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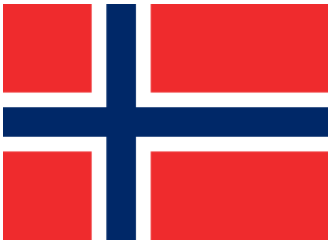

Country Report, Norway

Norwegian Spatial Data Infrastructure and the National Geodata Strategy

With reference to the National geospatial strategy published 2018

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Prepared by the Norwegian Mapping Authority (Kartverket).

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1 A Summary of the NSDI cooperation in 2018

Digital Norway is the name of our National Spatial Data Infrastructure, an agreement-based voluntary cooperation between about 600 partner organisations who have the responsibility to provide spatial data and/or who are large public users of such information. The initiative is part of the national IT policy and should help to develop a more efficient, user-friendly and knowledge-based public sector.

Digital Norway is a unique collaboration that ensures easier access to spatial data between the various sectors and management levels via standardized services on the internet. This helps to renew, improve and simplify the implementation of many public tasks. Partners demonstrate the effect of this colaboration through constantly developing and applying innovative scientific applications and user solutions.

There is a high level of activity in the Norwegian spatial data infrastructure. The Coordination Group for Geographic Information, the National Geodata Advisory and the expert groups have conducted regular meetings. The National Geodata Strategy and the associated plan of action have been a recurrent theme in 2018 as well in addition to important national activities and priorities.

An agreement on principles and criteria for implementation of the cooperation in 2018 was formulated at a meeting of the Coordination Group in November 2017.

A proposed National Geodata Strategy was submitted to the Ministry of Local Government and Modernisation (KMD) in February 2017 by leaders of the Coordination Group and the National Geodata Advisory, and officially accepted and published on November 1st, 2018.
At the same time that the National Geodata Strategy was being considered, the Coordination Group also submitted a draft action plan. After publication of the adopted strategy, work started to adjust the draft action plan, and was completed in March 2019.

The national geoportal – Geonorge.no - has been the subject of significant development activities based on input from users, and in 2018 there was a high level of activity. At the same time, significant resources were used to facilitate distribution of data and services in a standardised form through the portal.

The use of geodata continues to be crucial in new areas and will increasingly be a common component in the national ICT architecture. This is also emphasized in report no.27 (2015-16) to the Parliament, 'Digital Agenda for Norway' which discusses the importance of geographic information and geonorge.no. There remains further challenges on cooperation in the national infrastructure related to more efficient data flows, tighter integration in the user tools and further development of the knowledge base. Norwegian cooperation should provide spatial data that is suitable for solving current societal challenges and that is easy to find, understand and use.

