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# Case study report on Jostedalsbreen National Park

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### Summary

This note is a mapping of management organisation and function, and of regional development in the surroundings of Jostedalbreen National Park in Norway. The note focuses on interactions between environmental authorities and local economic actors, emerging conflicts and solution strategies as well as the influence of policies on integration of socio-economic development and management of the national park. The note is meant as a basis for further comparison between Norway and Austria concerning these issues.

### Other publications from the project

Getzner (2008): "Impacts of National Parks on Tourism: A case study from a prominent alpine national park". *Economia delle fonti di energia e dell'ambiente*, 2008:3, 103-120.

Getzner (in press): "Impact of protected areas on sustainable regional development: the case of Hohe Tauern national park (Austria)", *Journal of Sustainable Economy*

Getzner, Jungmeier, Müller & Zollner (2009): *Case study report on the Hohe Tauern National Park (Austria)*, Vestlandsforskning-note number 7/2009. Vestlandsforskning, Sogndal.

Vik, Benjaminsen & Daugstad (in press): "Synergy or Marginalisation. Narratives of farming and tourism in Geiranger, western Norway". *Norwegian Journal of Geography*.

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# 1 Introduction and project description

The impact of protected areas, especially national parks and biosphere reserves, on regional development is a major issue in the public debate in nature conservation policies.

The current report is a first outcome of a research program of Vestlandsforskning (Sogndal, Norway) in cooperation with Klagenfurt University (Austria) entitled "Policy for harmonizing national park management and local business development". Funded by Miljø 2015, the program, which is taking place from 2008 to 2010, aims at exploring the linkages between protected areas (PAs) (national parks), regional development, and specifically PA management strategies. The paper is a case study description of the Jostedalbreen National Park (Norway), and will both serve as a basic document for the comparison between the Jostedalbreen National Park and the Hohe Tauern National Park (Austria), and for the draft of journal publications as the main "product" of the research process. The structure of the report has been set up according to a joint case study protocol that provides the questions to be answered in the two site specific studies.

The research questions of the research program are:

1. How does the history of interactions between environmental authorities and local economic actors influence the present situation in LPA; which conflicts have emerged and how have these conflicts eventually been resolved?
2. How do national and international policies on nature protection and economic development influence local processes relating to the integration of socio-economic development and management of LPA?
  - a) Why do local and regional actors adapt differently to the policies?
  - b) How do policy changes occur?
3. What are the differences between regional socio-economic effects of LPA in Norway and Austria, and to what extent can these be explained by policy regimes and management models?
4. What are the probable long-term effects of implementing new models for the integration of regional development and LPA management on socio-economic development and nature and cultural heritage values?
5. Which institutional changes in national policies and management models for LPA need to take place in order to secure regional socio-economic development without reducing nature and cultural heritage values inside the LPA?

The research project consists of four work packages (WP):

- WP1: Experiences and debate gained from test models on transferring the formal responsibility for managing national parks to the local level of government.
- WP2: Comparison case study in Jostedalbreen NP in Norway and Hohe Tauern NP in Austria.
- WP3: Trailing research of i) the designation of Breheimen national park, and ii) the establishment of a management model for the UNESCO site of Nærøyfjorden.
- WP4: Total synthesis to answer the main research questions.

The current report is a contribution to work package (WP) 1, providing the fundamentals for a comparative study of PAs in Norway and Austria. The report is specifically targeted to account for research questions 1 and 2, and partly for research question 3.

The next steps in the process are the comparison of the two case study reports Jostedalbreen National Park (Norway) and the Hohe Tauern National Park (Austria), and the integration into one document dealing with a comparison of the two case study areas.

## 2 Short profile of the park

### 2.1 The National Park

Jostedalbreen National Park covers an area of 1315 square km. It was established in 1991 and enlarged in 1998. Jostedalbreen is a large plateau glacier with numerous branches from about 300 to 2 000 meters above sea level. This constitutes the largest glacier in continental Europe. Most of the NP is above 800 metres above sea level. Besides Jostedalbreen, the NP consists of a number of smaller glaciers as well. The NP expands 6 miles, and counting all glaciers, about half of it is covered by ice (Direktoratet for naturforvaltning 2008).

The NP is located in the County of Sogn og Fjordane, and in the municipalities Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen and Stryn. About 370 km<sup>2</sup> is privately owned, while the rest is public land (Bugge 1998; Lovdata 2009b; Vorkinn 1992). It is mostly lower areas in the valleys that are privately owned (Dybwad 1994).

Nigardsbreen is the largest glacier arm of Jostedalbreen. The lower parts of the glacier, glacier valley, the glacial lake have been a conservation area since 1985. Nigardsbreen is today a Nature Reserve, which borders to the NP. The objective is to protect the landscape values for research on glaciers and botany. The area is to a large degree developed. There is a road to the glacier lake and from there a trail or boat across the water toward glacier arm. (Fylkesmannen i Sogn og Fjordane 2006). Development that interferes with the natural state within the nature reserve cannot occur, and all vegetation is preserved from all damage. It is emphasised that because of the close connection between the protected areas, the management should be coordinated (Bugge 1998).

The valleys Erdalen, Sunndalen and Bødalen were incorporated in the national park in 1998 when the National Parliament decided that the Stryn and Loen river systems should not be developed for hydro power purposes, through the Conservation Plan IV for Water Courses (Direktoratet for naturforvaltning 2008).

### 2.2 Traditional user groups

Jostedalbreen is today used for outdoor recreation, education and research (Direktoratet for naturforvaltning 2008), but has long traditions.

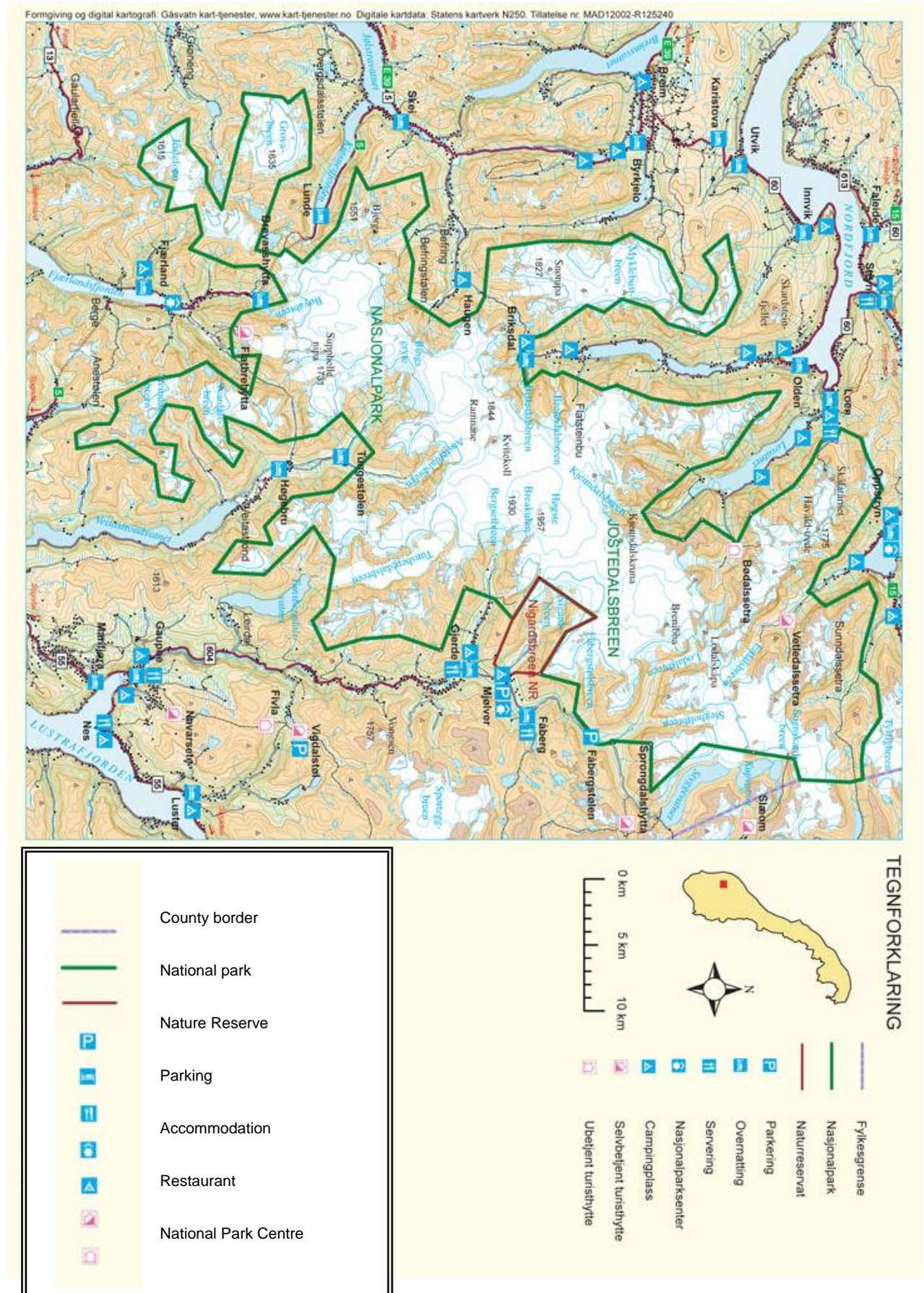
#### 2.2.1 Agriculture

The settlement has been dependent on agriculture for a long time. From the Iron Age, mountain farming was extensive, and fishing and hunting was important to survive. The valleys were important for haying, pollarding and grazing. Many of mountain valleys have been influenced by grazing, hayfields, logging etc, and the cultural landscape in the valleys are of important conservational value. The most prominent cultural landscape values are all the old mountain farms (Solheim 1987; Dybwad 1994). During the 1950s mountain farming decreased like elsewhere in Norway (Dybwad 1994). Active farming is still carried out in the valleys surrounding the glacier, but only a few mountain farms are being run in the traditional way (Direktoratet for naturforvaltning 2008; Jostedalbreen Nasjonalparksenter 2008). The valleys are still used for grazing animals during the summer season, with cattle, sheep and goat, although to a less extent than before. Some places there are problems with overgrowth of bush and forest. Wood logging is seen as an important resource many places. Most of the mountain farms that are maintained today, is used as vacation homes (Dybwad 1994).

#### 2.2.2 Communication

Most of the local communities around the glacier were isolated, especially during certain parts of the year. The locals had to travel by sea to reach surrounding areas, but during winter travelling could be difficult due to varying ice conditions and danger of avalanches. For several centuries, the glacier was often used as a track between the communities. Jostedalbreen connected the districts between the western valleys, and from the western fjord and valley areas to interior Sogn and Eastern Norway (Solheim and Loftesnes 2007; Weichert 2008). Until the second half of the 19<sup>th</sup> century, Jostedalbreen was the most important trunk road in the districts around the glacier. Traders used the routes across the glacier, and the most important business was the cattle driving. The herding took place during early summer, before there were too many crevasses on the glacier. They often went by night, when the snow was hard frozen. Today the glacier is too small for this to be possible, it is too dangerous because of the crevasses and steep areas (Kjølsdalen Krins Utviklingslag 2003; Weichert 2008).

Figure 1: Map of Jostedalbreen National Park (Direktoratet for Naturforvaltning 2009a)



### 2.2.3 Tourism and outdoor recreation

The area has long traditions as a recreational area. Jostedalbreen became a tourist attraction in the 19<sup>th</sup> century, when the first foreign mountaineers came to explore the Norwegian mountains. Jostedalbreen was soon the best known and most visited glacier in Norway. Several hotels were built in the valleys towards 1900. Most of the tourists came mostly to look at the glaciers, and the glacier arms Briksdalsbreen, Bøyabreen and Kjenndalsbreen early became attractions due to the short distance from the fjord to the ice. Tourists were brought to the glacier by boat and by horse and carriage (Solheim 1987; Dybwad 1994; Direktoratet for naturforvaltning 2008; Weichert 2008).

English, Norwegian and Danish mountain sport pioneers started glacier climbing. They used locals that knew the glacier and the local conditions as guides. These were usually local farmers that had been familiarised with the glacier from an early age. This developed into the trade of mountain guides. Gradually the interest from tourists that wanted to make walks on the glacier increased, and guiding was a good extra income for the farmers. In 1890 a concessionary guide system was established by the Norwegian Trekking Association (*Den norske turistforening*). Official glacier guides were selected, and the concession was personal and had to be renewed annually. This lasted until World War II. Today the guides must be authorised by the Norwegian Forum for Mountain Sports (*Norsk fjellsportforum*) established in 1988 (Solheim 1987; Dybwad 1994; Weichert 2008).

Until World War II it was most common to venture in the area with a guide. Today, many venture on their own with the necessary equipment and knowledge. Jostedalbreen and the surrounding area have the status as an area of national interest for outdoor recreation.

The locals in the region use the valleys and mountains around the glacier as a destination for daytrips. The same areas are used to ascend and descend the glacier plateau. To venture on the glacier demands skills and equipment. The most common routes are the marked trails between the valleys like Stardalen-Oldedalen, Fjærland-Veitastrond, Sunndalen-Skjåk. In the past years, there has been an incensement of more prepared facilitated tourism activities. Examples are the summer ski centre at Strynefjellet and boat transport on the Nigardsbreen glacier lake with glacier guiding on Nigardsbreen (Dybwad 1994).

Some of the glacial branches represent the most popular tourist destinations in Norway. This is in particular Briksdalsbreen, Nigardsbreen and Kjenndalsbreen. Most of the visitors are on a day trip in the outer edges of the glacier or in the valleys. This is partly due to the fact that the NP is not easy accessible and hiking requires skills. During the summer, many of the tourists visit the outer edges of the area on daytrips, many travelling by car. Hotel and cruise ship tourists mostly visit famous places in the outer edges of the NP, like Briksdalsbreen and Nigardsbreen (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006; Jostedalbreen Nasjonalparksenter 2008).

### 2.2.4 Education and Research

The first scientist came to Jostedalen in the beginning of the 1800s. The area is still used by Norwegian and international research on geology, glaciology and botany and educational purposes by schools, colleges, universities, organisations etc (Dybwad 1994; Weichert 2008).

### 3 Context of protected areas in Norway

#### 3.1 History of nature conservation and the development of parks

The first signs of engagement for nature protection in Norway stems from the 19<sup>th</sup> century. While at first the protection concerned threatened resources and species, there later was a turn towards protecting areas for aesthetical and scientific reasons. The first Norwegian act concerning nature conservation was established in 1910. In this act the conditions for conservation had to be scientific or historical reasons, and it did not include conservation of larger land areas. In the act of 1954, there was an opening for conservation of “areas” based on “beauty or uniqueness” (Direktoratet for naturforvaltning 1996:13, our translation), which included national parks. By this act, the authorities were also obliged to establish a national council for nature conservation. This was done in 1955. In 1964 this council presented the first National Plan for Nature and National Parks (Statens Naturvernråd 1964). The first Norwegian national parks were established in 1962/63.

The present Nature Conservation Act (*Naturvernloven*) was established in 1970. This act will be presented further in the following section, together with the present Norwegian New National Plan of National Parks and other large protected areas (*Ny landsplan for nasjonalparker og andre større verneområde*) from 1993.

Today, the objective in Norwegian conservation policies is to ensure a representative selection of nature types in Norway for the future. The justification for Norwegian nature conservation may be split into several parts (Miljøverndepartementet 1992, our translation):

- With regard to the intrinsic value of nature
- For future generations to be able to experience untouched nature
- For researchers also in the future to be able to study the interplay in untouched nature and cultural landscapes

An area of totally more than 45.000 km<sup>2</sup> is conserved according to the NCA in Norway. This is equivalent to 14.3 % of all Norwegian land areas. The national parks constitute more than 50 % of the protected area.

**Table 1:** Areas conserved according to NCA per 01.01.2008 (*Miljøstatus 2009*)

Conservation category	Number	Area km <sup>2</sup> (incl. fresh water)	Portion of Norway's mainland area
<b>National Parks</b>	29	26.756	8.3 %
<b>Landscape Protected Areas</b>	174	15.093	4.7 %
<b>Nature Reserves</b>	1822	4.299	1.3 %
<b>Natural Heritage Objects</b>	101	2	0.00 %
<b>Other conservation areas</b>	122	126	0.03 %
<b>Sum</b>	2248	46.276	14.3 %

Norway has protected a relatively large share of the nation's land area compared to several other countries. However, there is a distortion in the selection of nature types being protected. Mountain areas are overrepresented in Norwegian nature conservation relatively to other types of land areas, while highly productive forest areas are strongly underrepresented.

