotes to what degree the processes have resulted in integrated plans, and is considered along two dimensions: to what degree the municipalities have cooperated closely and

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

























































<sup>6</sup> Lyngen participated in both the Lyngenfjord and the Tromsøregionen process (numbers 1 and 8 in the table).

<sup>7</sup> In addition, the Norwegian military did not want to release sites that were bound for navy exercises, even though they had given signals they would, thus halting the process and creating uncertainties with regard to the possible availability of large areas for uses like aquaculture. The sequestration of areas by the navy was also an issue that affected the process and the possibility of allocating areas to aquaculture in several of the other inter-municipal processes.

developed a joint, well-coordinated planning map for the entire coastal area based on the above (as opposed to each municipality making its own map and then putting them together) and whether there is any obligation to cooperate post plan. Even though this latter, strictly speaking, falls outside the planning process, it is considered a good indication of the integrative effect and commitment of the municipalities taking part in the inter-municipal processes. Green in the table indicates a high degree of coordination on the defined activities and outcomes, red indicates a low degree, while a mixed colour indicates a certain degree of coordination. The table is organized according to time of start-up.

Insert Table 3 around here.

**Table 3: Characteristics of the inter-municipal coastal zone planning processes, status October 2016**

	1 - Lyngenfjorden	2 - Sør-Trøndelag	3 - Fensfjorden	4 - Helgeland	5 - Romsdalsfjorden	6 - Nordmøre	Coastal plan Troms 2013 (Kystplan Troms)		
							7 - Sør- og Midt Troms	8 - Tromsøregionen	9 - Nord Troms
<b>Inter-municipal cooperation</b>									
<b>Number of municipalities</b>	3	11	5	13	5	11	13	5	2
<b>Start-up</b>	2008	2009	2010	2012	2012	2013	2013	2013	2013
<b>Proposal coastal zone plan</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Designation of area to aquaculture</b>	yes*	no	no	yes**	yes	yes	yes	yes	yes
<b>Municipal adoption of plan</b>	2015	no	2013	On public hearing	Ready for public hearing	Ready for public hearing	2015	2015	2014
<b>Policy cooperation</b>									
<b>Dialogue and exchange of information</b>									
<b>Policy coordination</b>									
<b>Joint organizational structures</b>									
<b>Delegated planning authority</b>									
<b>Cooperation on information gathering</b>									
<b>Establishment of similar planning tools</b>									
<b>Policy integration</b>									
<b>Coordinated planning map, including designation of areas to aquaculture</b>									
<b>Formal cooperation post plan</b>									

\* The municipalities suggested areas for aquaculture, but these were taken out of the plan before adoption because of objections from sector authorities.

\*\* The municipalities used an inverse planning principle and defined areas where aquaculture should not be allowed. In remaining (unplanned) areas, sites for aquaculture production can be applied for.

## Level of integration

### *Level one of integration: policy cooperation*

The lowest level of integration, policy cooperation, implies coordination as dialogue and information exchange. In all nine processes, we see, as expected, a high degree of policy cooperation (marked green in the table). According to the project leaders, the exchange of information and knowledge transfer has contributed to building relations between planners in the municipalities, something that is considered very positive in small municipalities with little resources and small staffs. Exchange of information and experience has been central for these municipalities. The project leaders also note that the dialogue across municipalities has contributed to increased understanding of different interests among municipalities and their regions, benefitting both planners and policy makers in the process. Throughout the processes there has also been dialogue between the project leaders of the different inter-municipal planning processes. The processes in Troms County have taken place under a regional project, including meetings among the different projects which have contributed to dialogue and information exchange. The inter-municipal coastal zone planning processes are therefore successfully contributing to knowledge transfer, learning and increased understanding.

### *Level two of integration: policy coordination*

We also see a high degree of policy coordination, that is, coordination of the process. Such level-two integration involves an approach to coastal zone planning where joint organizational structures, information gathering and planning and decision-making tools are established.