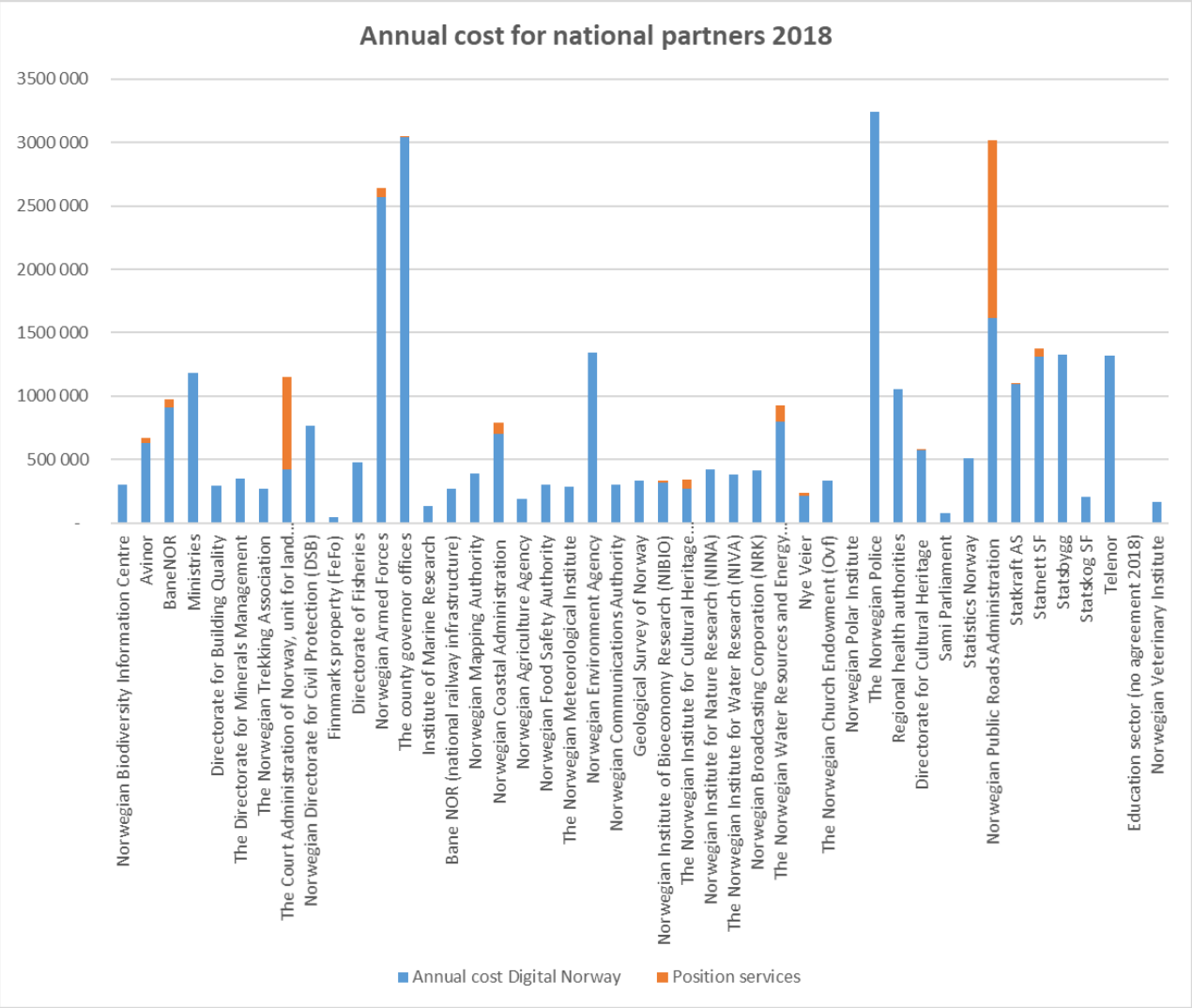
1.1 Partners and economy

By the end of 2018, cooperation in Digital Norway involved 599 partners comprised of 45 national partners, 17 counties, 422 municipalities and 115 energy companies.

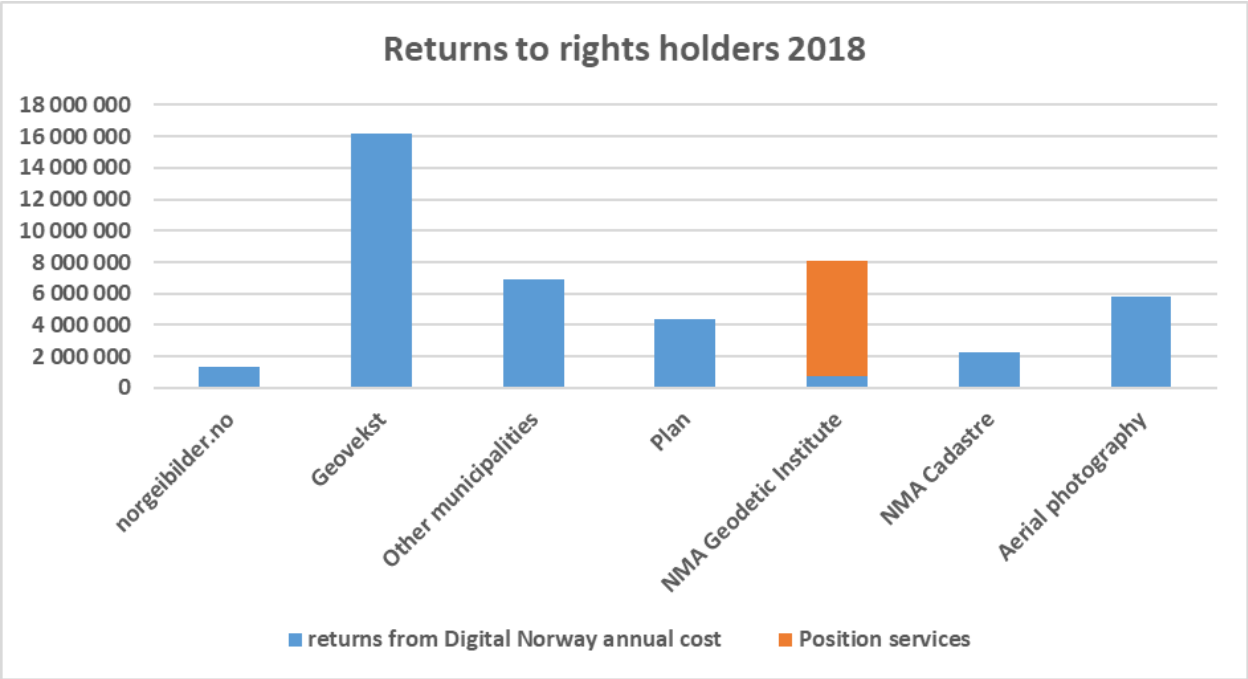
There has been an increase in the annual membership fee - from about 42.4 million in 2017 to about 45 million in 2018. The increase is largely due to new financing arrangements for ensuring scheduled data that more municipalities synchronize and make available for partners.