Norwegian NPs and LPAs contain nature landscape, and to a certain degree cultural landscape and cultural heritage objects. While in other countries it is common to include the gateways (including ends of roadways) through larger establishments for tourism and parking, this is not common in Norway. Generally, European national parks contain a much larger portion of cultural landscape than in Norway (Dybwad and Andersen 1999).

## 3.2 National framework for protected areas

### 3.2.1 Political and legal framework

#### Nature Conservation Act

All nature conservation in Norway is done according to the Nature Conservation Act. The Nature Conservation Act (NCA) was established in 1970. The existing NCA is an elaboration of former acts and it differentiates between and describes four different protection categories. These are Landscape Protected Area (LPA), National Park (NP), Nature Reserve (NR) and Natural Heritage Object (NHO). While the first three covers areas, the last category is for unique objects. Of the three first, Landscape Protected Area is the least strict conservation category with reference to restrictions on traffic and developments. Traditional use can normally continue within LPAs, and for instance, minor developments meant for use in commercial tourism can be allowed within the borders of an LPA. National Park is in Norway a medium strict conservation category. According to the NCA, NPs shall be protected against developments, contamination and other interventions, but there are few restrictions on use that do not imply contamination or further facilitations. Nature Reserve is the strictest category for area protection in the Norwegian setting, and implies most restrictions related to traffic and other types of use. As a consequence of this, Norwegian nature reserves are normally less extensive than the other two area conservation categories. However, nature reserves can be linked up to LPAs or NPs and like this be part of larger protected areas (Lovdata 2009a)

According to the Directorate for Nature Management, the Norwegian protection categories to a high degree correspond with the categories of IUCN. However, while the NCA has four protection categories, IUCN operates with five categories: Ia Strict Nature Reserve; Ib Wilderness Area; II National Park; III Nature Monument or Feature; IV Habitat/Species Management Areas; and V Protected Landscape/Seascape<sup>1</sup>. Landscape Protected Areas according to the NCA, correspond with category V and Natural Heritage Objects with category III. All Norwegian National Parks, except one that covers a too small area, are placed within category II. The Norwegian category Nature Reserve covers both category Ia and IV of IUCN. Most protected habitat areas, *biotopvern*, appear in Table 1 as "Other conservation areas" as this is a special paragraph under the chapter on Nature Reserves in the NCA. Another aspect worth notice is the conflict on hunting and fishing rights in Norwegian NPs according to the wilderness principle in category II of IUCN. Nevertheless, this does not compromise with the categorisation of Norwegian NPs as category II within the IUCN system (Direktoratet for Naturforvaltning 2009b).

Protection of areas according to the NCA is approved by the King in the Council of State after a comprehensive process where landowners, municipalities, county administrations, local and central public agencies, private companies and interest groups are given chance to voice their opinion (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006).

#### White papers and other official documents

The existing *New National Plan for National Parks and other large Protected Areas in Norway* (short New National Park Plan) was presented as White Paper (*Stortingsmelding*) No 62 (1991-92) by the Ministry of the Environment, and approved by the parliament in 1993. It substituted the former National Plan from 1964. This New NP Plan was first presented as an Official Norwegian Report (NOU 1986:13) by the National council for Nature Conservation, *Statens Naturvernråd* (SNR) in 1986. Before it was presented as a white paper it was subject to a broad hearing including central and local institutions and organisations. This plan was presented due to a demand by the Norwegian Parliament on a thorough elaboration and evaluation of the National Park policies of Norway (Miljøverndepartementet 1992).

With reference to the former National Park Plan, this new plan suggested to expand the total protected area in Norway fourfold. In total 27 new NPs were suggested, six of these in combination with LPAs. Furthermore,

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<sup>1</sup> Our reference on this topic refers to five IUCN categories. A closer look on IUCNs Guidelines for Applying Protected Area Management Categories (<http://data.iucn.org/dbtw-wpd/edocs/PAPS-016.pdf>) shows that IUCN has six categories. We cannot find any reference to the sixth IUCN category (Managed Resource Protected Area) in prevailing reports or papers from Norwegian authorities.

expansion of nine existing NPs was suggested, together with 16 LPAs and three NRs. Totally these protected areas would cover an area of more than 24.000 km<sup>2</sup> (Miljøverndepartementet 1992).

It is stated in the New NP Plan that the traditional policy had mostly concerned protecting areas, establish regulations, authority for dispensation and inspection. Less emphasis has been on active management, and the management has been passive due to limited financial resources and a cautious approach from the environmental authorities. There was an increasing demand from both users and environmental authorities of a more active management of the protected areas, and with the New NP Plan, a higher degree of use should be allowed within the NPs. This included a larger differentiation within every national park, and between the different NPs. (Dybwad 1994).

Internationally, there is much interest in national parks as tourism destinations, and from abroad several unfortunate consequences from tourism are known in NPs where this is not managed (Direktoratet for naturforvaltning 1996. The New National Park Plan (Miljøverndepartementet 1992) opened for a certain touristic use of our NPs. Norwegian NPs can be divided into two groups with relation to degree of conservation. In some NPs, facilitation and adaption for some kinds of use – more specifically this concerns outdoor activity and some forms for tourism – are taken in as one of the objectives in establishing the NP. In the rest of the NPs, conservation has been given priority. The New NP Plan has a precise description of how this facilitation and adaption can and should happen (our emphases and translation):

In order to achieve this [increased touristic use] it is a precondition that one has a considerable expansion of informational and guiding equipment together with an expansion of offering more organised experiences. In order to handle the increased use following this priority without damaging the natural environment, there are several important conditions that have to be fulfilled:

- Not all national parks or National park zones can handle increased use. The individual national park therefore has to give its function based on evaluations of degree of vulnerability/carrying capacity, attractiveness, traditional use, location relative to population and tourism centres etc. Directorate for Nature Management will as part of working with a national management strategy develop superior frameworks for this.
- The national framework will have to be followed up by management plans for the individual national parks including considerations over potential establishment over special user zones/traffic zones etc. For the individual zones, the set objectives for environmental conditions should be as definite as possible, to which forms and extent of use must be adapted.
- The management system has to be enforced and prepared for increased use. Through this, especially the informational, guiding and supervising functions have to be enlarged. One also has to have capacity and resources to perform necessary physical facilitation and repairing measures due to increased use.

The ministry wants to emphasise that increased use of the national parks in relation to marketing must not happen until the above-mentioned management-related conditions are fulfilled.

In 1996, the Directorate for Nature Management published the report “Management of National Parks” as a follow-up to many of the underlined elements in the quote above. This report describes the differentiation within and between NPs with regard to use and conservation, and a total of 13 instructions for the management of national parks are presented (Direktoratet for naturforvaltning 1996: 17-19, our translation):

1. Management of the national parks must have a long-time perspective of at least 200 years.
2. Management of the national parks shall consider the biodiversity.
3. Management of the national parks must lean on the precautionary principle.
4. The national parks must be managed based on the intrinsic value of nature.
5. The national parks must be managed in a national and international holistic perspective.
6. Each individual national park must be managed holistically.
7. The conservation values must be secured by management of human interference.
8. Leisure time activity hardly affecting the environment should have priority.
9. The management shall consider traditional use as long as it does not compromise with the conservation objective.
10. Management shall prevent interference and attrition on cultural heritage objects.
11. Commercial activity shall be under strict control in the national parks.
12. Management of national parks must aim at adaption, without unnecessary prohibitions.
13. Open approach in the management.

In order to achieve proper management of the NPs as wholes and of different zones within the NPs, management plans should be made for each individual NP on the Norwegian mainland and all protected areas exceeding 40 km<sup>2</sup> (Direktoratet for Naturforvaltning 1996)

With regard to the management of areas, there has been a turn towards more participatory processes in protection of areas. This was particularly a result of the New National Park Plan, where the former top-down dominated regime of management and protection plan work was challenged. Four special testing areas, with large protected areas, were established with different decentralised management regimes. All these models were evaluated in 2008. In general there is a growing interest in stimulation of local protection initiatives in order to prevent local alienation to the processes (Direktoratet for naturforvaltning 2008).

Furthermore, during the reading of the national budget in 2003, the government presented a proposition to the parliament, including what has become known as the Mountain text, *Fjellteksten*. Here, increased use of the NPs related to tourism was suggested, in order to raise the value creation in these areas. This included commercial tourism activity within the NPs (Finansdepartementet 2003). The declaration of the former government, The Soria-Moria Declaration, follows up from the Mountain text.

### Other legal documents

The Norwegian Planning and Building Act, *Plan- og Bygningsloven* (PBA) regulates use of all areas not covered by the NCA. Important in the case of Jostedalbreen National Park is the paragraph that describes National policy provisions. Such provisions can be defined by the King and include prohibition of construction activity in a defined geographical area of particular interest (Lovdata 2009c). The National Park plan also mentions that national policy provisions can be used as a means to propose an area for protection.

In addition to these national documents, a protective regulation, *verneforskrift*, is made for each protected area. This regulation specifies the extension of the area, the objectives for protection, and rules for the protected area.

## 3.2.2 Administrative framework

### National bodies

Ministry of the Environment, Miljøverndepartementet (MD) is responsible for areas protected according to the Nature Conservation Act. MD's responsibility includes implementation of conservation measures and giving superior guiding lines. Under MD, the Directorate for Nature Management, Direktoratet for Naturforvaltning (DN), is however delegated much of the responsibility for the effectuation of these actions. DN approves management plans, allocates the assets and is the court of appeal. It is required that the national authorities take the overall national responsibility for the protected areas, provide for a uniform management on a national level, and hold the legal expertise (Direktoratet for naturforvaltning 1996). The Norwegian Nature Inspectorate, Statens Naturoppsyn (SNO) is formally organised as a separate department in the Directorate for Nature Management, and has three sections; predator section, coast section and national park section. The objective of SNO is to conserve national environmental values and prevent environmental crime. When the inspector position was established in 1998, the County Governor got full management responsibility. SNO is not a decision-making body according to the protective regulations, but should rather keep supervision of the areas according to the Nature Inspectorate Act. They are responsible for supervision, including information, training, care, adaptations, registrations, documentation and inspection. To carry out these tasks, SNO has regional departments in all counties. (Fylkesmannen i Sogn og Fjordane 2006).

### Regional/Local bodies

The Environmental department at County Governor's Office, Fylkesmannens miljøvernavdeling (FM-MA), is responsible for the daily management of the national parks and most other protected areas<sup>2</sup>. Central tasks include working out management plans, considering dispensations, cooperation with other authorities, secretariat for the Consultative supervisory board. FM-MA is also responsible for the budget. Locally, the FM-MA cooperates with the regional departments of SNO in the decision of which tasks that should be prioritised. Important tasks for the regional departments of SNO are control and supervision of decisions, monitoring, marking of borders, care,

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<sup>2</sup> For some protected areas, municipalities can be given the management responsibility.

information and technical advices to FM-MA. Most large protected areas also have a Consultative Supervisory Board, *rådgjevande tilsynsutval*, with elected public representatives (Direktoratet for Naturforvaltning 1996; Dybwad 2009).

In addition to these standard management units, some towns and municipalities recently have achieved status as National Park villages or National Park municipalities. This is done as a trial project, and according to the wish of the municipalities and villages to focus on the national parks as a hallmark and develop the potential for added value in the surrounding areas. Five villages have been chosen according to the following main (compulsory) and additional criteria:

Main criterion I.	The community must be the closest <u>service centre</u> to the national park, and possibilities to achieve information, accommodation and food services have to be present
Main criterion II.	The community must stand out with an <u>integrated environmental profile</u>
Main criterion III.	There has to exist a community development plan that shall consider the proximity to the national park
Main criterion IV.	The community must be a natural gateway to the national park
Main criterion V.	The community must hold competence to communicate information on the national park and be active in advertising the national park
Main criterion VI.	The municipality must have an approved municipal plan (area development)
Additional criterion I.	Maintenance of landscape/landscape care
Additional criterion II.	Active product development – products directed towards the protected area (guiding, facilities etc.)
Additional criterion III.	Culture bearer
Additional criterion IV.	Conscious of local traditions, local food

Furthermore, 31 out of 85 municipalities with parts of their land protected as national park have achieved status as National Park municipality according to the following criteria (all compulsory):

Criterion I.	At least 30 % of the municipal area or at least 300 km <sup>2</sup> is protected as national park, or an entire National Park is within the municipality.
Criterion II.	The municipality has National Park areas and cooperates in an intermunicipal cooperation regarding national park information/facilitation/tourism together with other municipalities with national park areas, or the municipality has a National Park Centre (Direktoratet for Naturforvaltning 2009c, our translation).

### **National evaluation of the management of protected areas**

In 2006, the Office of the Auditor General of Norway, *Riksrevisjonen* (RR), presented an evaluation report on the quality of the management of PAs in Norway, *Riksrevisjonens undersøkelse av myndighetenes arbeid med kartlegging og overvåking av biologisk mangfold og forvaltning av verneområder*. As one of two core topics, this report assessed to what extent the management of national PAs is done according to the respective objectives for protection. According to this report, the management is weak. In 1995, the Directorate for Nature Management found that 18 % of all PAs in Norway were threatened. In the evaluating study done in 2006, this had increased to 30 %. One of the main reasons for this is that the national authorities have prioritised to increase the number of PAs or expand existing PAs during the period, instead of improving the management of the existing PAs. The report points towards five core areas where improvements must be made:

- Quality assurance of management plans - these have to be prepared and revised regularly;
- Measures to combat dispersion of introduced species; Enforce the law on environmental criminality;
- Measures to ensure the biodiversity and different habitats; and
- Estimation of cost concerning measures.

This last point is emphasised. The RR discovered that the Ministry of the Environment had made estimations on the cost of establishing new PAs in Norway, but no calculations concerning the management of these areas after they had been established (Riksrevisjonen 2006).

In 2006, a working group set up by Ministry of Environment suggested measures to strengthen national policy regarding sustainable use, management and care of protected areas. The group suggested higher budgets to prepare management plans, to carry out management, information and monitoring. Measures towards local communities, local and regional authorities were also suggested to strengthen compatible business development and participation management (Direktoratet for Naturforvaltning 2009b). In Ministry of Environment budget for 2009 several of these suggestions are implemented with increased financing to:

- fulfill the last National Park plan, management plans and local management
- value creation, national park villages, tourism and information
- economic compensation to land owners
- strengthen nature inspection (Miljøverndepartementet 2008, our translation).

In Sogn and Fjordane County these changes include among others 1.3 million Euros to a municipality business fund in connection to Naustdal-Gjengedal landscape protected area (designated in January 2009). In the national program for value added based on nature heritage the county got two projects: 1) Value added based on communication with the tourists by Nærøy Fjord World Heritage Park, and 2) Coastal Heritage by municipalities on the south-west coast of Sogn and Fjordane (Direktoratet for naturforvaltning 2009e).

## 4 Designation and management history of Jostedalsbreen NP

### 4.1 Background for protection

Jostedalsbreen ended up being designated a national park because it is one of the largest areas with state owned land, and large areas were pristine or very little influenced by humans. This national park is one of the largest wilderness-like areas still existing in Southern Norway (Direktoratet for naturforvaltning 2008; Jostedalsbreen Nasjonalparksenter 2008).

The argument for protection was related to the glacier constituting a large and unique area in a European context. It is the largest glacier in the mainland of Northern-Europe and it is surrounded by grand scenery with large contrasts in short distances. The preserved values are primarily associated with the glacier, glacier rivers, geological formations and vegetation. The glaciers and melt water runoff have brought about a great many moraines and other interesting geological formations. The climate is alpine on the glacier, similar to polar areas, but temperate along the fjords. The contrast in fauna and nature types is therefore vast. Cascading streams, rivers and waterfalls in the hillsides identify the area. At the time of protection, development of hydroelectric power plant was a big threat to these nature values, but also development plans of agriculture and tourism (Solheim 1987; Weichert 2008).

The cultural landscapes, particularly the mountain summer farms, were also an important protective value (Weichert 2008). Many of the mountain farms were worthy of a heritage status because of cultural historical or antiquarian reasons. Despite this, only a few were part of the initial national park proposal (Solheim 1987).

### 4.2 Frameworks of the park

#### 4.2.1 Timeline

##### 1970-1985: Land consolidation and nature conservation

The borders between private and public land in the area of Jostedalsbreen were not set until the late 70s or early 80s, through land consolidations. This process was finished in 1986. Concurrent to this, in 1985, Nigardsbreen Nature Reserve was designated, because of the particular geological and scientific value. This area, of 28 km<sup>2</sup>, borders to the area of Jostedalsbreen NP (Dybwad 1994).