All inter-municipal coastal zone planning processes were organized as projects, with a set time frame agreed upon in the planning programme. Each process was managed by a board, generally consisting of an equal number of elected representatives from each municipality, and a working group, consisting of area planners from each municipality.<sup>8</sup> The first task of the board is to develop a planning programme, where the municipalities agree on how the work shall be organised and define the aims and tasks of the planning process where the plan descriptions, plan provisions and plan maps are to be developed. In seven of the projects the board was delegated planning authority, in line with the Plan and Building Act §9-3. This is assumed to make the process run more smoothly and save time. It also facilitates more active cooperation and coordination among the municipalities. In the two projects that did not delegate authority, Helgeland and Tromsø (number 4 and 8 respectively), we find that planning to a higher degree took place in the single municipalities.

In two of the projects, external consultant companies were engaged to lead the process and secure the administrative implementation of the project (Fensfjorden and Tromsø regions, numbers 3 and 8 in the table). The rationale for this was to save time and internal resources.

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<sup>8</sup> In addition, stakeholder involvement was secured through meetings and public hearings. One project, Helgeland, with 13 participating municipalities (number 4 in the table), divided the municipalities into three working groups, but later merged them into one to secure progress. One project, Sør-Trøndelag (number 2 in the table), also had a group with representation of the different sector authorities relevant for the coastal zone.

The majority used local personnel, arguing that this contributes to competence building, which is one of the aims of inter-municipal cooperation. For instance, in the South and Mid Troms process (number 6 in the table), with 13 participating municipalities, the locally engaged project leader said that most of the work, including impact assessments, was conducted by the administrative staff in the municipalities. This has contributed to competence building in the small municipalities in this region, increased the understanding of the different interests of the different municipalities in the region and established a basis for continued cooperation between municipalities (personal information from project leader), all aspects leading to a higher degree of integration.

In all the processes the county councils played a role; as initiator, facilitator, with funding and competence and even with implementation of the processes. The planning processes in Troms County (numbers 7–9 and 1) is interesting in that the county established a three-year project, the ‘Troms coastal plan’ (Kystplan Troms), to run from 2013–2016. The aim was to support the 24 municipalities in the county in revising their coastal zone plans. The county facilitated three inter-municipal planning processes; one for the southern region, one for the northern region and one for the Tromsø region. The project had a designated project leader and a project coordinator for each inter-municipal process partly or totally funded by the county. The municipalities had suggested such a coordinated initiative to the county council to stimulate cooperation and to develop common political guidelines for area use, management and value creation and hence achieve the sustainable management of the marine resources in the coastal zone. The aim of the project was not to establish one common plan for the entire county, but three distinct inter-municipal plans, participating in a common process (Troms County 2011). Under this project, a regional planning forum was established, in accordance with the Plan and Building Act §5-3. The ongoing process for the Lyngenfjord (number 1) was enrolled into this.<sup>9</sup> As shown in Table 3, the organization and level of integration in the three processes differ, but in all processes new coastal zone plans were adopted.

In all projects, municipalities cooperated on information gathering, either by buying services like impact assessments or by conducting it themselves. They also used the same technology: for example, mapping systems, either existing ones or ones that were invested in, were central in the projects. Some municipalities, such as Nord-Troms (number 9), already had common planning technology and were using existing software and archives. Others, such as Romsdalsfjorden (number 5), established a map database and a digital multi-criteria analysis during the project. Finally, in the processes, municipalities also agreed on the tools and criteria to develop plan descriptions and planning maps. This coordinated collection of information and the use of the same criteria for developing plan descriptions contribute to the standardisation of information and criteria for planning and facilitate a more integrated approach to management of the coastal zone. This is an advantage for the users of the coastal zone as it improves predictability, for instance when applying for aquaculture sites. We therefore see a high degree of policy coordination in the nine processes.

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<sup>9</sup> One municipality (Kvænangen) had already begun to revise its plan and decided to continue outside the cooperation. Still, the project leader of the Nord-Troms cooperation participated in their meetings.

*Level three of integration: policy integration*

Policy integration denotes a situation where the actors involved, in addition to establishing common standards, also work towards a unified solution. It is characterised by a joint or well-coordinated plan, i.e. coordination of content. In addition, the obligation to continued cooperation or coordination implies a higher degree of integration and commitment to the inter-municipal plan.