Annex 1 shows the total annual membership cost per partner and division of returns.

The chart below shows the membership cost for national partners in 2018:



The figure below shows the annual returns to various partners in 2018:



For detailed information about the annual fee and returns, see annex 1 to this document.

1.2 Organisation and meetings

The Ministry of Local Government and Modernisation
The Ministry of Local Government and Modernisation has overall responsibility for implementation of the Geodata Law. This includes follow up of other involved ministries, and follow up of the Geodata Coordinator through management dialogue and general guidance.

The Norwegian Mapping Authority
In addition to safeguarding the role of National Geodata Coordinator, the Norwegian Mapping Authority has responsibility for rulemaking, standardisation, technological development, administration and guidance in the geodata area. The Norwegian Mapping Authority is also participating according to the Geodata Law and administration of Digital Norway.

Coordination Group for geographic information
The Coordination Group for geographic information is appointed with representation on behalf of the parties in cooperation. It has the main task of facilitating optimal solutions and principles for the terms of participation in the cooperation. The Norwegian Mapping Authority administers and manages the Coordination Group in its' role as National Geodata Coordinator. They also have a corresponding role in relation to the representatives for local and regional parties at each of its twelve county map offices.

The Coordination Group has also created several important forum groups focusing on the further development of collaboration through the technology forum, thematic data forum, plan data forum, Parcel forum, Marine/maritime forum and emergency response forums respectively.

Similarly, there are separate venues that ensure interaction within the Geovekst cooperation (Geovekst-forum) and between some of the biggest city municipalities (the large municipality group) that are important venues in the cooperation.

A working group including members of the Coordination Group, had been working on a National Geodata Strategy since 2015 and in February 2017 in collaboration with the National Geodata Advisory Group, they submitted it to the Ministry of Local Government and Modernization for further processing. The strategy was adopted and published by the Government on November 1st, 2018. Work on the strategy's action plan began in 2017, and was also submitted to the Ministry of Local Government and Modernization in June 2018. Soon afterwards the strategy was published, and the Working Group continued efforts to ensure that the action plan continuously related to the adopted strategy.

Geodata cooperation in the counties

Each county has a representative body that ensures a holistic implementation of Digital Norway in the County. In addition, each county has two subcommittees for the base data, plan data and thematic data respectively. County geodata representatives are administrated by the Norwegian Mapping authority through the county map offices.

County geodata representatives draw up and adopt a county geodata plan with activities and projects related to the development and use of spatial data. The county representatives decide which of the plan's actions are to be taken and which representatives will coordinate the implementation. Which basis data will be included in the relevant projects is specified in the municipal FDV-agreements. The county geodata representatives play an essential role in the region's work with "the public map basis".

The county governor offices safeguard the central responsibilities in the counties, and in collaboration with the Geodata Coordinator act as a driving force for increased use of geodata in municipalities, county councils and other regional management.