##### 1986-1991: Protection Plan work

The proposal of Jostedalsbreen National Park was a part of the NOU 1986:13 New national plan for national parks<sup>3</sup>, *Ny landsplan for nasjonalparker*, presented by The National Council for Nature Conservation, *Statens Naturvernråd*, in 1986. The work with Jostedalsbreen NP was pushed forward in order to consider the protection plans in relation to the question about development of hydroelectric power plants which was important at the time. The ministry of environment sent the national park proposal out for public hearing in October 1986 (Solheim 1987; Solheim and Loftesnes 2007).

As a follow up of the NOU, a White Paper on designation of a national park in the Jostedalsbreen-area was presented for the Parliament, *Stortinget*, in November 1987 (St. meld. nr. 25 1987-88). In this report, the ministry had considered user and conservation interests that had come forward in the hearing, and some of the objections against the first proposal in the NOU. It was initially said that the basis of existence of the local communities should be crucial when drawing the borders and forming the regulations. The current activities in the area and future potential would be closely considered. Based on this White Paper, the parliament committee recommended for the parliament to approve the White Paper (Innst. S. nr. 273 1987-88). The committee noted that the suggested regulations were liberal and to a large degree complied with the objections from the local people. In some areas with potential of conflicts, they adjusted the borders and regulation. However, they left the question of where the boundaries should be drawn open in other areas, among others Stryn (Solheim 1987; Dybwad 1994).

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<sup>3</sup> This report was the draft for the White Paper with the same name from 1992

**Table 2:** Overview over events in the history of Jostedalsbreen National Park

Time	Event or decision type	Subject	Actor(s)
1970? – 1986	Borders between private and public land finally decided	Land Consolidations	Land Consolidation Court Land Owners
1985	Designation of the Nigardsbreen Nature Reserve		King in Council of State
1986	NOU 1986:13 <i>New national plan for national parks</i>	First proposition for Jostedalsbreen NP	National Council of Nature Conservation, Statens Naturvernråd
October 1986	Hearing	Proposition sent on hearing	Ministry of the Environment
November 1987	St. meld. Nr. 25 (1987-88) <i>On National Park in the Jostedalsbreen Area</i>	Final proposition for Jostedalsbreen NP	Ministry of the Environment
December 1987	Innst. S. nr 273 (1987-88)	Recommendation for NP	
October 1988	Approval of proposition	St. meld. Nr. 25 (1987-88)	Parliament
June-September 1989	Hearing	Proposition sent on hearing	
May 1990	Hearing	Draft	
31 May 1991	Norsk Bremuseum opened		
19 June 1991	St.melding nr.62 (1991-92) <i>New National Plan for National Parks and other Large PAs</i>		Ministry of the Environment
25 October 1991	Designation of Jostedalsbreen National Park		King in Council of State
January-June 1993	Hearing	Draft of Management Plan of Jostedalsbreen NP	The County Governor
1993	Hearing	Draft of Management Plan of Nigardsbreen NR	The County Governor
April 1993	Protection of the Stryne- and Loen Water Courses	Protection Plan IV for waterways	The Norwegian Parliament
12 June 1993	Breheimsenteret opened		
19 July 1993	Jostedalsbreen National Park Center opened		
September 1993	Consultative Supervisory Board Created		
June 1994	Management Plan of Jostedalsbreen National Park approved		The County Governor Directorate for Nature Management
Fall 1994	Work with redefining the NP borders started		The County Governor
1996	Hearing	Proposition for expansion	
1997	Management Plan of Nigardsbreen NR approved		The County Governor Directorate for Nature Management
18 June 1998	80 km <sup>2</sup> in Bødalen, Erdalen and Sunndalen included in the NP		Council of State
1998	SNO established	Inspector position started	
1998	Hearing	Draft for Maintenance Plan for Erdalen, Bødalen og Sunndalen	The County Governor
2001	Maintenance Plan for Erdalen, Bødalen og Sunndalen approved		The County Governor Directorate for Nature Management

The Norwegian parliament, *Stortinget*, had received a notice of hydroelectric power plant development of the Stryn Water Course. The government decided to postpone the decision of allowing hydroelectric power plant development, partly due to the costs. The government also stated that the decision of the boundaries in Stryn would be postponed until the decision on hydroelectric power plant development. The work with the rest of the plan was continued. They also made a note of the potential for tourism development, and were open for adjusting the proposal if concrete plans were presented. However, it was emphasised that projects could not be conflicting with the national conservation interests. The planned information centre was considered a positive initiative to inform the public about the NP, and as an entrance to the NP. They also recognised the significance of business development and employment in the local communities (Dybwad 1994).

This White Paper was sent out for public hearing as Protection Plan in June 1989. Due to the thoroughness of the preparatory work, through the NOU, the proposal was heard simultaneously among local and national organisations and institutions. This deviates from the normal process, where the local hearing is done prior to the national hearing. The final designation of Jostedalbreen National Park was done by the King in Council of State October 25th 1991 (Dybwad 1994; 2009). When the NP was designated, the Norwegian Parliament had still not decided if the Stryn and Loen Water Courses should be protected or used for hydroelectric power development. While waiting for this decision, National Policy Provisions were imposed in an area of about 40 km<sup>2</sup> in the valleys of Bødalen, Erdalen and Sunndalen. These were temporary and valid for ten years. The objective behind this regulation was to secure the valleys as potential land for an expansion of the NP while waiting for the final decision of protection or development (Dybwad 1994; Solheim and Loftesnes 2007).

#### **1991-present: Management Plan and expansion**

Directly after the designation, the Environmental department at the County Governor's office started working with the management plan. This was early compared to other national parks, but according to the recommendation from Directorate for Nature Management. The Protection proposition together with the final hearing was used as background material for a Management Plan draft which was sent out for public hearing in 1991. The Management plan was approved by the Directorate for Nature Management in 1997 (Dybwad 1994; 2009). A similar process resulted in the Management Plan of Nigardsbreen Nature Reserve, which shares border with Jostedalbreen NP, in 1998.

Two things from the Management Plan are worth particular mentioning. The first concerns the establishment of a Consultative Supervisory Board, *rådgevingende tilsynsutval*, in 1993. According to Dybwad (2009) this was not very common at the time. Only after this, with the turn toward more participatory management approaches, this has become normal for NPs and other large protected areas. The CS Board of Jostedalbreen NP consists of one elected representative from each municipality involved in the NP, one from County Governor and one from the Norwegian Nature Inspectorate. The CS Board is supposed to give advice about the principles and big issues relating to the management. Next, the establishment of three Information centres was important and a new development compared to other NPs. The same year as the establishment of the CS Board, three such centres were established in different valleys surrounding the glacier, which are important gateways to the National Park. The importance of nature information and guidance was emphasised by the ministry in the National Park Plan, and a new task for the National Park Service. All three centres surrounding Jostedalbreen NP were in 1997 authorised as National Park Centres. Today, Norway has 14 such centres. The authorisation is granted for five years at a time, and it was last renewed in 2007 (Directorate for Nature Management 2009b; Fylkesmannen i Sogn og Fjordane 2008).

In 1993, the Parliament passed the protection of the Stryn and Loen Water Courses through the Conservation Plan IV for Water Courses. This occurred in association with the National Park Plan, and the Parliament requested that it was worked with an expansion of the Jostedalbreen NP in Stryn as a consequence of the protection of the Stryn and Loen Water Courses. This work started in fall 1994, and a hearing was sent out in 1996. In 1998 The Jostedalbreen NP was enlarged, and an area of 80 km<sup>2</sup> in Bødalen, Erdalen and Sunndalen was added. The National Policy Provisions were at the same time suspended, but the protective regulation was not changed. Only minor adjustments were made in the Management Plan (Dybwad 1994).

After the NP was designated, the Environmental department at the County Governor's office was responsible for the management of the NP, NR and area with National Policy Provisions. The daily management responsibility belonged to Statskog, the State-owned Land and Forest Company, executed by a National Park manager. In

1996 the Norwegian Nature Inspectorate, *Statens Naturoppsyn* (SNO), was established, based on the Nature Inspectorate Act. One inspector was assigned to each NP (Bugge 1998). The position in Jostedalsbreen came in 1998, and this replaced the position of NP manager (Dybwad 1994).

#### 4.2.2 Political and legal framework

As mentioned earlier, a unique regulation is made for each area protected according to the Nature Conservation Act. Regulation concerning conservation of Jostedalsbreen National Park, Luster, Sogndal, Balestrand, Førde, Jølster, Globben and Stryn municipalities, Sogn og Fjordane (Forskrift om vern av Jostedalsbreen nasjonalpark) states that the protection purpose of Jostedalsbreen NP is to:

- Conserve a large, varied and valuable glacier area with accompanying area from lowland to high mountains, with flora and fauna and geological formations in natural or essentially natural state.
- Give the public opportunity to experience nature and exercise traditional outdoor recreation activities that are not dependent on technical facilitation.
- To preserve cultural monuments and cultural landscape. (Lovdata 2009b, our translation)

Roughly one can differentiate between two types of national parks in Norway. Jostedalsbreen NP is in the group which has outdoor recreational life as part of the purpose. This group was granted a National Park Manager in the period before SNO was established (Dybwad 2009).

Furthermore, a Management Plan is developed for Jostedalsbreen NP. This plan will be described in chapter 4.2.5.

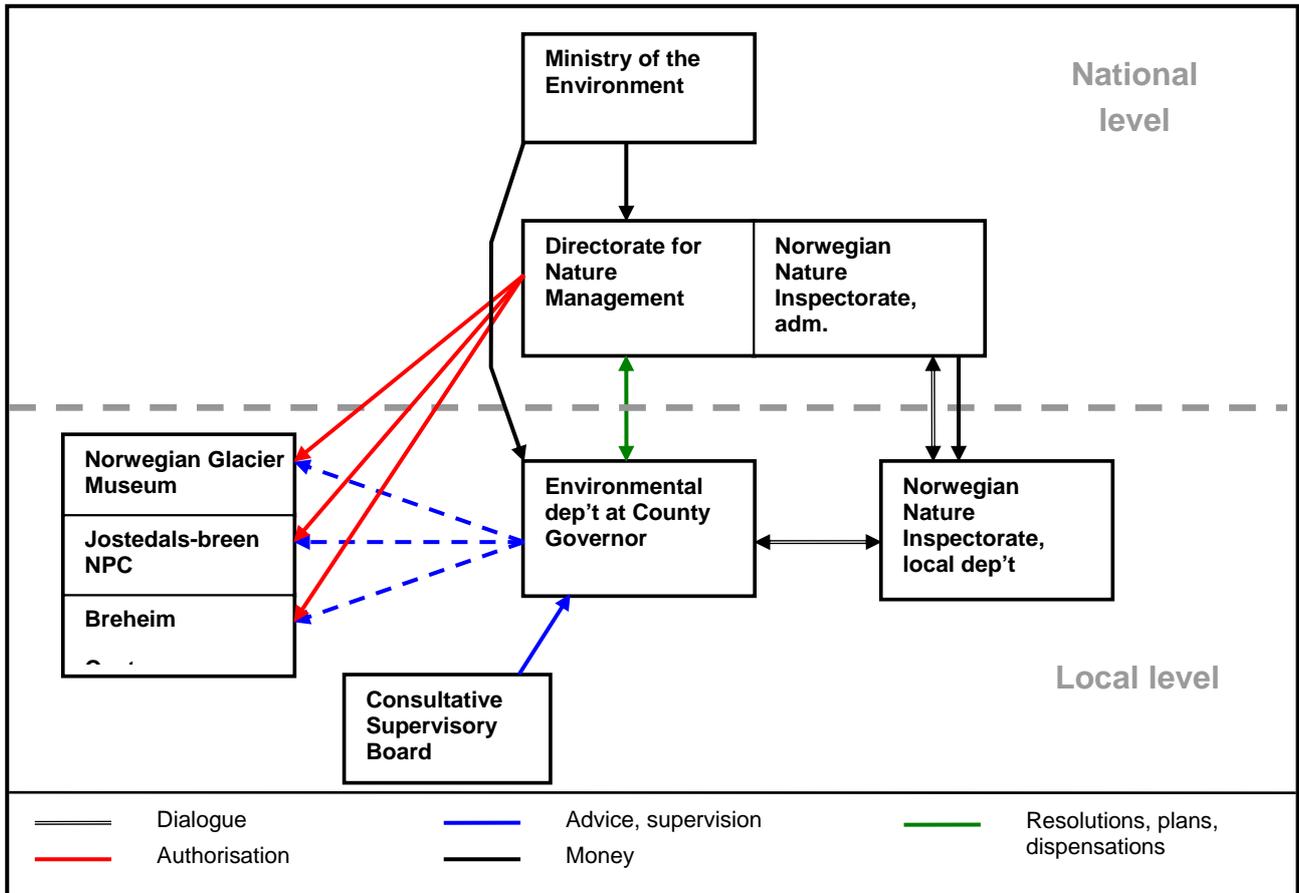
In addition, the National Park Service publishes a yearly report on the developments, activities and status of the National Park. This report is written by the employees at the County Governor's office and SNO, and approved by the Consultative Supervisory Board (Fylkesmannen i Sogn og Fjordane 2008).

#### 4.2.3 Administration and management: organisation

The management of Jostedalsbreen National Park is organised according to the model described in the previous chapter. The national bodies in the management are Ministry of the Environment, Directorate for Nature Management and Norwegian Nature Inspectorate (SNO). Locally, the Environmental department at the County Governor's office holds the responsibility, while the local department of SNO is the executive unit. SNO has three sections, and the Jostedalsbreen office is under the National Park section. SNO has had a local office for in Stryn from 2000 and in Sogndal in 2003. The National Park Centres are responsible for information and guidance. The local level of the management is often labelled The National Park Service (Fylkesmannen i Sogn og Fjordane 2006). In the area around Jostedalsbreen NP Stryn og Luster municipalities have achieved status as National Park municipalities, as described in chapter 3.2.2 (Direktoratet for naturforvaltning 2009d).

The CS Board was sceptical of the establishment of SNO. At the time, the government gave signals that the local participation was to be increased, but at the same time funding was reduced. SNO was going to be financed by the already reduced funding. The CS Board meant that this complicated investments in development that was wanted by both local community and the management authority. The view was that these positions should have a local attachment by being administratively under the County Governor, in order to keep a good cooperation with the local communities. It was emphasised that if SNO was appointed to the Directorate of Nature Management, this will represent a centralisation of the management authority and more detachment from the local level. They were also sceptical of expanding the NP to include Bødalen and Erdalen without increasing funds and staff. They were critical of it being possible to manage more land, when the budget had been so small (Bugge 1998).

Figure 2: Organisational map of the National Park Management of Jostedalsgreen National Park (Dybwad 2009)



**National Park Centres**

Jostedalsgreen National Park has three National Park Centres. This is unique as most Norwegian NPs have one or no NP Centre. All the centres had opened at the time when authorisation became possible, and the management of Jostedalsgreen NP decided to support all the centres in their application for authorisation. This was done both due to the fact that Jostedalsgreen NP is large, and the three different centres covered different areas of its surroundings, and due to the different profiles of the centres. In the continuation it has been very important to maintain these different profiles (Dybwad 2009).

Norwegian Glacier Museum, *Norsk Bremuseum*, in Fjærland is owned by a private foundation. The aims are to inform about snow, ice and glaciers. This is an interactive museum that imparts knowledge about glaciers and climate. A separate exhibition focuses on protected areas and outdoor activities, and informs about the NP. They also annually publish a brochure about the guided glacier walks in the area. Jostedalsgreen National Park Centre in Stryn is the only centre that has chosen to use National Park Centre as part of its title. Like Norwegian Glacier Museum, it is owned by a private foundation. Its objective is to provide information about the NP and the nature in the area. The exhibition emphasises geology, avalanches, fauna and activities on the glacier. They also have a geological park with Norwegian rocks and a botanical garden with wild growing plants, most of them local. They offer guided nature walks. Last, the Breheim Centre, *Breheimsenteret*, in Jostedalen is organised as a corporation. The exhibition inform about the natural and cultural history of the area. They have a close cooperation with the tourism companies, and arrange activities like glacier walks, rafting, kayaking and horseback riding. About 33 % of the visitors to Nigardsbreen stop at the centre. From 2001 they have also had an information service at the parking lot by Nigardsbreen. Breheimsenteret is an important meeting place for visitors and locals during the summer, and host popular activities like glacier pubs on Fridays and music arrangements (Bugge 1998; Fylkesmannen i Sogn og Fjordane 2006; Weichert 2008).