As can be seen in Table 3, this took place in the Norwegian inter-municipal coastal zone planning processes to a varying degree. Only in four of the processes, the Lyngenfjord, Fensfjord, the Romsdalsfjord and the Nord-Troms (numbers 1, 3, 5 and 9 in the table), we found real policy integration through the development of a well-coordinated plan (green mark in the table). In all of these, there were very few municipalities involved, from two to five. The municipalities here cooperated closely on plan provisions and designating areas for different uses, including aquaculture, taking the entire area of the municipalities into account. For instance, in the Romsdalsfjord process we see a very high degree of policy integration. The five municipalities have been working closely together throughout the process, including a high degree of involvement from sector authorities. The planning has taken place for the entire coastal area, both in collecting and compiling knowledge and in the development of the plan provisions and plan map. The work has been consensus based, and designation of areas for different uses, including aquaculture, has taken place disregarding municipal borders. The main criteria has been the areas' suitability, taking into consideration the level of conflict with other interests. This project is however not finalized. The plan is ready to be submitted for public hearing. If adopted, this project seem, together with the Lyngen and Nord-Troms, to be the most successful process with regards to level of integration and cooperation in designation of area to aquaculture.

The Fensfjord process and plan stands out from the others. The Fensfjord is one of the busiest sea areas in Norway, with large cargo ships, tankers, fishing boats, ferries and express traffic. The municipalities saw the need to consider the entire fjord area together and prepare a common plan for different activities in the area. At the same time, this planning work should be combined with an assessment and clarification of the risks, preparedness and contingency plans in the fjord. The five municipalities in the process agreed to prioritise shipping and not to designate new area for aquaculture, restricting themselves to adjusting some existing areas. The decision was made jointly, hence the green mark in the table. Preparedness was however the central theme in the planning process. The municipalities noted the lack of knowledge and the need for a more holistic approach and called for the development of a regional plan for aquaculture, including in the three fjords in the area. In that regard, one could argue that the planning process was less integrated, or holistic, because the project did not include and important aspects of the coastal zone planning.

In one of the projects, Helgeland (number 4), the municipalities used a so-called inverse planning principle and defined areas where aquaculture should not be allowed. In the remaining (unplanned) areas, sites for aquaculture production can be applied for. The reason

given is lack of knowledge of areas suitable for aquaculture. There is the further consideration in the Helgeland project that this makes the plan more dynamic, something that is considered to be beneficial to the aquaculture industry. In this process, we find some degree of coordination of content, where decisions on areas not to be designated for aquaculture were taken together: hence the split mark in the table. Further, new uncontroversial areas were designated individually by each municipality. Areas not designated for other activities, like fishing or protected areas, could be applied for by aquaculture companies. These areas are in many ways still unplanned areas, and the clarification and prioritisation among different user interests that should normally be made in the coastal zone planning process are here left to the individual municipality in case of an application. The Helgeland plan has been stopped at county level after serious protests from other sector agencies. The Directorate of Fisheries however supports the planning strategy. It is argued that the inverse planning principle gives more flexibility, but whether it provide a more integrated plan is doubtful, as each municipality individually must manage applications from aquaculture companies.

In the Nordmøre process (number 6 in the table) we also see some level of integration of content. The six municipalities are hosting salmon rivers or waterways, and together agreed not to allocate new areas for aquaculture in these areas. A common plan provision was developed, contributing to a more integrated approach. In the project, the working group agreed to map the entire area an aquaculture site occupy, not only the physical area occupied by the fish cages and anchors but also the no-transport and no-fishing area around it. This meant that several aquaculture sites in one municipality actually tie up areas in neighbouring municipalities and this has been mapped. When it comes to designating new areas for aquaculture, however, this was done individually by each municipality, without regard to the interests and area designations of the neighbouring municipalities or sector authorities: hence the split mark in the table. The municipalities in the project was also using different planning principles, where a majority used traditional planning principles and designated new areas, while a minority applied an inverse planning principle. This difference were maintained in the inter-municipal plan and visualizes the lack of a holistic approach.