The municipalities

The municipalities are organised in Geovekst, which is responsible for the establishment, operation, maintenance and availability of the most detailed map data, orthophotos and laser data for the participating municipalities (through the common map database - FKB). This database covers approx. 60% of the country's area. Nine of the largest municipalities cooperate on academic challenges related to maps and Geodata, while five of the municipalities are not included in Geovekst, but have their own agreements for deliveries to Digital Norway.

The following is a summary of the activity in the National Spatial Data Council, the Coordination Group and the underlying trade unions.

1.2.1 National Geodata Advisory Board

The National Spatial Data Advisory Board was appointed by Royal Decree on March 30th 2012. The advisory strengthens cooperation within the National Spatial Data Infrastructure, communicates with the Ministry of Local Government and Modernisation with regards to Norwegian spatial data policy, and advises public authorities that contribute to or use geographical information. The Advisory does not have decision-making powers.

The first Advisory Group had a timespan of three years, which expired in 2015. The current Advisory group is in effect from 2016 until the end of 2019. In 2018, there were some changes to the membership due to retirement or job changes. Members are personally appointed. The following people were members of the National Geodata Advisory Board in 2018:

Position	Member name	Organization
Council leader	Alvhild Hedstein	BAMA
Director General	Anne Cathrine Frøstrup	The Norwegian Mapping Authority
Deputy Director	Bjørn Bjørnstad	Norwegian Environment Agency
Deputy Director	Christine Korme	Abelia
Director	Ellen de Vibe	Oslo municipality, Planning and Building administration
CEO	Geir Hansen	Geodata AS (representing the geomatics branch)
Deputy Director	Gyda Grendstad	State Roads Authority
Councillor	Harald Danielsen	Arendal Municipality
Director	Roar Skålin	Meteorological Institute
Assistant Director	Per Brekke	Directorate for Civil Protection and Emergency
Director	Einar Vik Arset	The Coastal Administration (participated in the November meeting before joining the position in February 2019)
Head of Unit	Mona Høiås Sæther	Trondheim Municipality
CEO	Morten Smelror	Norway's geological survey
Leader	Eric Kelley	The military geographical service
CEO	Jørn Rolfsen	Directorate of Agriculture

The National Geodata Advisory has held three meetings in 2018. Read more about the council in Geonorge. They have dealt with many cases in 2018 and provided the Ministry of Local Government and Modernization with advice on several issues, described in further detail in the minutes.

The National Geodata Strategy was published at a meeting for the Coordination Group on November 1st 2018. The group's leader participated in publication of the strategy, together with two state secretaries from the Ministry of Local Government and Modernization.

1.2.2 The Geographical Information Coordination Group

The Geographical Information coordination group was appointed by the Ministry of the Environment in 2013, now the Ministry of Local Government and Modernization. The group consists of 21 participants who together represent all of the participating parties in Digital Norway. The Coordination Group is the executive body and has decision-making authority for the parties in Digital Norway. The Mapping Authority heads the meetings, and in their role as spatial data coordinator also acts as secretariat.

The Coordination Group safeguards the rights and obligations of the parties in the Digital Norway collaboration. The group communicates and coordinates inputs from the others with interests in the infrastructure and assists the data coordinator in running the collaboration in accordance with current requirements, guidelines and society's needs.

In 2018 the Coordination Group had the following members:

Representative		Agency
Ole-Gunnar Drabløs	Ministry of Local Government and Modernization	State investment department
Per Vallner	County Governor	County Governor of Østfold
Jørn Kristian Undelstvedt	Ministry of Finance	Statistics Norway
Frode Skjævestad	Ministry of Transport	The Norwegian Coastal Authority
Øyvind Martinsen	Ministry of defense	The military geographical service
Mats Berg	Ministry of Justice and Public Security	Police data and material service
Hildegunn Norheim	Ministry of Agriculture and Food	NIBIO
Ingunn Limstrand	Ministry of Climate and Environment	Norwegian Environment Agency
Frank Haugan	Ministry of Trade and Fisheries	Norways geological survey
Bjørn Lytskjold	Ministry of Petroleum and Energy	The Norwegian Water Resources and Energy Directorate
Espen Sveen	Ministry of Transport	State Roads Authority
	Telenor	Telenor
Kristin H. Lind	Energy Norway	The energy sector
Einar Jensen	The Geovekst forum	Norwegian Mapping Authority
(Ingen representant)	Ministry of Education and Research	
Rolf Thore Bekkhus	Large city municipalities	Oslo Municipality
Jorge Sagredo	Ministry of Health and Care Services	Sykehusbygg HFT
Anne Kjersti Briskerud	KS	Kongsvinger Municipality
Kristin Tandberg	KS	Asker Municipality
Fredrik Duvholt	KS/Fylkeskommunene	Vest-Agder County (1 meeting) Troms County (1 meeting)
Erik Perstuen	Head of the Digital Norway Coordination Group	Norwegian Mapping Authority