**Positions**

The park management has two employees. One advisor at the County Governor is responsible for case administration for the NP, while the inspector is employed at SNO. In 1993 and 1994, before SNO was established, the Park Manager position was a 70 % position. In addition to these permanent employees, extra personnel participates in inspection (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2008).

**Table 3:** Number of inspection field days in Jostedalsbreen NP and Nigardsbreen NR (Fylkesmannen i Sogn og Fjordane 2008)

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
25,5	43	38,5	30	45	45	30	48	64	61	70	59	70	68	79	73

**Management of neighbouring areas**

As part of the turn towards participatory management described earlier, Luster Municipality took over the management responsibility for the Nigardsbreen nature reserve in 2005. Hence, the responsibility for management of these two protected areas lies at different authorities. However, there are some meeting places. First, one representative from Luster Municipality participates in the Consultative Supervisory Board, and next, SNO is still responsible for supervision of the area (Fylkesmannen i Sogn og Fjordane 2006).

**4.2.4 Management areas**

The management of Jostedalsbreen National Park is to be done with reference to the purpose of protection described in the protective regulation:

- Conserve a large, varied and valuable glacier area with accompanying area from lowland to high mountains, with flora and fauna and geological formations in natural or essentially natural state.
- Give the public opportunity to experience nature and exercise traditional outdoor recreation activities that are not dependent on technical facilitation.
- To preserve cultural monuments and cultural landscape. (Lovdata 2009b, our translation)

**Challenges**

The main challenge concerning nature is to preserve the natural state of the NP; this implies keeping technical interventions and installations out. It is also a challenge to reduce the environmental problems existing today, and to prevent future damages. If possible, one has to restore existing damages. The damages result from external impacts, like acid rain and radioactive fall-out, human activity and physical interventions, like development, disturbances, motorised noise, attrition and littering. The challenge is to adapt use of the area to the natural environment and the purpose of protection (Dybwad 1994).

The challenge for outdoor recreation is that all activity must leave as little trace as possible and present the opportunity for good nature experiences. The challenge for acceptable business activities is to make this as nature and environmental friendly as possible. Unspoilt nature and the old cultural landscape will probably become a valuable resource in the future, for research and tourism. It is not possible to combine exploration and development with preservation of unspoilt nature (Dybwad 1994).

The relationship between conservation and use is an important issue relating to agriculture and cultural landscape. The challenge for agriculture is to manage to preserve the valuable cultural landscape without impacts of modern farming, like building of roads. The settlement and agriculture in the adjacent areas to the NP is an important part of the attraction, and a premise for the preservation of the cultural landscape (Dybwad 1994).

**Important working areas**

According to the national guidelines, information and nature guiding is defined as important tasks for the management of the NP. Information should be about the NP in particular and the area in general. The target groups of information are tourists, land owners, organisations and municipalities. The National Park Centres play an important role here, and most of the information to the visitors will be given by the NPCs, municipalities and the glacier guides etc. The NPCs are seen as important for tourism in the region. They increase the knowledge

about nature and culture in the Jostedalsskogen area. Furthermore, the NP management arranges seminars and lectures to influence that this information is correct and updated. Brochures and posters are developed almost continuously. Information boards have been put up by the most used gateways, and information should be made available at for instance accommodation facilities in the area. This will be financially supported, but in cooperation with other stakeholders (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006).

The national policies have mainly concerned protection. Before the report by Directorate for Nature Management, active management (care and maintenance) of protected areas had hardly been described. The traditional model has only partially been able to integrate the goals of conservation and facilitation for recreation. Lack of cooperation between authorities and the public was pointed out as a problem. Recently more guidelines encourage more active management. The demands and expectations from society will lead to a transition from traditional inspection assignments to information directed to visitors, active management and monitoring (Direktoratet for naturforvaltning 1996; Dybwad 1994).

#### 4.2.5 Management planning tools

With many and strong user interest in the area of Jostedalsskogen, a strong management was required from the beginning to protect the conservation objectives. The Management Plan (MP) is a guide for the management of the protected area. It is based on the protective regulation and gives guidelines for the use and conservation of the area. The MP can initiate application of the protective regulation and prevent undesirable use that can be hard to change later. The plan informs about background for the preservation and about the natural and cultural history of the area. It also informs about the principles of the management, and discusses issues connected to the management. Recommendations for adjacent areas is treated to the degree it is necessary (Dybwad 1994).

The first proposition to the Management Plan was based on the comments to the NP proposition in 1989. The Management plan includes issues that came up during the hearing, that concern the use of the NP in relation to the protective purpose, but not finally clarified by the royal decree. It was approved in 1994 after a hearing (Dybwad 1994).

When the management plan came, it meant to cover three areas; the NP, Nigardsbreen Nature Reserve and the area with National Policy Provisions in Stryn. However, a management plan for Nigardsbreen Nature Reserve alone was developed, and approved in 1997. After the expansion of the NP, the Management Plan was extended to cover Bødalen, Erdalen and Sunndalen also, and the National Policy Provisions were deleted (Fylkesmannen i Sogn og Fjordane 2006). The plan was to update the MP after five years, and then every tenth year (Dybwad 1994). However, when the NP was expanded in 1998, meeting with the locals discovered that the MP was not yet outdated. Hence, there was no need to update it. Only very recently, a need for revision has emerged, and the plan is to start this work in 2010 (Dybwad 2009)

The MP gives recommendations for management in the adjacent areas bordering to the NP, but it is the land owners and municipalities that are responsible for the management of these areas. These areas are regulated according to the Planning and Building Act. The County Governor and County Administration has the responsibility for supervising and inspecting, and have the opportunity to give advice and objections to municipal regulations (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006).

In the Management Plan, information and nature guiding is stated as a priority in the park management. Their view is that the information centres has an important role in informing about the protected area, and they contribute economically and professionally (Bugge 1998; Dybwad 1994).

In order to meet the challenges related to the diversification of protective purposes of national parks and other large protected areas, Directorate for Nature Management has suggested using zoning of the areas. In their report from 1996, they suggested four different zones; Special Protection Zone (SPZ), Zone without Adaption and Interventions (ZAI), Using Zone (UZ) and Zone with Adaptions and Infrastructure Development (ZAID). SPZ shall be used in areas in need of special protection due to unique or threatened natural or cultural values. Usually these zones cover small areas. ZAI is used for wilderness-like areas, and normally covers the core areas of the National Park, where it is a goal to keep as much as possible unspoilt and without human interference. Marked trails are and cabins will not be allowed in these zones. UZ include areas where the objective is to maintain the natural environment, but some measures or interventions can be allowed to serve the interests of outdoor recreation or the industry. This implies marked trails and trekking club cabins, and limited grazing and wood

logging for own use if this is a continuation of old traditions. Such zones can cover both large and small areas. ZAI shall cover areas where special facilitation is necessary in order to serve user interests, especially related to tourism cabins and their need for supplies. This classification covers areas where it already at the time of NP designation had occurred major interferences. These areas are usually small and only exceptionally relevant (Direktoratet for Naturforvaltning 1996; Dybwad 1994).

All these zones are represented in Jostedalbreen NP. Fåbergstølsgrandane in Jostedalen valley is classified as SPZ; the glacier plateau and some of the steep and remote escarpments in the valleys are areas defined as ZAI; many of the valleys, with old cultural landscapes and the most used entrances to the NP, are classified as UZ; and parts of Grovabreen and Krundalen are classified as ZAI. The classification is done based on several principles:

- The natural values in the area and how vulnerable the area is
- Influence due to human activity is most significant in an area with untouched nature. Channelling of traffic is thus an important measure in order to save such areas.
- It is desirable to maintain the glacier plateau as qualified wilderness, i.e. areas more than 5 km from roads, power lines, settlement and other technical interventions, like they are today.
- Facilitation for outdoor recreation should be done according to contemporary traffic patterns. Marked paths shall lead to glacier arms and cabins close to the glacier, and not up to the glacier plateau for security reasons. Public cabins should be placed below the plateau, in the Using Zone
- Extensive facilitation measures for tourism shall be placed outside the National Park, unless they are approved in the final processing (Zone with Special Adaption and Intervention)
- Cultural landscapes that are upheld and maintained belong to the Using Zones (Dybwad 1994, our translation).

In the period before the expansion of the National Park, the areas of Bødalen, Erdalen and Sunndalen valleys in Stryn Municipality were covered by National Policy Provisions in order to secure the valleys as possible areas for expansion of the National Park. After the expansion, the National Policy Provisions were suspended, and the three valleys were incorporated fully in the Management Plan. Furthermore, a special Maintenance Plan, *Skjøtselsplan*, was made for these three valleys. The plan states that “the aim of the plan is to take care of the cultural landscape and the wilderness in the area.” (Dybwad 2001:3). More detailed aims are to clarify *i)* what kinds of measures that are beneficial and necessary to maintain the nature qualities in the area, including cultural landscape, *ii)* what kinds of measures that are important for the land owners and *iii)* arrangements that benefits both land owners and management authorities. The management plan opens, on application, to allow specific measures or development initiated by stakeholders (Fylkesmannen i Sogn og Fjordane 2006).

#### 4.2.6 Councils, discussion and decision making platforms

##### Contact between decision makers and the public

Public hearings are mandatory when treating political matters that involve several sides or are of particular interest to the society in the Norwegian management regime. In the case of Jostedalbreen National Park there have been several hearings where the local communities, and local and national organisations, have been given the opportunity to influence the process. First, there was a hearing after the publication of the Official report NOU 1986:13 about its contents and propositions. In 1989, a hearing was organised about the proposition of the National Park. The participants of the hearing in 1989 were in 1990 informed that the work with the Management Plan had started, and were given the opportunity to make additional comments. The draft for Management Plans for both Jostedalbreen NP and Nigardsbreen NR were sent out on hearing in 1993 to land owners, organisations and municipalities, the county and national agencies. In 1996, a hearing was organised about the proposition for expansion of the NP, and last, the Maintenance Plan for Bødalen, Erdalen and Sunndalen valleys was sent on hearing in 1998. The first hearing was organised by the ministry, while the NP manager/County Governor organised the two last hearings made the plan and conducted the hearings (Dybwad 1994).

Moreover, officials from the management organise inspections and meetings with locals in order to get impressions of particular cases and situations related to the protection. The Environmental department at the County Governor's office participated in 23 inspections and meetings in 1989 and 12 in 1990 in connection with the NP proposition and Management Plan (Dybwad 1994). Later, the SNO inspector has taken over the inspections and supervision of the land areas.

The earlier mentioned Consultative Supervisory Board is a contact arena between the local people and municipalities and the NP management. The municipalities should present the opinions of the public, organisational and land owners about matters relating to the management of the NP. In this forum they conduct inspections, hearings etc. The CS Board is supposed to give advice about the principles and issues of the management, but not particular cases unless they are of special interest. Except for these meetings, there is only random contact between the municipalities and park management, for instance if cases of applications of exception from the protective regulations (Bugge 1998; Fylkesmannen i Sogn og Fjordane 2006).

The municipalities have the responsibility of managing the areas surrounding the NP. The management plan of the NP also includes issues related to the management of the surrounding areas, and gives advice of how to manage these areas, but the County Governor has no responsibility of guidance and inspection in these areas. It is up to the municipalities and land owners to follow up on these recommendations (Bugge 1998; Fylkesmannen i Sogn og Fjordane 2006).

The cooperation between the park management and local businesses in the area on a regular basis is limited to a yearly Glacier Guiding Seminar where only the tourism businesses associated with guiding participate. This is a professional seminar where companies associated with glacier guiding meet the management authority. Here it is summed up what has happened in the tourism sector and the management the past year, and they discuss possible improvement of the cooperation or improvements of safety measures. The businesses have the opportunity to impart and discuss circumstances around conservation and use of the protected area. As a result of this cooperation, glacier walk maps have been developed through a project. Apart from these seminars, there are only sporadic contact between the actors when particular circumstances appear (Bugge 1998; Fylkesmannen i Sogn og Fjordane 2006).

There is no cooperation between the management authority and tourism actors about marketing of the area. Through her interviews, Bugge (1998) found that the local tourism actors see marketing of tourism as an important condition for development of the local tourism industry. One interviewee meant that the label of NP probably had led to a better marketing of the local community as a destination (Bugge 1998). Although there has been some resistance against the use of National Parks in marketing of Norway as a tourism destination, the Mountain Text, *Fjellteksten*, opened for this in 2003 (Finansdepartementet 2003). Furthermore, when the management authorities publish information about protected areas, this also functions as marketing of the surroundings. The park management has contributed to the development of information, for instance the establishment of Breheimsenteret that market the area surrounding the NP through information about tourism offers and nature conditions (Bugge 1998; Dybwad 1994).

The National Park Service also contributes to lectures and speeches at local development seminars and meetings. Here they give advice about tourism development in relation to the NP, and what kind of offers the visitors to the NP requests. This kinds of cooperations is seen as beneficial for both the tourism sector and management authorities of the protected area (Bugge 1998; Fylkesmannen i Sogn og Fjordane 2006).

### **Other important platforms in the region**

The yearly Glacier Festival in Jostedalun unites tourism enterprises, the public and researchers from the area. The purpose of this festival is to combine scientific discussions about the environment and climate and a rich variation of activities on and around the glacier. The Glacier Festival started in 2007.

## **4.3 Stakeholder interests**

### **4.3.1 Brief history**

During the time when Jostedalsbreen first was proposed as a National Park, there was a discussion about development of hydroelectric power plant in Stryn. The National Council for Nature Conservation wanted the mountain valleys Bødalun, Erdalun og Sunndalun to be part of the national park because of their unique qualities. If these areas became protected, a development of the hydroelectric power plants would not be possible (Solheim 1987; Solheim and Loftesnes 2007).

During the hearing about the proposition of Jostedalsbreen NP, most of those who had objections were not against the principle of Jostedalsbreen as a national park, but the discussion centred on where the boundaries

should be drawn. A common view was that the NP should not include private land, but stay within public areas. Many land owners in Oppstryn would rather have a national park than hydroelectric power plants in their mountain farm valleys, but apart from that, the landowners in general were in favour of limiting the NP to the state owned land in the high mountains/ alpine areas. The county council and most of the municipalities were positive to a national park, but wanted to adjust the boundary according to local business activities. Some of the objections from the surrounding municipalities concerned the opportunities of further development of tourism activities, and the lack of possibilities to participate. Most the municipalities objected to the short time limit that was set in the hearing and the lack of local cooperation and participation in the management of the NP. Concerns were also expressed that the strict regulations would interfere with a development of tourism in these areas. It was emphasised that these municipalities are central for the transport and tourism sector in Western Norway, and would be a central area of growth in the years to come. Scientific institutions, organisations for nature and outdoor recreation, professional bodies and the Directorate of Nature Conservation suggested however to include private land. The environmental organisations also wished to expand the proposal in some areas. Sogn og Fjordane Trekking Club proposed an expansion of the NP in connection to protection of the Gaular Water Course (Dybwad 1994; Bugge 1998; Solheim and Loftesnes 2007).

### **4.3.2 Potential conflict areas related to stakeholder interests**

#### **Outdoor recreation**

According to the Outdoor Recreation Act and the Protective Regulation, there is open access to the NP for the public. However, traffic and activity should be cautious and not impose damage on natural and cultural values, or disturb wildlife or other visitors. Trekking Club activities and different types of guiding activities and courses are allowed as long as they are not conflicting with the protection purpose, and represent positive measures that through nature experience increase the understanding and knowledge of the values of the area and safety in the glacier (Dybwad 1994).

One of the objects of the protection is to facilitate traditional recreation activities. It is not necessary to regulate activities in the protected area today. The most famous places like Briksdalen has many visitors, without this leading to serious problems of attrition and degradation. The behaviour of the tourists in front of the glaciers is a problem due to danger of ice slides, and this problem must be handled through information. Activities on the glacier require skills and equipment, and the ones that do not possess this, should join organised tours on the glaciers. Facilitation for outdoor recreations will only occur in the Using Zones (UZs) (Dybwad 1994).

It does not require particular knowledge to venture in the UZs, and these zones can be facilitated so that most people can experience the area on their own. Measures are most relevant in the most visited areas. All modifications must occur with as little as possible impact. There will not be marked trails into more difficult and dangerous terrain, because it can lead unskilled visitors to areas they have neither the equipment nor knowledge to handle. This can lead to dangerous situations and accidents. The visitors that want to participate in glacier walks, without having proper skills, must participate in guided or arranged trips, or participate at a course (Dybwad 1994).

There are three types of facilitations for outdoor recreation; unmarked trails, marked trails and cairns. The National Park Service will not implement infrastructure facilitations, like marking of trail and putting up signs. This will be done in cooperation with organisations and municipalities. The Management Authority can restrict maintenance of this infrastructure when traffic is conflicting and need to be reduced. Marking of new trails and new signs, bridges etc. need dispensation from the protective regulation (Dybwad 1994).