In the South and Mid Troms projects (number 7 in the table) we also see a certain degree of coordination of content with an active working group attempting to reach consensus. In the development of the planning map, designation of areas for aquaculture was discussed in the board and working groups, and attempts to create a more integrated process taken, but in cases of disagreement, each municipality made their decisions based on the interests of the municipality rather than taking a regional approach: hence the split mark in the table.

In the aforementioned Sør-Trøndelag project (number 2), all areas shallower than 25 m were defined as non-aquaculture areas, in order to reduce conflicts with recreational users. This process, however, stopped after 5 years without the adoption of a planning map or plan description, only some guidelines for coastal zone planning in the municipalities and no clarification of area use made. The level of integration must therefore be considered low.

In the Tromsø region process (number 8 in the table), we saw limited cooperation in developing the planning provisions and plan map. Despite the common collection of



information and a common process where aquaculture companies were invited to make a wish list of aquaculture sites in the region, when the planning map was to be developed there was no coordination or even consultation. Each municipality planned for its own area. Some of this can be explained by the fact that one of the municipalities had already revised its plan before the inter-municipal process started. However, there was also no coordination between the other municipalities, where multiple municipalities were involved, as there was a salmon river bordering several municipalities. There was also an initiative from the neighbouring project, the South and Mid Troms project (number 7 in the table) to coordinate their work when assessing and designating areas for aquaculture in a common fjord bordering this salmon river. This was, however, rejected by the Tromsø region. The result was that the latter did not designate areas for aquaculture, considering the risk to wild salmon in this national salmon fjord too high, while the former designated areas on the south side of the same fjord. For the actors involved, in particular the aquaculture businesses in the region, this lack of a coordinated approach was confusing and highlighted the need for a more integrated approach in fjords, regardless of administrative boundaries. This case also illustrates the lack of clear and unified criteria for the management of the coastal zone and aquaculture production.

We therefore see a limited degree of coordination of content in inter-municipal coastal zone projects. In all projects, there is the intention of future cooperation, and all our informants expressed the expectation that dialogue would continue after the end of the project and adoption of the plans, either informally through the personal contacts that have been established or in ad hoc meetings when necessary. As mentioned, some municipalities in the South and Mid Troms has announced that they will start a new inter-municipal process to revise the plan, but not all the 13 municipalities have expressed their interest. The Troms county council, which facilitated and supported the four processes in the county, has announced that they will follow up with municipalities through annual coastal zone plan meetings (personal communication from the project leader of the county project). All our informants also stress that the inter-municipal process has furthered their understanding of the need for a more integrated planning and that the basis for future cooperation has been established. Only one inter-municipal coastal zone project, however, Fensfjorden (number 1 in the table), has established formal procedures for future cooperation (post plan). The plan also includes guidelines for the future consideration of new plans and a formal obligation to follow up the project through the establishment of a meeting group named Fensfjorderådet. In none of the projects do we see any ambition for common management.

## **6. Prospects for a more integrated coastal zone management through inter-municipal planning**

The question raised in this article is how or to what degree inter-municipal cooperation enhance coastal zone planning in general and planning for aquaculture production in particular. Based on the analysis of the nine inter-municipal coastal zone planning processes, we find many achievements of inter-municipal cooperation.

The municipalities in the projects have exchanged information and gained understanding about the diverse interests in their region (level one of integration). They have cooperated on information gathering and developed common plan descriptions (level two of integration). One impact of this is common knowledge bases and similar planning tools. Further, the municipalities have improved their planning competence and, according to the leaders of the planning processes, inter-municipal cooperation has contributed to this to a high degree. The harmonization of plan maps and criteria for planning should be considered positive for the actors involved, both public and industry, as the implementation of coastal zone plans becomes more standardized and hence predictable. Through the process, municipalities have also established relations and a basis for dialogue and cooperation between planners and policy makers in municipalities in the future.