In addition, heads of the thematic data forums, representatives of the standardisation committee, representatives of the Mapping Authority, and representatives of the spatial data coordinator meet eachother in all meetings.
Three meetings were conducted in the Coordination Group in 2018. Information exchange is an important part of these meetings and is a permanent item on the agenda. This applies to information from the secretariat and not least input and information from the representatives.

Issues dealt with in the coordination group in 2018 included:

- The National Spatial Data Strategy and action plan
- The public basemap - suitability analysis and action plan
- Follow-up of Geonorge
- Information security in Digital Norway
- Raising the quality of the cadastre

The Coordination Group has also been regularly informed about the status of the national mapping programs as well as the parties' deliveries to the public map basis and INSPIRE. All of the unions and working groups of the coordination group have reported back to the coordination group. You can find information about the meetings of the Coordination Group here.

1.2.3 National Geodata Strategy

Report. St. 27 (2015-2016) Digital Agenda for Norway outlines the Government's National Spatial Data Strategy. In 2017 the National Spatial Council and the Coordination Group for Geographical Information jointly presented a proposal for a strategy to the Ministry of Local Government and Modernisation, and on November 1st 2018 it was published. Read more about the strategy and download it from the Parliament's website. The strategic vision is: *Norway must be a leader in the use of geographical information.*

The strategy points to more use of geographical information in society, and the target group for the strategy is both contributors and users of the spatial data infrastructure. It contributes to the realisation of the Digital Agenda, among other things through its focus on user needs and on the sharing and use of data. The strategy is an important contribution to the digitalisation of the public sector, with its emphasis on a common infrastructure and common solutions. The strategy also addresses important societal challenges, across many sectors and legislation.

The strategy process was carried out under the auspices of the Coordination Group for Geographical Information with the National Spatial Council as a supporter. The Coordination Group ensured that input from everyone with interests in the infrastructure was communicated and coordinated. In the strategy work, players from both public administration and the private sector were involved through meetings and consultation processes.

A more detailed description of the strategy

"Everything happens somewhere" was chosen as the slogan for the National spatial data strategy. Norway has a comprehensive and advanced infrastructure for geographical information, which covers many needs in society. The infrastructure of data, common solutions, services, standards and rules for the management, distribution and use of geographical information were developed through the agreement-based cooperation in Digital Norway.

Many users have become completely dependent on access to good geographical information. For social processes such as handling of building permits, for navigation, flood, landslide and other emergency services responses to residential addresses, such access is critical. Increasing amounts of data and opportunities for linking data also mean increased social benefits of geographical information. We often do not reflect over the fact that we use geographic information, as the use has become embedded in virtually all sectors, at all levels and in many of the user solutions we use in everyday life. Systems and data are linked to each other and become part of a comprehensive basis for decision-making. Development of technology is fast moving and society is digitized and utilising data in ever new ways. This development in the use of geographical information represents a significant change since the parliamentary report for Digital Norway was written 15 years ago.

The main goals of the strategy are that we should have:

1. A national knowledge base of geographical information that meets important social needs
2. Common solutions and technology that support effective solutions and that allow new opportunities for use in society
3. A well-functioning system for management, sharing, development and innovation between the users of geospatial information in both the public and private sectors
4. Framework conditions that are predictable and well adapted to the challenges in the digital community.

Within the first three main goals, 20 sub-goals have been defined, while the fourth main objective is to be further investigated by the Ministry of Local Government and Modernisation.

Implementation of the strategy's ambitious goals will require good cooperation and coordination among a number of actors who must take responsibility. In order to achieve the desired overall effects for society, it is crucial that the involved actors base their further efforts in the area on this strategy.