#### **Hunting and fishing**

Hunting is allowed according to the Wildlife Act and The Act relating to Salmon and Fresh-water Fish. Most hunting occurs on private land (Dybwad 1994). Of the small game hunting, grouse hunting is most common. There is also some deer hunting. Two reindeer areas include a part of the NP, but most of the hunting occurs outside the NP (Fylkesmannen i Sogn og Fjordane 2006).

#### **Cabins**

There are 26 cabins in the area, and 13 of inside of the NP. 19 of the cabins are public Trekking Club cabins. The availability of cabins and accommodation is considered good, which gives reason to be restrictive with allowing

constructions of new cabins. It will not be permitted cabins on or close to the glacier plateau, but it can be permitted in mountain farm areas. It can also be granted exceptions of expanding or rebuilding existing cabins. It might also be relevant to give permission to land owners to construct mountain farm houses, under certain defined conditions (Dybwad 1994).

### **Littering**

All waste must be brought out of the NP, but it can be given permission to burn waste from cabins. It is most litter at the most common entrances and trails. One particular popular tent camp at the glacier plateau has some litter problems. It can here be relevant to build a toilet out of stone. At the large entrances, the municipalities and businesses are responsible to keep the area clean, but it can be relevant with financial support to build sanitary facilities (Dybwad 1994).

### **Agriculture**

The Protective Regulation restricts agriculture on several fields. The management plan states that valuable cultural landscape and cultural monuments should be protected as much as possible. Measures that will preserve the cultural landscape are welcomed. This implies wood cutting for own use, grazing and maintenance of mountain farm houses and barns. Many modern farm methods that lead to irreversible physical impacts, like building of roads, bridges and similar interventions, will not be allowed. Natural areas that have been degraded by these kinds of impacts should go back to the natural state, and measure of restoration can be relevant. There are few examples of serious impacts in the NP, but several roads have been built adjacent to the NP that has degraded the landscape aesthetics. The land owners are themselves responsible of maintaining mountain farm buildings, both inside of the NP and in the adjacent areas. The County Governor's cultural and agricultural departments can however provide professional and financial assistance for projects aiming to maintain or restore the cultural monuments or cultural landscape. It is prohibited to erect buildings on where there have not been buildings before. It is also prohibited to cultivate new land, use mineral fertiliser and pesticides. Some things can potentially be approved by application, like fencing and restoration of buildings (Dybwad 1994).

### **Hydroelectric power development**

Hydroelectric power development is prohibited in the NP. At the time of the first management plan, it was relevant, but conflicting, to permit development in some areas adjacent to the NP. There are three possible projects; Kjøsnesfjorden and Fossheim in Jølster, and the Stryn and Loen Water Courses in Stryn. The Government or Parliament will make the final decision in these matters. The requirement was that development must occur with as little impact as possible. This includes building of roads, power lines, dams etc. Moreover, development must not interfere with existing trails entering to the park. Development must be followed by measures of landscape management and restoration to reallocate the natural state as much as possible (Dybwad 1994).

### **Roads**

It is prohibited to build roads in the protected areas. The exception is tractor and lorry roads under certain conditions in two specific valleys. These were issues that came up during the process of designating the National Park. The municipalities, land owners and agricultural authorities in the adjacent areas are recommended to be restrictive with new roads. Certain preconditions and conditions that can follow permission is for instance that the road must benefit agriculture and be economically viable, the roads cannot interfere with entrances and existing trails and should be adapted to the terrain. It also recommended that the land owners and municipalities cooperate on developing parking spaces at the end of public roads by entrances to glacier (Dybwad 1994).

### **Motorised activity**

Motorised activity on land and water, and landing with aircraft is prohibited in the NP. It is also desirable that the adjacent areas have little motorised activity. According to the Act relating to Motor Traffic on Uncultivated Land and at Watercourses, *Lov om motorferdsle i utmark*, motorised activity is prohibited on all uncultivated land regardless protection status. There are however a few exceptions, even if it is more restricted in the protected areas. Exceptions are for instance police, rescue service, management and inspection according to different acts. It can also be given dispensation for livestock husbandry, firewood logging and transport of supplies and equipment to cabins, in association with scientific investigations and similar. These activities must also be approved by the municipality and land owner, and land owners have the right to prohibit the activities on his land.

If permission is given, it will have particular conditions and be restricted to a particular time period. The Management Plans defines some examples of circumstances where it can be relevant to give permission, and when it will not be given (Dybwad 1994).

One regulation from 1988 state that landing places on mountain summits, viewpoints, glaciers and similar places will not be allowed if the object is heliskiing, short stops, as starting points for daytrips and similar. It is also according to the Aviation Act prohibited with low flying less than 300 metres above the ground unless it is of safety reasons is necessary due to weather conditions. In addition, there are particular regulations above Briksdalen after a directive in 1999 to not fly under 2000 foot from 1.May to 1.October. This was made a permanent regulation in 2003, with a minimum height of 8500 foot above sea level in a area in Oldedalen/Briksdalen (Dybwad 1994; Lovdata 2009b).

### **Tourism**

Tourism infrastructure will not be allowed in the core areas of the park, but some measures can be allowed at the outer edges of the park. This can be measures like information, marking and parking spaces that occurs in cooperation with land owners and municipalities. Larger commercial infrastructure, like gondols, ski centres, road to the glacier apron and tourist flying on the glacier will not be allowed. Measures for tourism should be canalised to zones with measures and infrastructure development, and marked trails in user zones will be beneficial for tourism. There should be danger signs at the most visited places. The tourism businesses should be responsible for this, but with some assistance form the Park Management. Guided and organises tours and courses in the NP is a positive measure when they are not conflicting with the objectives of protection. The Park Management should have details of the selected routes and how many that participates, in order to supervise the activities and avoid conflicts and attrition. There will be close cooperation and a yearly seminar with glacier guide companies (Dybwad 1994).

### **Research and education**

Research and education is seen as positive as long as it is not conflicting with the preservation values or the objectives of preservation. The management authorities will assist to the degree it is possible and beneficial (Dybwad 1994).

## **4.4 Conflicts and solution strategies**

### **4.4.1 Central conflict areas**

The thesis *Reiseliv og naturvern: ei kartlegging av tilhøve kring reiseliv og vern av større naturområde, basert på ei intervjuundersøking på Skei og i Jostedalen, ved Jostedalsbreen nasjonalpark* by Marianne Bugge in 1998 deals with conflicts between tourism and preservation interests in the villages of Jostedalen and Skei. These municipalities were in favour of the designation, but feared that the regulations might obstruct local development of tourism. The interviews indicated that the designation hadn't had this negative effect on tourism development. Most of the municipalities were also initially sceptical of lack of local participation, but the tourism actors felt that their arguments were taken into consideration, and didn't perceive the regulations as a problem after the designation. On the contrary, they perceived the regulations as reasonable and not obstructive for their activities. This implies according to Bugge that there were no significant conflicts between the protection of the area and tourism development at the time, and there are no potential conflicts in the near future (Bugge 1998).

Conversations with the NP management also have revealed that the conflict level related to Jostedalsbreen NP is considered to be low. This can generally be considered to be positive for the park. However, there is at least one drawback from this low level of conflicts. The Management Plan is intended to be revised and updated regularly, at least every 10 years. However, in the case of Jostedalsbreen National Park, the initial MP is kept, although it has passed nearly 20 years since the park was established. Management Plans for similar large protected areas which have been object for a higher level of dispute, have been prioritised for revision.

### **4.4.2 General solution strategies**

The cause of the environmental problems is not always clear, but the uncertainty must benefit the environment, and therefore the precautionary principle must be used as the approach. Facilitation for outdoor recreation, tourism and other activities can only occur if it is done according to the objective of the NP and without using new

unspoilt natural areas. The NP can not be considered isolated from the surrounding area, and it is important to maintain buffer zones around the NP. This must occur through municipal plans according to the Planning and Building Act (Dybwad 1994).

If there is much traffic in an area, the Nature Conservation Act opens to regulate access. There are two relevant measures; through influencing the spatial distribution by trails or by restricting or prohibiting access. In 1994, there were no known conflicts that were so big that measures to limit or prohibit traffic had been relevant (Dybwad 1994).

Dispensations from the protective regulation can be given after application. It is normal that grants of dispensations if followed by certain conditions. For instance, grants of use of motorised vehicles are often followed by conditions to when and where the activity can be executed. Motorised activities should be limited to what is strictly necessary, and the ones that get permission must report on the activities after they occur (Dybwad 1994).

#### **4.4.3 Conflict areas and cases**

##### **Borders**

In the designation of national parks in Norway, existing land use is often considered to minimise conflicts. This was also the case in Jostedalsbreen NP. There is mainly agricultural land in the surrounding valleys that was left out in the designation of Jostedalsbreen NP. The definition of borders is done with reference to the inputs that have come during the hearing (Bugge 1998).

##### **Roads**

Building roads close to the borders of protected areas is a potential conflict, and there are conflicting policies regarding this. To improve access to the NP can be beneficial for tourism in the surrounding local communities. St. meld. nr. 25 (1988-89) states that each municipality should have an entrance to the NP. From the interests of NP management, this can make it more difficult to prevent further development, and can lead to encroachment and degradation of the protected values. Development in the border area is preferred by the park management. The NP plan state that development should occur in areas where there has already has been some development, for instance the most common traditional tracks (Fylkesmannen i Sogn og Fjordane 2006).

In Jostedal, the local travel actors meant that the potential could be further utilised by developing existing products, like activities and accommodation. The NP Management meant that the encroachment at Nigardsbreen was maximum of what they could accept when the park was designated. New commercial development is not desirable ( Bugge 1998; Dybwad 1994).

Nigardsbreen is an example that improved access has benefited tourism in the local community. Nigardsbreen nature reserve is remote, but has many visitors during the summer. The degree of facilitation was large even before the designation of the preservation area, but even later there has been several dispensations from the protective regulation in order to improve infrastructure development (Bugge 1998).

##### **Agriculture**

The Management plan states that agricultural activity in favour of the protection purpose of maintaining cultural landscapes will be processed positively (Dybwad 1994). In Krunndalen, the land owners wanted to continue wood logging. This was not seen as conflicting, because the cultural landscape in the valley was threatened by overgrowth. It was opened for a dispensation to build a cart road in the valley, in relation to development of horse-drawn carriage as tourist product (Fylkesmannen i Sogn og Fjordane 2006).

##### **Hydroelectric power development**

Development of hydroelectric power plants have been a major conflict. At the time of designation, there were three possible projects; Kjøsnesfjorden and Fossheim in Jølster, and the Stryn and Loen Water Courses in Stryn. According to the MP, the National Park Service should aim at diminishing the negative impacts from potential power developments (Dybwad 1994). The development in Stryn was as mentioned not permitted in the end due to Protection Plan IV for Water Courses. Several other hydroelectric power projects were also stopped due to the designation of the NP. These include two projects in Sogndal and one in Jølster. Development of Kjøsnesfjorden,

adjacent to the NP, was however permitted by the Norwegian Parliament, *Stortinget*, in March 2004. The development of hydroelectric power in Kjøsnesfjorden started in 2006, and will affect the NP because of the large physical impacts. This includes drain of rivers, road, stone tips and dams. A development implies that the boundaries of the NP will have to be moved and the area of the NP will diminish by 1.5 km<sup>2</sup>. There will also be a reduction of a wilderness-like area of 12.3 km<sup>2</sup>. The construction activity started in May 2006. Furthermore, the Norwegian Water Resources and Energy Directorate, *Norges vassdrags- og energidirektorat* (NVE), is considering an application of building a hydroelectric power plant in Myklebustdalen in Gloppen Municipality, also adjacent to the NP. A development will reduce the area without major infrastructure development on Myklebustbreen (Fylkesmannen i Sogn og Fjordane 2006).

### Tourism

The area around Jostedalbreen National Park has been a Norwegian target area for tourism since before the designation of the NP. It was assumed that the designation of the NP would increase the flow of tourists and that one could guide the flow by marketing. The MP emphasised that the tourism activity had to be managed in a sustainable manner. Facilitations in terms of parking lots close to the NP were suggested, but further tourism developments like ski resorts, gondolas, roads to the glacier etc. will not be permitted. The protective regulation does not open for dispensations related to such measures (Dybwad 1994)

#### Case: Grovabreen

Grovabreen is a separate glacier not connected to Jostedalbreen, but part of the NP. A road and summer skiing facilities was planned, and some land owners in the adjacent Dvergsdalsdalen planned on starting farm tourism and wanted to develop a road and marked trails up to the glacier (Bugge 1998; Dybwad 1994; Weichert 2008).

The idea of a road to Grovabreen comes from the end of the 80s. At the time, there were no concrete plans, but the municipality was engaged in the issue. The municipality felt that it was necessary with a road in towards the glacier. The County Administration, the Directorate for Nature Management, the local travel organisation and local and state level skiing organisations were also in favour of a road and a summer ski centre. Local and state level nature conservation organisations and some local land owners were against (Bugge 1998).

According to White Paper no. 25 (1987-88) it would be possible for development on the north side of the glacier. It was also expressed that it would be possible to apply for exception to prepare ski trails inside the NP. If a road was to be build, it had to fit the terrain as much as possible. The ministry took the comments into consideration, and was open to adjust the borders from the proposal. The borders of the NP were adjusted when the NP was designated, in order to make it possible to build a road in the future (Bugge 1998).

The NP manager meant that the project was problematic and potentially conflicting because of encroachment in unspoilt nature. Even though the borders were adjusted in order to make it possible to carry out a project, this did not imply that the project will automatically be approved. The decision would depend on the final project plan and its approach to the NP and natural environment (Bugge 1998). The Management Plan for the NP states that the only development that would be allowed was cross country tracks and a road. This degree of development at Grovabreen was not seen as conflicting, and the Management Plan opened up for the possibility that the area could be regulated as a user zone if the area was to be developed. If it was not developed, the zone will remain a zone without development (Dybwad 1994).

Both the tourism industry and land owners were in 1998 sceptical of the dimensions of the project in relation to the returns to the local community. Also fear of degradation of the natural environment was expressed. Furthermore land owners involved in farm tourism disagreed on the desired size of the project and whether it would increase the touristic value of the area (Bugge 1998).

The NP manager also pointed out that the financial situation was uncertain, and the project would depend on external investors. He perceived it as unlikely that the project would be profitable. The County Administration initially considered supporting the project financial, but ended up rejecting it. Only cross country slopes would be allowed, reducent the potential of income compared to alpine skiing facilities drastically (Bugge 1998).

The project met resistance from many stances (Fylkesmannen i Sogn og Fjordane 2000). Although permission was given to this project, it has stranded. Jølster municipality still has the project on its list over long-term actions, but according to the local Power enterprise, it is not expected that it will be realised (NVK Multiconsult 2000)

### Motorised activity

In general, the protective regulation states that motorised activity is prohibited inside the borders of the NP. Although there are some dispensations from this prohibition (emergencies, inspections etc.), it is considered a goal to maintain the level of motorised activity in the NP at a minimum (Dybwad 1994).

#### Case: Helicopter flights

A local initiative in Luster applied for dispensation to do helicopter flights of tourist to the mountain peak of Kaldakari. During the initial rounds the project was moved 1.5 km north to Nystøtsnovi, 17 metres outside the NP border. After some years of processing, the zoning plan for landing places in the valley and by Nystøtsnovi was rejected by the Ministry of Environment in October 2005. Later, this has been changed to a round trip by helicopter from Veitastrand above the National Park. This started in 2007 (Fylkesmannen i Sogn og Fjordane 2004; Fylkesmannen i Sogn og Fjordane 2006). According to a study on nature protection and local ability to develop tourism, this particular case generated an intense debate regionally. The municipality approved helicopter flights in the initial rounds, whereas different departments at the County Governor's office had different views, describing that:

(...) the project is in conflict with the policies from an environmental perspective while simultaneously there is understanding for it having potential from a rural development perspective. Hence it is felt the matter is of such principle importance that it is the responsibility of the national authorities to decide on (Geluk 2004: 74).

Besides this dispute between the environmental and the agricultural department at the County Governor, this particular case was also seen to be of high symbolic value due to the restrictive practices on motorised activity in outfields and environmental sensitive areas in Norway (Geluk 2004).

Helicopter flying above the NP with tourists in Stryn has created local reactions. This has partly been due to the activities having occurred from several places in the municipality without this being well regulated. The municipality started in 2002 to plan and find good landing places. The proposal for municipal plan was sent out in 2005 (Fylkesmannen i Sogn og Fjordane 2004).