It is more unclear to what degree inter-municipal planning processes have resulted in integrated planning for the coastal zone and planning for the aquaculture industry (level three of integration). In four of the inter-municipal planning processes, we saw a high degree of holistic planning for a sea area or fjord system. These processes however involve few municipalities, in total they amount to 15 of the 65 municipalities involved in inter-municipal planning. In addition, in one process, there were no clarification of aquaculture interests, reducing the number of municipalities to 10. In the remaining processes the coordinated approach to a greater or lesser degree falls short when it comes to actually designating areas for different uses, in particular aquaculture. In these cases, inter-municipal planning remedies only to some extent the challenges of piece-by-piece planning of the coastal zone.

Cooperation does not create a win–win situation when it comes to designating areas for aquaculture. Both the negative effects (pollution) and positive effects (economic)<sup>10</sup> are local. When gathering information, processing data and setting up criteria for management, it creates win–win situations. This can be assumed to influence the considerations made in the different municipalities. In some of the processes, we see no attempt to cooperate on area designation. In other cases, there were disagreement or different interests among the municipalities, and then we not surprisingly see the lack of a coordinated approach. In the projects with real integration of content, the distribution of benefits and burdens from aquaculture production was considered for the entire area, and all municipalities saw the benefit for their municipality from the common decision reached.

Within the existing institutional setup, where the municipality has the authority to designate areas for different activities in their coastal zone, the degree of coordination and integration is however very much at the discretion of the municipality. The management of the coastal zone will still take place in the distinct municipalities, and we do not know how much coordination will take place in day-to-day management. All the relevant municipalities in a coastal area have to be willing to take part in integrative efforts to be able to reach a higher level of integrated management of a fjord or coastal area. The Norwegian government have initiated a political process to reduce the number of municipalities through more or less voluntary

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<sup>10</sup> Part of the aquaculture license fee is reallocated from the government to the municipalities where the production is to take place (Sandersen and Kvalvik 2015).

merges. The result of this will be larger municipalities, managing larger coastal areas, and hence fewer municipalities to coordinate in future revisions of the coastal zone plan. From an integrated coastal zone management perspective, this may be positive.

The coastal zone plans are to be revised every four years (usually these revisions are not conducted so often). The question then is whether the municipalities will do this individually or establish new inter-municipal projects. According to the Trøndelag plan or guidelines, the inter-municipal plan with its common strategic basis for planning in the coastal zone could also be a guide to future revisions of the coastal zone plans (The Coast is Clear 2015:17). It remains to be seen to what degree this will happen. Still, the inter-municipal processes have created contact between the political and administrative levels in municipalities, which could be useful in future planning. Even without a common revision process, municipalities have now established some common principles and mapping tools.

To sum up, the study confirms our hypothesis that inter-municipal coastal zone planning processes involve level one and two of coordination to a high degree. We however find more cases of level three of policy integration than expected. Cicin-Sain and Knecht (1998) nearly 20 years ago stated that it is limited how much you can achieve from local integration in coastal zone planning without a higher degree of institutional coordination at the national level (Frisvoll and Rønningen 2012). The experience from the Norwegian inter-municipal coastal zone planning processes provides evidence that you can. The inter-municipal planning processes have been successful in that they have contributed to relations, competence building, common planning tools, common data and plan maps, establishment of common standards for management and also the ability to see the coastal area in a broader perspective.

Our findings are consistent with the study of inter-municipal land area planning in Norway by Harvold and Skjeggedal (2012), who found that planning cooperation mainly takes place as ad hoc projects where municipalities run parallel planning processes, exchange information and cooperate on information gathering but with little degree of formal cooperation after adoption of plans. The study however shows that inter-municipal coastal zone planning do remedy some of the challenges of piece-by-piece planning of the coastal zone, also related to planning for aquaculture production. It is therefore reasonable to conclude that inter-municipal coastal zone planning contributes to a more holistic approach to the area planned for than municipalities would otherwise have. Despite the varying degree of level three cooperation, we claim that inter-municipal coastal zone planning is a better tool for coastal zone planning than the traditional single municipal planning, and that this first generation of inter-municipal coastal zone plans is a step toward a more integrated approach to coastal zone planning.

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