The limit for low-flying in the NP is 300 metres above the ground; the normal is 150 metres according to the Aviation Act. In addition, there are particular regulations above Briksdalen after a directive from 1999 to not fly less than 2000 feet above the ground from 1 May to 1 October. This was made a permanent regulation in 2003, with a minimum height of 8500 feet above sea level in an area in Oldedalen/Briksdalen (Fylkesmannen i Sogn og Fjordane 2004).

### Recreation activities

There has been an increasing conflict between users of different types of recreation activities. It is the management's responsibility to prioritise and the traditional recreation activities over commercial recreation activities. The main rule is that commercial infrastructure development should not be allowed, and traditional recreation should be prioritised. All infrastructure development that is allowed is exceptions from the protective regulations. Projects that are of "essential value for society" can be excepted from the regulations, and this can apply allowing development that benefits the local community (Dybwad 1994).

### Cabins and tenting

During the process of establishing the NP, there was expressed interest of building private cabins for hunting, fishing and herding. This was not allowed. When it comes to building public cabins, there has been no conflict about where to build the cabins. Sogn og Fjordane Trekking Club have been opposed to building cabins at the glacier, and want the cabins rather to be localised in the mountain farm areas around the glacier. This is in accordance the guidelines of the National Park Service (Dybwad 1994).

There have been conflicts between conservation of the mountain farm environment and camping in Bødalen. Camping was popular, and became a problem. The management authorities agreed with the land owners plan of developing a camping ground and toilet in the area, and they contributed financially the project (Dybwad 1994).

There are geological values in Haugdalen that are very sensitive to attrition. The management authorities meant that measures to limit visitors in this area should be initiated. It is suggested for instance regulating access to marked trails. It is also emphasised that no further infrastructure development should occur, and the area should

not be subject to a further tourism development. It was also suggested that the part road closest to the glacier should be closed for traffic, and an old trail should be maintained to canalise the traffic. The MP stated that management authorities will keep contact with glacier guides, land owners and the municipality concerning the use of the area (Dybwad 1994). The glacier guides in the area did however not agree that these geological deposits are exposed and in risk of attrition, and are the geological values are already degraded. The tourism activities were not large enough to represent a big threat. They meant that number of visitors at Nigardsbreen was so large that it was reasonable to talk about degradation, but the concern in Haugadalen seemed illogical in comparison to Nigardsbreen. The municipality was also against closing the road, in fear of that it would effects public access and tourism activities in the area (Bugge 1998).

#### 4.4.4 Dispensations, permits and developments

The yearly report, årsmelding, for Jostedalsbreen NP from the National Park Service, sums up number of cases related to dispensations and management of the NP. The table below shows how many cases the management has treated since the reporting started.

**Table 4:** Cases on dispensations and management of Jostedalsbreen NP (Fylkesmannen i Sogn og Fjordane 2004; Fylkesmannen i Sogn og Fjordane 2008)

Year	2000	2001	2002	2003	2004	2005	2006	2007
Logged cases Jostedalsbreen	21	23	20	14	16	21	21	18
Logged cases Nigardsbreen		6	12	6	8	1	1	4

The applications are categorised thematically, and the most common issues are infrastructural developments and interventions and motorised activity.

In 2006 three dispensation were given to applications of infrastructure development or other interventions; one to improve the trail to Bødalsbreen, one to put up information signs along the trail to Bergsetbreen in association with upgrading the trail to a nature trail, the last application was to execute seismic explorations in Bødalen (Fylkesmannen i Sogn og Fjordane 2006). In 2004 there were three such applications; to expand the cabin Flatabrehytta, minor changes of a mountain farm house, and a geological research project. In Nigardsbreen there were two applications; to move a hydrometer and minor changes along the road to create passing lanes two places and make a new pier for the boat. All applications were granted (Fylkesmannen i Sogn og Fjordane 2004).

In 2004, a trail was made in front of Nigardsbreen. This is a nature trail from NP centre toward the glacier. The trail was finished in 2006, but was opened for public use in 2005. (Fylkesmannen i Sogn og Fjordane 2006). It was also started to look for solutions on how to improve the trail from Bødalsseter. This is challenging, due to the type of terrain and that the trail also must support use from cattle grazing in the area. Construction activities will not be considered. It was also investigated how to construct a cover in the wet parts on the trail to Bersetbreen. Work was done on improving the road in Sunndalen, and the project on improving two trails to Sunndalssetra was finished. The land owners had worked with this for ten years. (Fylkesmannen i Sogn og Fjordane 2004). In 2006 they were going to apply for improving trails and old mountain farm tracks (Fylkesmannen i Sogn og Fjordane 2006). It was in 2004 given permission to clear and remark a trail leading to a viewpoint in Veitastrom (Fylkesmannen i Sogn og Fjordane 2004).

In 2006 five applications treated use of motorised vehicles, and all applications were granted. Four were about use of helicopter; two landings, one low-flying and one with both landing and low-flying. The two with landing only were in relation to a scientific investigations and a renewal of multi-annual permit to bring equipment and supplies to a Trekking Club cabin. The other two were in relation to nature film projects. The fifth application was about transport on bare ground, where a land owner wanted to transport materials, supplies and equipment to Bødalssetra and the camping ground close to the existing drive tracks. In 2005 there were ten applications of use of motorised vehicle. For Nigardsbreen there were no applications in 2006 and 2005, but 3 in 2004 and 4 in 2003 (Fylkesmannen i Sogn og Fjordane 2006). In 2004 one illegal helicopter landing was registered. The applicant was not aware that it also was required permission from the NP Service, and had only got permission from Stryn

municipality. The same year there were seven applications of permits to use motorised vehicles in the NP. Two were about use of snowmobiles and five were about use of helicopter; three of these low-flyings. Five of the applications were from media associated with information about the Jostedalsbreen NP, and two were about transport of materials to a trekking club cabin and inspection associated with the planned hydroelectric power plant in Kjøsnesfjorden. In Nigardsbreen there were three applications; one from media, one about preparation of a ski trail in association with a race and one about use of snowmobile in association with wood logging. All were granted (Fylkesmannen i Sogn og Fjordane 2004).

**Table 5:** *Granted dispensations on motorised traffic (Fylkesmannen i Sogn og Fjordane 2006)*

Place	Vehicle	Objective	Year	Permit
Flatabrehytta	Helicopter	Service	2004-2008	3 days with 4 trips
Skålatårnet	Helicopter	Service	2003-2005 2006-2008	1 day
Jostedalsbreen Nigardsbreen	Helicopter Snowmobile	Research	2003-2007	4 times a year, 1-6 days
Nigardsbreen	Helicopter	Rescue exercises	2002-2006	1 day
Nigardsbreen	Snowmobile	Cross country tracks/races	2002-2006	April
Skålatårnet	Helicopter	Service Events	2006-2008	2 days with 1 trip
Langedalen	Tractor	Woodcutting	2003-2005	15.10-15.12
Brenndalen	Tractor	Woodcutting	2000-2004	10.10-10.05

Agricultural activity in the NP is mostly grazing. Except grazing, none of the mountain farms in the NP are run in the traditional way. Some places are not grazed enough, and there are problems with overgrowth of bush and forest. There has been granted permission and given contribution to develop agriculture inside the NP, by improving roads and building bridges to make grazing easier (Fylkesmannen i Sogn og Fjordane 2006). There are also several permits given for wood logging (Fylkesmannen i Sogn og Fjordane 2004).

The uphill race on Skåla has been arranged since 2002, and has been granted a separate permission. There is no use of helicopter, but the race gathers many participants and spectators, which can lead to attrition. In 2004, 908 people participated, and the organiser perceive the maximum limit to be 1000 participants. Some attrition have been registered due to the race. To limit these problems, it is prohibited to use shoes with spikes. There was previously granted a permission for 2003-2005, but the current permission is valid for 2006-2008 (Fylkesmannen i Sogn og Fjordane 2004; Fylkesmannen i Sogn og Fjordane 2006).

There was granted permission to a research project in geology in 2004. This implied digging sections in glacial deposits and small dynamiting in active river beds. The project will continue for several years, and the permission has been given after extensive contact and information, together with a prearranged inspection. There was also given permission to a research project by the Sogn and Fjordane University College, *Høgskulen i Sogn og Fjordane*, to map vegetation and vegetation succession, and mark the vegetation maps for later registrations (Fylkesmannen i Sogn og Fjordane 2004; Fylkesmannen i Sogn og Fjordane 2006). In 2004 Jostedalen Breførarlag was granted renewed permission to put poles and to blast some glacier to secure the safety of

tourists the guide on Nigardsbreen. The explosions concern small charges, and will occur during early in the morning (Fylkesmannen i Sogn og Fjordane 2004). There was in 2003 permitted to expand the parking area for busses in Briksdalen, and to protect against floods in the river Oldedøla. In 2004 only minor parts of the plan has been finished (Fylkesmannen i Sogn og Fjordane 2004). There were several avalanches and slides in 2004, which destroyed roads and trails. This lead to several projects of repairing and improving them (Fylkesmannen i Sogn og Fjordane 2004).

## 5 Regional development

### 5.1 Regional development policies

Norwegian policy makers have for several decades focused on regional development through an active regional policy. According to the Ministry of Local Government and Regional Development, *Kommunal- og regionaldepartementet*:

The overall objective is to ensure equal living conditions throughout the country, maintain the settlement patterns and central features of the potential in all regions. People should have a real, independent choice regarding their place of residence. The Government facilitates economic development in all parts of the country and encourages people to move to rural areas (Kommunal- og regionaldepartementet 2009).

By this, it is implied that all regions and communities shall have equal right to developments of industry and sectors suited for the area.

The country is split into different target zones for direct economic support to enterprises. Sogn og Fjordane is classified as a zone III area which means that enterprises can get from 10-30 % funding dependent on size. Only zone IV has higher rates (Kommunal- og regionaldepartementet 2009).

As has already been mentioned, the area surrounding Jostedalsskogen has been a target area for tourism since before the designation of the National Park. Moreover, tourism has been a target area for Norwegian policy makers for a long period, and has lately been confirmed by the platform for the present Norwegian government. This declaration states that natural values shall be at the centre of Norwegian tourism. Considering the spectacular nature in Western Norway, it should thus be no surprise that this area is a target area for tourism (AP, SP og SV 2005).

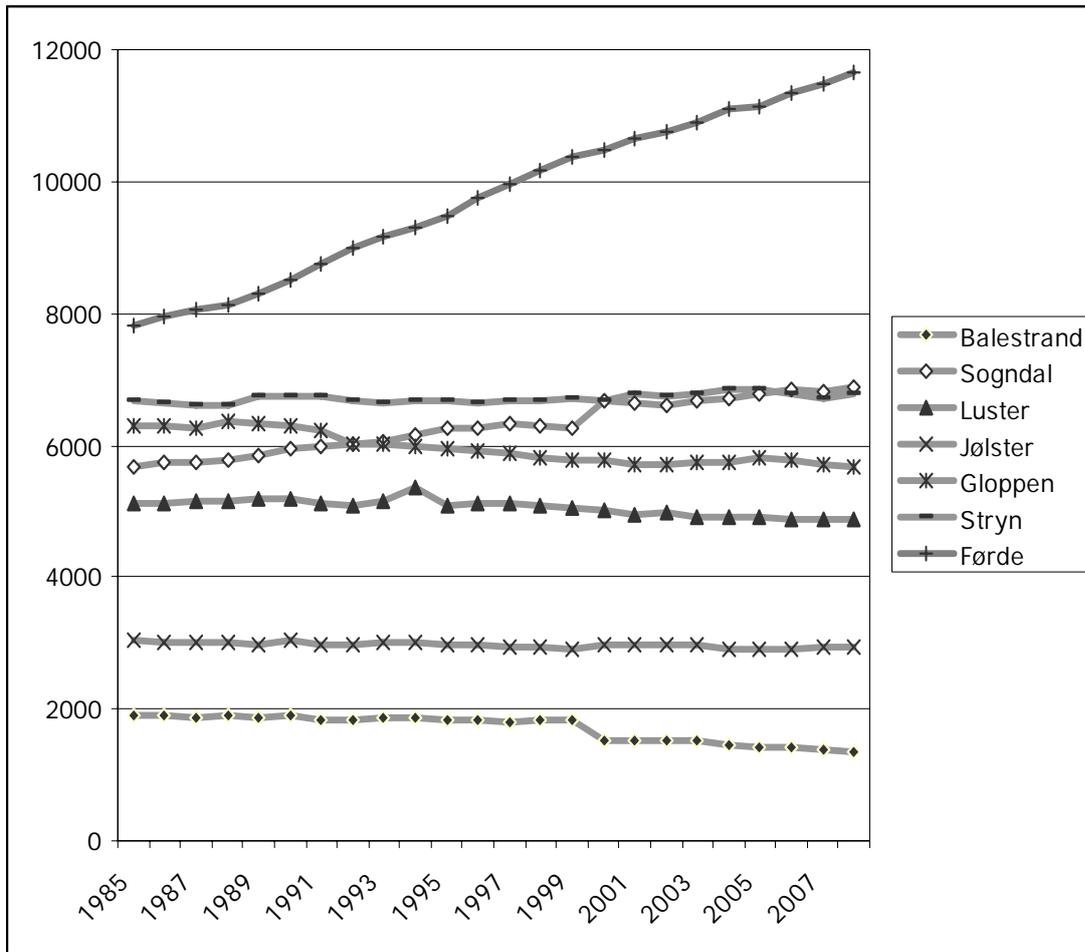
### 5.2 Socio-economic development of the region surrounding the park

#### 5.2.1 Demographic and social developments

As indicators for demographic and social developments, we have chosen to use indicators as population growth, age of population and level of education. Figure 3 on next page shows the development in population for the seven National Park municipalities since 1985. Net population in the period for all the municipalities is 3626 people. This is equal to approximately 10 % of the 1985 population. Net population growth in Norway in the same period was 14 %. Net population growth in the county in the same period was less than 0.1 %. This means that this region has had a much higher population growth than the county as a whole. But it should be noted that the NP municipalities also cover two of the county's largest communities; Sogndal and Førde, and as in other parts of Norway we can see from the figure that these are the municipalities with highest growth.

Figure 4 shows the age distribution in the population. As we can see, there is an underrepresentation of citizens younger than 45 years of age. This means that the average age in the region is higher than in Norway as a whole.

**Figure 3:** Population in the NP municipalities (Statistisk sentralbyrå 2009)



**Figure 4:** Population development of national park municipalities compared to the county and national level (Statistisk sentralbyrå 2009)

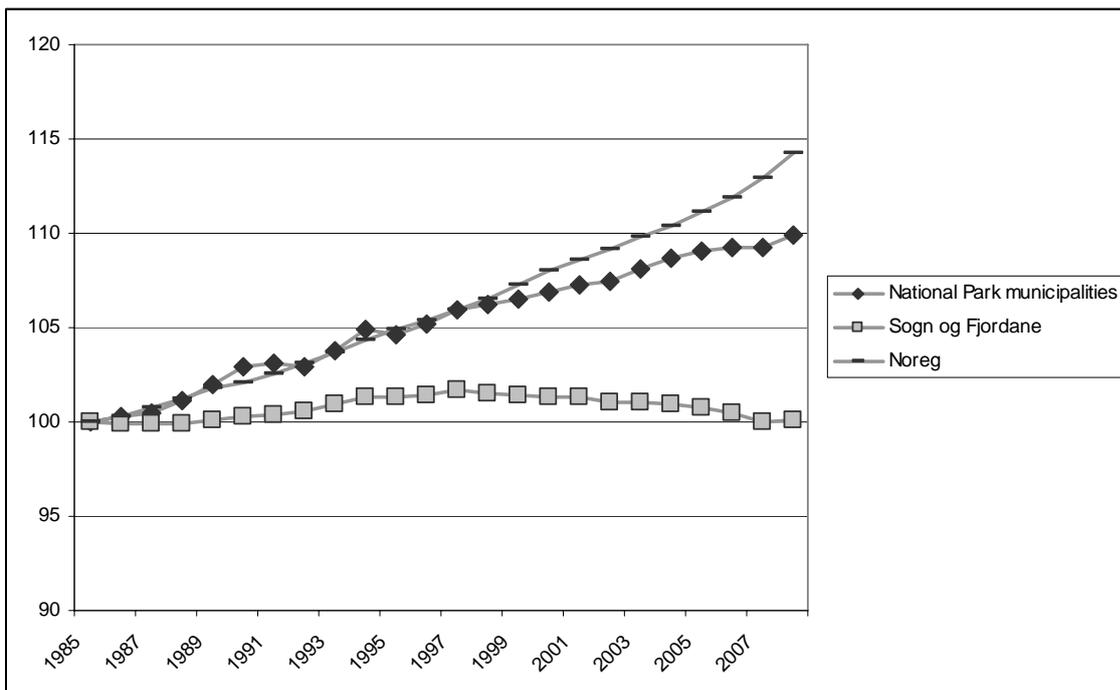


Figure 5: Distribution on age among total population in NP municipalities (Statistisk sentralbyrå 2009)

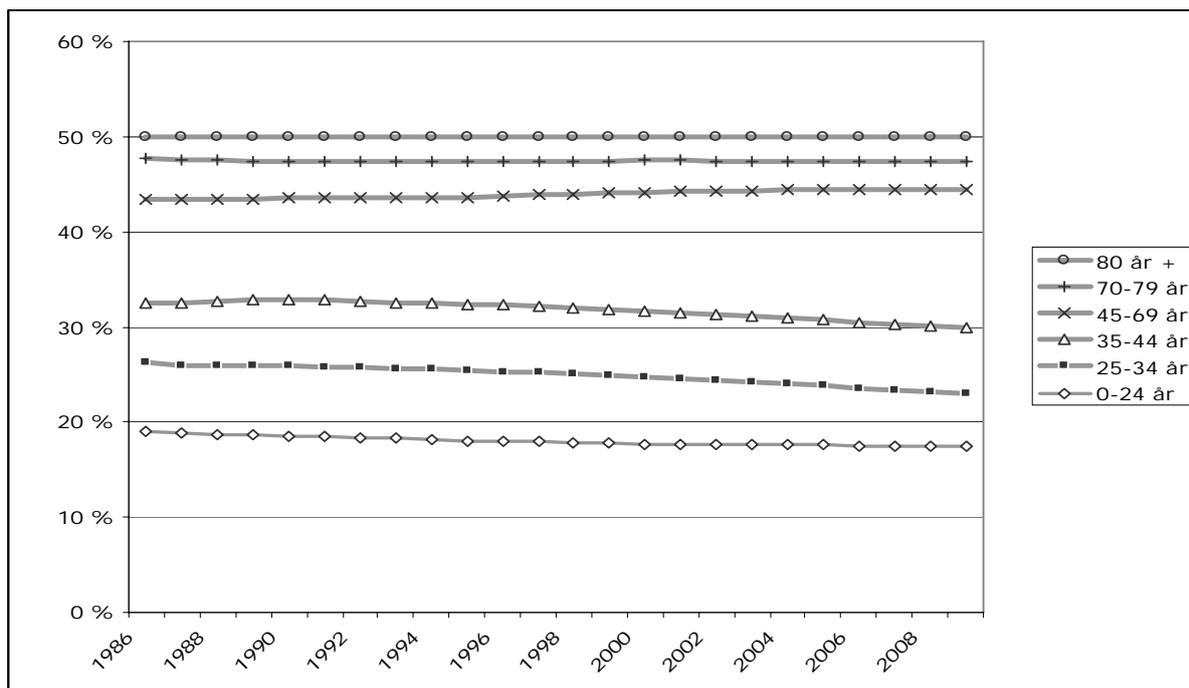


Table 6: Change of age structure in the national park municipalities (Statistisk sentralbyrå 2009)

		1986	1990	2000	2009	1986	1990	2000	2009
		%	%	%	%	No of people	No of people	No of people	No of people
National park municipalities	0-24 år	38 %	37 %	35 %	35 %	13 908	13 958	13 830	14 085
	70 år +	13 %	13 %	12 %	11 %	4 844	4 882	4 569	4 485
	Total					36 657	37 611	39 047	40 500
	Change of young residents	1 %							
	Change of elder residents	-7 %							
Sogn og Fjordane County	0-24 år	37 %	36 %	34 %	33 %	39 666	38 607	36 912	35 589
	70 år +	13 %	13 %	13 %	13 %	13 718	14 052	13 777	13 364
	Total					106106	106 540	107 589	106 457
	Change of young residents	-10 %							
	Change of elder residents	-3 %							
Norway	0-24 år	36 %	34 %	32 %	32 %	1 477 531	1 458 498	1 438 839	1 526 166
	70 år +	11 %	11 %	11 %	11 %	449 113	475 362	514 204	506 843
	Total					4 159 187	4 233 116	4 478 497	4 799 252
	Change of young residents	3 %							
	Change of elder residents	13 %							

Considering the level of education there has been a stable increase from 1985 to 2007. Totally, the number of highly educated people (universities and colleges) in the NP municipalities has increased by a factor of 2.3 during this period. As expected, the number of highly educated people has grown more in the education centres, Sogndal and Førde, than in the rest of the municipalities (Statistisk sentralbyrå 2009).

The last indicator for regional development is employment. As shown in the table below, the NP municipalities have net inwards commuters. This can be interpreted in several ways. One interpretation is that there are many jobs in these municipalities, which may be considered positive for the regional development. Another interpretation, however, is that there is a net flow of money out of the region due to the commuters paying their taxes to the municipality where they reside.

**Table 7: Commuting (Statistisk sentralbyrå 2009)**

Total number of employed	20028
Total employed from economic region	16886
Outwards commuters to other economic region	2492
Inwards commuters	3142

### 5.3 Economic branches

#### 5.3.1 Structural change of the local economy in national park communities

Data on structural changes are hard to find on a level that is relevant for this report. On a county level, we find that the last 60 years there has been a large decrease in number of jobs in primary industries and a large increase in number of jobs in public sector and the service sector. Secondary industries have been stable in their number of jobs in the same period (Bukve et al. 2006). However, it is difficult to find more recent numbers and in the detailed level we would want, such as municipality level and tourism within service sector.

#### 5.3.2 Tourism

Due to the fact that the area is such an important recreational area in a national context we have chosen to focus on tourism in this section. First, through a presentation of the area, the different communities and the tourism businesses which operate in the National Park. After this presentation we will give an introduction to the activities these businesses offer, and towards the end we will present some tourism statistics.

##### Luster municipality

*Jostedalen* is an agricultural community. Agriculture is the most important factor for the settlement that is distributed along the whole valley. The outlying and mountain land areas were in old times important for the agricultural production. Also the glacier was important, especially for stock trading, since it was the track between the regions of Nordfjord and Sogn (Bugge 1998). There was no road in Jostedalen until 1809 (Weichert 2008). Jostedalen also has long traditions of tourism. Long before the establishment of the NP, the entrances to the glacier in Jostedalen have attracted tourists. Jostedalen is today one of the most popular destinations in the area, and the Nigarsbreen glacier arm is the most important attraction (Weichert 2008). Many residents in Jostedalen are full time employed in the tourism sector, while others have part time jobs, often in combination with agriculture. Students and locals are also employed on a seasonal basis during the summer (Bugge 1998). In 2008, the locals work mainly in agriculture, tourism and service trades. Many commute to work outside the valley (Weichert 2008).

The area of Nigardsbreen was facilitated for tourism early. Much is today developed, despite the status as natural reserve (Bugge 1998). There is a four km toll road from the main road to the glacial lake. In summertime, there is a shuttle boat across the lake, and a short trail up to the foot of the glacier (Weichert 2008).

Breheimsenteret in Jostedalen employs in 1998 6-8 persons during the summer season, and one manager on full time. The centre is also an important meeting place for locals and visitors during the summer, and contributes to arranging cultural activities (Bugge 1998).

The settlement in *Veitastromd* is situated along a five km long alluvial plain. The delta which the glacier river has created is suitable for agriculture, especially grass production. The fields are covered with snow 6 months a year. There are still well-run farms, and agriculture composes mainly dairy production from cows and goats, and is famous for production of goat cheese. A toll road leads into mountain farms where livestock graze during the summer. There was no road into the valley until 1956. Before that, there was a daytrip by rowboat across the large lake in the valley and continuing by foot to reach the settlements by the fjords. From 1895 there was steamboat running on the lake. It was common that the valley was isolated for weeks during the winter. The trails across the glacier have been particularly important as an alternative. Even in recent times, the community has experiences long periods of isolation due to avalanches blocking the road (Weichert 2008).

The following tourism businesses operate in Luster:

- Jostedalen breførerlag
- Ice Troll
- Breporten
- 
- Leirdalen Bre og Juv
- Norgesguidene
- Fimbul
- Jostedal Camping
- Jostedal Hotel
- Nigardsbreen Camping
- Breheimsenteret

### **Sogndal municipality**

*Fjærland* is at the end of the Fjærlandsfjord. The locals are mainly engaged in agriculture, mostly dairy farming. The flat ground makes it easy to run, and the farms are larger than the average in the region. The wetlands at end of the fjord are protected as a nature reserve. The first steamship to Fjærland started running in 1860. This made it relatively easy to trade commodities, and it became the first tourist route. At the end of the 1800s, tourist ships had become common. In 1889, the farmers founded a conveyance company that took tourist by horse and carriage from the fjord and up to the glacier. In 1974 the community got a regular ferry service, but there was no road until 1986. This was the road leading west, and in 1991 opened the road to east, making Fjærland a part of the arterial roads in the region (Weichert 2008).

The following tourism businesses operate in Sogndal:

- Mundal Hotell

### **Stryn**

*Oldedalen* valley is on the western side of Jostedalsbreen. The tourists started to visit Briksdalsbreen glacier arm late in the 1800s. Today there is a road though the valley that ends at Briksdalsbreen, and there is a track up to the foot of the glacier. Oldedalen Transport Company started in 1923, but had to stop the horse transport in 2004 after a dramatic accident and changed to purpose-build cars. In 1992 the cruise ship quay opened. Farming is today the main occupation, but with tourism as an important source of income. There is particular many nature based outdoor activities offered. Some also commute, or are employed by a mineral water producer that uses water from a reservoir underneath the glacier (Weichert 2008).

Few people live in *Lodalen* valley. Like elsewhere, the main sectors are agriculture and tourism. The main attractions are Bødalsbreen and Kjenndalsbreen. Tourists came to Kjenndalen already at the end of the 1800s, brought up by local framers by boat and horses. Today a toll road leads into Kjenndalen, almost all the way to the glacier. In Bødalen a toll road leads to the mountain farms at Bødalsæter, which is one if the most prioritised cultural landscape areas in the district. In summer there are many activities like glacier walking, kayaking and hiking.

In *Erdalen* there is a small settlement at the bottom of the valley where people live of agriculture or commute.

The following tourism businesses operate in Stryn:

- Olden Aktiv
- Briksdal Breføring
- Guest houses
- Hotels

### **Jølster municipality**

*Skei* has traditionally been an agricultural community, but many perceive the sector as uncertain and look to other business opportunities like tourism. Tourism in *Skei* is not so closely attached to Jostedalbreen NP because it is located more centrally. New roads have made *Skei* into an interception point with more traffic. Tourism is important for *Skei*, and brings revenue and employment. However, the number of employed is not high compared to the level of tourism, partly due to inwards commuting. In 1998 there were 850 beds available in the municipality of Jølster, but many had plans of expanding. Many tourists use Haugdalen to proceed to Haugabreen. Many hike in the area, and the track across the glacier has been used much in old times (Bugge 1998).

The following tourism businesses operate in Jølster:

- Several camping grounds and cabins.
- Glacier team
- Jølster rafting
- *Skei* hotel
- Stardalen has a café, gallery and handcraft store.

### **Tourism activities**

There are several variations when it comes to activity tourism. Most of them are directly related to the glacier. Others, however, make the most of tourism in the area through different outdoors activities such as horseback riding, sailing and ocean rafting. In the following, we will give a short introduction to the activities that relate to the glacier, and where they are offered.

The most commonly offered activity is *mountain and glacier guiding*. This is offered both in easy and difficult variations. The most popular activities are glacier guiding of 2-5 hours on Nigardsbreen, Haugabreen, Tunsbergdalsbreen or Bødalsbreen glacier arms. However, also more ambitious expeditions, such as glacier-crossing of 3-4 days and climbing the highest mountain peaks in the NP are regularly offered.

*River rafting* is another popular activity, as several large rivers run down from the glacier arms. River rafting is offered in *Skei* and Jostedal.

In Briksdalen, one company offers *Glacier Safari*, fleet paddling over the glacier lake up to the front of the glacier arm.

*Kayaking* on glacier lakes is offered on two different locations in Jostedal.

In Jostedal, one company also offers *canyoning*, a combination of climbing and walking upwards the canyon of the glacier river.

### **Expansion of tourism sector**

It is not known exactly how many visitors there are to Jostedalbreen NP, but the estimate is about 250 000 visitors a year to Briksdalen, and 600 000 in the whole Jostedalbreen area (Fylkesmannen i Sogn og Fjordane 2006). In 1994, the estimation to Briksdalsbreen was 200 000. It was also estimated that there were 130 000 in Fjærland and 50 000 at Nigardsbreen each year, making a total of 380 000 (Dybwad 1994). This shows that tourism has increased vastly during the last decade.

In 2004 and 2006 it was estimated that about 20 000 participate yearly in guided glacier walks (Fylkesmannen i Sogn og Fjordane 2004; Fylkesmannen i Sogn og Fjordane 2006). Jostedalen Breførarlag and Stryn Fjell- and Breførarlag had in 1993 9 000 participants on glacier walks (Dybwad 1994). Most of the trips occur at Nigardsbreen, Briksdalsbreen, Haugabreen and Bødalsbreen (Fylkesmannen i Sogn og Fjordane 2004). Comparative to this, registrations showed that 806 people went across the glacier from Fjærland to Høgste Breakulen in 1992 (Dybwad 1994)

There are several public cabins around the glacier. They are especially located in the mountain farm areas, but none on the glacier plateau. Flatbrehytta in Fjærland and Skålatårnet in Stryn is the most visited. Both are close to the glacier apron. In 1993 they had 1800 and 1300 visitors. The table below shows the number of visitors in the years 1994-2003. The visitors are since 2004 no longer registered (Fylkesmannen i Sogn og Fjordane 2004).

**Table 8:** Approximate numbers of visitors to public cabins (Fylkesmannen i Sogn og Fjordane 2004).

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Skålatårnet</b>	1560	1624	1260	1175	759	1500	ca. 1400	1175	1650	1040
<b>Flatbrehytta</b>	1200	1700	1970	1600	1200	1267	ca. 1200	ca 1350	?	12-1500

Regarding trekking and outdoor recreation, Norwegian Trekking Association, Den norske turistforening, and local trekking clubs organise trips and courses from in the National Park (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006).

**Table 9:** Number of trips and participants arranged by the Norwegian Trekking Association (Fylkesmannen i Sogn og Fjordane 2006)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>No of trips</b>	31	27	23	23	19	20	22	22	17	13	27	20	31
<b>No of participants</b>	759	826	697	669	445	629	515	539	377	384	456	461	247

When reading these numbers it should be noted that outdoor activities as trekking and hiking are highly dependent on the weather. Hence, it is difficult to get a clear view of the development based on these numbers.

Apart from estimates from outdoor activities, we can gather statistics about visitors from ticket-selling institutions. In the following we will present some of these numbers. First, the activity in Jostedalen can be measured by the passes in the toll road to Nigardsbreen and by the number of sold tickets on the boat on the lake from the parking lot and closer to the glacier (Dybwad 1994; Fylkesmannen i Sogn og Fjordane 2006).

**Table 10:** Visitors on toll road and boat to Nigardsbreen (Fylkesmannen i Sogn og Fjordane 2006)

	1993	1999	2000	2001	2002	2003	2004	2005	2006
<b>Cars</b>		11 070	11 003	10 727	10 856	11 469	12 017	11 951	11 817
<b>Motorcycles</b>		643	641	601	562	577	629	606	614
<b>Buses</b>		244	240	245	300	293	285	288	260
<b>Passengers on boat</b>	20 100	19 640	21 076	22 854	23 542	23 934	23 470	23 141	22 914

The National Park Centres also sell entrance tickets, and the table below shows number of visitors on the centres. As we can see, the numbers do not give clear signs of growth or decrease in the tourism industry.

**Table 11:** Visitors to the National Park Centres (Fylkesmannen i Sogn og Fjordane 1994; 1995; 2004; 2008)

	Breheimsenteret	Norsk Bremuseum	Jostedalsbreen National Park Centre	Total
1993	24 500	67 000	18 000	49 200
1994	20 500	74 000	20 000	114 500
1995	17 000	87 000	20 000	124 000
1996	15 000	76 000	21 000	112 000
1997	15 000	65 000	15 000	95 000
1998	17 000	71 000	12 000	100 000
1999	16 000	61 000	13 000	90 000
2000	16 500	59 500	17 500	93 500
2001	17 000	60 500	18 000	95 500
2002	17 000	51 800	33 700	102 500
2003	17 000	51 288	35 000	103 288
2004	17 000	50 000	37 200	104 200
2005	17 000	47 530	36 030	100 560
2006	17 500	45 630	33 829	96 959
2007	18 000	53 285	31 891	103 176

Despite the promising introduction to this tourism chapter, neither of these statistics shows unambiguous developments. However, a study done by Western Norway Research Institute and Sogn og Fjordane University College in 2007 shows that the tourism traffic on Sognefjorden has increased by 2.3 % from 2001-2005, and the tourism traffic on roads has increased by a total of 37 % from 1992-2005. Norsk Bremuseum, Jostedalsbreen NPC and Stryn Summer Ski Centre are all among the 10 most visited attractions in the county (Brandshaug et al. 2007). Furthermore, a report by Western Norway Research Institute from 2003 showed that the turnover in accommodation enterprises with proximity to the NP had increased by 13 % in the period from 1995 to 2001 (Aall et al. 2003).

All these numbers indicate that there has been a considerable growth in the tourism sector around the NP. Nevertheless, the same report from 2003 shows that the growth in tourism enterprises (accommodation) near the NP was much lower than the average growth in tourism enterprises in Sogn og Fjordane County. It is stated in this report that

It is reasonable to believe that the reason that the growth in tourism has been lower in the areas close to the NP than in the rest of the county, to a large degree depends on worse initial conditions for growth in the areas where protected areas are established (Aall et al 2003: 72, our translation).

It can be objected that this study only included a small part of the total tourism industry, namely accommodation, and therefore cannot be said to represent the total industry.

For instance, if we look to activity tourism, this niche within the tourism sector has had a huge rise since the NP was established. Numbers in the table below show that all enterprises based on activity tourism have had a steady rise in turnover and incomes since they were established. This combined with the fact that all except one of these enterprises have started their activity after the establishment of the NP, shows that certain parts of the tourism industry have experienced a period of expansion and development since the beginning of 1990s.

**Table 12:** Income in activity based tourism enterprises near Jostedalsbreen NP (Brønnøysundregistrene 2009 and own data collection)

Name	Year of establishment	% of total turnover from JBNP	Gross/Net income (turnover)									
			2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
<b>Jostedalen Breførarlag</b>	1987	90-95 %	-	3500/125	3000/200	2850/-250	2900/400	2850/500	1850/300			
<b>Breoppleving</b>	1994	<2006: 90 % >2007: 60 %	700	7004	x	1500	1450	1300	1350	1300	X	x
<b>Norges-guidene</b>	2000	2 %	-	1150/-50	1100/40	1100/50	750/25	500/10	200/-20	150/-4		
<b>Fimbul Jostedal</b>	2003	85 %										
<b>Ice Troll</b>	No numbers obtained											
<b>Glacier Team</b>			-	50/30	50/-1	50/2	50/-20	100/25	25/-15	40/-9	30/-10	40/0
<b>Olden Aktiv</b>	No numbers obtained											
<b>Bre og Fjell</b>	No numbers obtained											
<b>Breporten</b>	No numbers obtained											
<b>Jølster Rafting</b>			800/0	850/4000	500/75	450/75	550/2	500/-75	500/-75	450/-30	550/75	450/-40
<b>Leirdalen Bre og Juv</b>	No numbers obtained											
<b>Briksdal Adventure</b>	1994	50 %	-	2050/75	2100/5/75	1950/250	1800/20	1800/50	1850/7	1650/-15	1450/150	1300/50

All numbers have been divided with a factor of 1000

- Data not available      x Data lost      | No activity

Intervals: <10 000: 1000; 10-30 000: 5000; 30-50 000: 10 000; 50-200 000: 25 000; >200 000: 50 000

According to the manager of Breheimsenteret tourism has given the farmers better business opportunities (Bugge 1998). Several businesses in Jostedalen have experienced increased sales after the establishment of the NP. Breførarlaget had activities before the designation of the NP, and can refer to a substantial increase in visitors after the NP and nature reserve was established (Fylkesmannen i Sogn og Fjordane 2006). They had about 7 300 customers in 1993 (Dybwad 1994). In Jostedalen there were three stores, where the two that are close to the nature reserve were doing better than the one that is further away. More and more land owners also rent out houses and cabins (Bugge 1998).

Representatives from the activity tourism enterprises in Jostedalen experience that Breheimsenteret takes an important role in helping with booking of activities. Without this service and the centre, it would be more difficult to run activity businesses in Jostedalen, and the centre would not have been there without the NP designation. However, others emphasise the fact that the NP status also restrains possible developments of activity tourism in the area of Jostedalsbreen

<sup>4</sup> Due to melting, Breoppleving in 2006 ended glacier guiding at Briksdalsbreen glacier arm, and lost a large portion of their incomes

<sup>5</sup> Due to melting, Briksdal Adventure in 2006 ended glacier guiding at Briksdalsbreen glacier arm, and had to develop new activities in order to avoid bankruptcy. This year they also changed name from Briksdal Glacier Guiding to Briksdal Adventure.

It is claimed that Skei would have a viable tourism sector even without the NP. But the increase in tourism can partly be due to the establishment of the NP. One land owner said he had expectations about that the NP would bring positive effects on the local community. In 1998, he perceived that he hadn't experienced any change. However, he thought that the designation had brought more positive marketing of the community (Bugge 1998).

Glacier team in Stryn, Started in 1993 and has experienced increased demand. It is privately owned where the owners also have other jobs. They operate during the summer season, and employed in 1998 1-2 locals. The aim is to expand it to an all year round activity (Bugge 1998).

Despite several signs that the NP has facilitated the growth this niche of the sector during the last decades, hardly none of the companies use terms as 'National Park' or 'protected area' when advertising their activities and businesses. Some representatives emphasise that it is important to put weight to the activities in advertisements in order to get the message through to the public.

### 5.3.3 Investments in the NP

There is no budget for measures and investments in the NP, but the National Park Service has the opportunity to encourage and support measures that promote the preservation purpose. According to this, the NP service has granted relatively small amounts of money to some projects. Most of these projects are done for maintenance or facilitation for tourists. Especially the Information sign project and the Glacier tour map have been important projects, and targets for funding over the years. The information board from 1995 is posted at all of the common entrances to the NP. The brochure was new and revised in 1999. In 2003 there was a project where boards were put up at Briksdalen and Kjenndalen with the NP logo and the text "welcome to Jostedalbreen National Park" in Norwegian. It became a popular place for the tourists to take pictures. In 2006 the County Governor, the County Administration and SNO had a project about signs and information. The project had also a reference group with representatives from the NP centres, the Norwegian Public Roads Administration, *Statens Vegvesen*, the County Administration and Innovation Norway, *Innovasjon Norge*. The aim was to make the NP more visible through a uniform design of signs and information stations at the entrances. A local design company created the new design and other local companies were used as subcontractors. The first step was to make 16 signs or boards for different places in the NP. On the other side, considerable amounts of money is granted to local businesses around the National Park as a basis for their activity, especially concerning the NP (Fylkesmannen i Sogn og Fjordane 2006).

**Table 13:** Grants to projects in 2004 (Fylkesmannen i Sogn og Fjordane 2004)

Measure	Amount
Repair of the trail to Briksdalsbreen	8 000 kr
Measures on the road in Sunndalen	3 000 kr
Information sign project <sup>6</sup>	50 000 kr
Glacier tour map	6 000 kr
Collection of stories and legends	20 000 kr
Improvements of the trail to Bergsetbreen	20 000 kr
Restoration of building at Vetledakssetra	8 000 kr

**Table 14:** Grants to projects in 2006 (Fylkesmannen i Sogn og Fjordane 2006)

Measure	Amount
Nature trail to Bergsetbreen and nature communication	40 000 kr
Subsidy to restoration of an old mountain farm house at Vetledalsseter	15 000 kr
Glacier tour map 2006	6 000 kr
Event on the National Park Day at Jostedalbreen NPS	10 000 kr
Security and adaption measures in front of Nigardsbreen (Nigardsbreen Nature Reserve)	30 000 kr
Improvements of trails by Bødalsseter and up to Skålatårnet	100 000 kr
Registration of hikers (ferdelsregistrering)	15 000 kr

<sup>6</sup> 270 000 kr had in 2004 in total been allocated to this project (Fylkesmannen i Sogn og Fjordane 2004).

## 6 Summary and discussion of findings

Jostedalbreen is the largest glacier in continental Europe. Jostedalbreen National Park was established in 1991, and enlarged in 1998. The national park covers land areas in seven municipalities in the county of Sogn og Fjordane in Norway. Traditionally the communities have been dependent on agriculture, and the glacier was used as a track between the communities. The first tourists came to the area in the 19<sup>th</sup> century, and around this time, scientists also started using the glacier for research and education. The argument for protecting the area was the uniqueness of the glacier in a European setting. Its size, and the scenery surrounding the glacier are both used as protection arguments. Protected values in the NP mostly consist of glacier rivers, glacier arms, geological formations and vegetation. The change in climate from alpine on the glacier to temperate along the fjord allows for a rich variation in flora and fauna which is characteristic for the NP.

In the national framework for protected areas there has been a turn towards more participation in the management of large protected areas, and more adaption such as tourism measures in National Parks, as a step towards more value creation in areas nearby National Parks.

Jostedalbreen NP is managed according to the traditional management model for national parks in Norway. The Ministry of the Environment is responsible for the protection values at the highest level. Locally, the Environmental department at the County Governor's office is the executive body for the management of the NP. Here one NP manager is employed. This manager cooperates closely with the NP inspector at the local department of Norwegian Nature Inspectorate, which is a sub-division of Directorate for Nature Management, a directorate under ME. The environmental department at the County Governor's office has a Consultative Supervisory Board consisting of representatives from the seven involved municipalities. In addition to this traditional structure, Jostedalbreen NP also has three National Park Centres covering educational and informational tasks related to tourism. Furthermore, two of the municipalities with land areas in the NP have received status as National Park municipalities. These are new arrangements in order to making the NP municipalities and NPs more available to tourism.

One important challenge for the national park is to combine use with preservation of values in an active management. This is one of the main areas treated in the Management Plan, the most important tool for the management of the area. Zoning of the NP is used as a method to meet the challenges of diverse protection purposes. There has not been many conflicts during the existence of the NP, but a small number of conflicts have raised over important issues, especially hydroelectric power development and tourism. The NP management gives between 10 and 30 dispensations from the management plan for minor interventions, such as trails, dirt roads and a minimum of motorised activity every year.

The NP region has experienced a 10% population growth the last 25 years. This is lower than the national population growth, but much higher than the county. Most of the growth has been in the most urban communities, like the trend in the rest of Norway. In the same period, we also find there has been an increase in the number of people with higher education. This is also according to the national trend.

Tourism is one of the most important sectors in the NP area. Our indicators show that there has been a considerable increase in commercial activity tourism in the area. It can also seem like the level of activity tourism outside commercial market, such as individual venturing or trips arranged by the Norwegian Trekking Associations has been stable or decreased since the establishment of the NP. Activity tourism is probably the niche within tourism with highest increase since the beginning of the 1990s.

It is difficult to draw unambiguous conclusions about the effects of the establishment of Jostedalbreen NP. Nevertheless, in the following paragraphs we would try to give some reflections upon the initial research questions.

### 6.1 RQ1: Interactions, conflicts and solutions

The research question regarding interaction, conflicts and solutions is formulated as follows: *How does the history of interactions between environmental authorities and local economic actors influence the present situation in large protected areas (LPA); which conflicts have emerged and how have these eventually been resolved?*

The interaction between environmental authorities and local economic actors has generally been functioning well, and there has not been many conflicts during the existence of the NP. A small number of conflicts have however raised over important issues.

In the years before the designation of the NP, and during the early years of the park's existence, the issue of hydroelectric power development was problematic. Locals landowners in the area claimed their right to develop hydroelectric power plants in watercourses that came out of the glacier, as part of a national campaign against the Parliament's plans of protecting several large water courses. The problems of hydroelectric power development in the area around Jostedalbreen NP ended as the water courses in three neighbouring valleys were incorporated in the Conservation Plan IV for Water Courses by the Parliament. The NP was then extended to cover these three valleys.

After this phase, there have been few conflicts related to the NP. Two are worth mentioning. Both of these relate to tourism, one as development of new permanent facilities, and the other concerns motorised activity by use of helicopter to a peak inside the NP.

The Kaldakari case has been the most visible and largest conflict related to Jostedalbreen NP. The case, concerning transporting tourists by helicopter to a peak, Kaldakari, inside the NP border, gained attention regionally and started a debate in the media. The process lasted for some years until it was finally rejected by the Ministry of Environment. This rejection came despite the move of the landing to a peak just outside the NP border.

The second important conflict related to tourism concerns the development of summer skiing facilities in Grovabreen, which is a separate glacier, but still part of the NP. This project would include both permanent developments such as lifts and snow producing machines in addition to infrastructural developments of roads and parking lots. The idea of such a summer ski centre had emerged before the designation of the National Park, and the borders were consequently moved to fit such a development on the northern side of Grovabreen. However, after the establishment of the NP, only cross-country tracks and a road was permitted, due to loss of unspoilt nature in case of a larger development.

Both of these conflicts have been solved following the hierarchy of the management authorities. If the decision made by the local NP management has been met with resistance, the next body for handling complaints is the Directorate for Nature Management. At the highest level, the Ministry of Environment can be consulted, as was the case in Kaldakari.

In all these cases, the local economic interests have been forced back. The last project, in Grovabreen, stranded due to difficulties in financing after permission was given only to cross-country tracks. The Kaldakari project, on the other side, has been substituted with a helicopter round-trip without landing in the mountains. This may be seen as an indication that the economic interests are most important after all, independent of what the management authorities decide.

Again, it is worth repeating that the level of conflicts has been low. The drawback related to this is that the management plan has been left without updates and revision, as MPs in areas with more conflicts have been prioritised.

## 6.2 RQ2: Policies, processes and management

The research question regarding policies, processes and management is formulated as follows: *How do national policies on nature protection and economic development influence local processes relating to the management of LPA?*

We can identify two specific trends in the national policies for management of national parks the last two decades. The first is a development towards a higher level of local participation. The most obvious measure that is taken to meet this demand is the establishment of a Consultative Supervisory Board consisting of representatives from the municipalities affected by the NP. This board is meant to assist the management authorities in difficult cases.

The second trend for the national management policies for national parks points towards more adaption to tourism. The New National Park Plan from 1992, was the first national document to state that large protected areas such as national parks could be used as an arena for increased marketing for tourism purposes. Some

national parks was in particular opened for tourism, by adding this to their purpose for protection. Jostedalbreen National Park was among these.

Three information centres also established in communities around the glacier. These centres serve a function in educational and tourism purposes, but all of them have different fields of specialisation.

In recent years, two of the municipalities with land areas inside the NP have received status as national park municipalities. This is another measure meant to make it easier for the local communities to marketing themselves as tourism destinations.

It seems probable that the strategy from the national authorities is twofold. First, there is a goal of local and regional economic development in rural and peripheral areas of Norway. Second, dropdown effects to the local communities as a result of the NP may stimulate a sense of ownership and larger involvement among the local population. The Consultative Supervisory Board is a measure for direct cooperation and interaction. Moreover, we have also found that the one of the information centres serves an important function in coordinating commercial tourism activities in the community. Such additional services for the locals may lead to a more friendly attitude towards the management authorities, which again may have influence on the general level of conflicts related to the management of Jostedalbreen NP especially, and large protected areas in general.

### 6.3 RQ3: Socio-economic impact

The research question on socio-economic impact is formulated as follows: *What are the differences between regional socio-economic effects of LPA in Norway and Austria, and to what extent can these be explained by policy regimes and management models?*

This research question is outside the scope of this note, and will be answered in the next working step and later publications, concerning comparison between Norway and Austria.

### 6.4 RQ4: Effects of policy change

The research question regarding effects of policy change is formulated as follows: *What are the probable long-term effects of implementing new models for the integration of regional development and LPA management on socio-economic development and nature and cultural heritage values?*

This research question is outside the scope of this note, and will be answered in later publications, drawing on findings and analyses from different work packages in the research project (see introduction).

### 6.5 RQ5: Institutional changes

The research question regarding institutional changes is formulated as follows: *Which institutional changes in national policies and management models for LPA need to take place in order to secure regional socio-economic development without reducing nature and cultural heritage values inside the LPA?*

This research question is outside the scope of this note, and will be answered in later publications, drawing on findings and analyses from different work packages in the research project (see introduction).

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