The Coordination Group also received an order from the Ministry of Local Government and Modernisation to prepare a draft action plan for the strategy. It was submitted in June 2018, and the work to revise it began after the publication of the strategy.

1.2.4 Technology Forum

The annual Technology Forum was conducted at Gardermoen airport, in Oslo from November 13th-14th 2018 with a total of 155 participants.

The aim of the Technology Forum is to raise discussion on requirements and recommendations for data and services, and the need for guidance material for implementation. The forum is a meeting place for everyone who works with location-based information, where common solutions to technological challenges relating to location-related infrastructure are discussed. Read more about the Technology Forum at Geonorge.

1.2.5 Thematic data forum

The thematic data forum is a meeting place for mutual exchange of experiences and interactions around thematic data among producers and users represented in Digital Norway. The aim is to secure a supply of thematic data with high quality and a good and coordinated communication of these.

Two meetings were arranged in 2018, on January 23rd and September 25th.

In addition to exchange of information on ongoing work in other national forums, the main focus in 2018 was:
• Follow-up of ongoing projects such as the Fit-for-purpose analysis, GeoLett and the Geodata Strategy.
• Review of several data owners' solutions to safeguard data in national datasets.
• Access to national datasets when downloading from Geonorge, and experience using the Geonorge API.
• Increased focus on content improvement for DOK data from a user perspective - improved map coverage and mapping of local and regional DOK datasets not in the system.

Work in the Thematic Data Forum is rooted in the "Action Plan for Thematic Data in Digital Norway 2016-2018", which was revised in 2019.

Information about the Thematic Data Forum and minutes from the meetings can be found here.

1.2.6 Plan data forum

The Plan data Forum is a meeting place for the parties in Norway's digital collaboration, where issues related to plan information (land use plans according to the Planning and Building Act) as part of the infrastructure are dealt with. The forum will help to ensure that relevant development activities and collaboration solutions are rooted in Norway digitally. Information and competence offers for the parties in Norway's digital collaboration are also included in the forum's mandate.

1.2.7 Plans for 2018-2020

A new plan was adopted by the Coordination Group in October 2017, taking effect from January 1st 2018. Digital Norway partners that benefit from access to updated plan data via common solutions under geonorge.no have joined forces to support the municipalities financially in their work on the setup and operation of geo-synchronised plan data. The Mapping Authority coordinates implementation of the initiative.

The fact that Digital Norway parties will have access to fresh plan data in one place provides opportunities for efficiency for the parties. Examples of this are a project by the Norwegian Water Resources and Energy Directorate (NVE), which will quickly analyse whether a planned area is exposed to avalanches. The municipality will then be notified early in the planning process. The fact that data exists in one place makes it easier to set up user-based search solutions online. Such search solutions can provide major efficiency gains. Examples of this are building application solutions and road and traffic applications on the internet.

For municipalities, delivery of plans to Digital Norway is simpler because it happens automatically by synchronisation, and municipalities can easily gain access to plan maps in neighboring municipalities. The geo-synchronisation mechanism requires high quality plan data. Many municipalities have had to raise the quality, to the benefit of all who use these. The fact that plan data is collected in one place also makes it possible to synchronize further, right into the Digital Norway geoportal. The county governor of Viken, together with Geodata AS and the Mapping Authority worked to test this in 2018. We also want the municipalities to set up geo-synchronisation to encourage collaboration between municipalities.

The goal for the 2018-2020 plan is that Digital Norway's geoportal should be continuously updated for at least 160 municipalities through the use of geo-synchronisation. Partners have the greatest need for access to plans from municipalities with a lot of activity and frequent updating of their plan register. This affects which municipalities are prioritized for supporting digital setup and operation of geo-synchronisation through Digital Norway. Municipalities that do not geo-synchronise will continue to follow the ordinary FDV routines with SOSI file deliveries.

Additional funding to strengthen the implementation program and to ensure synchronisation from more municipalities is provided by the Ministry of Local Government and Modernisation and the Mapping Authority and also from a regional level in 2018.

As of December 31st 2016, there were 162 municipalities that synchronised their plan data. Of these, 65.5 had received support at start-up from Digital Norway funds and 96.5 had received support from the Ministry of Local Government and Modernisation, the Mapping Authority and regional funds. 55 municipalities that started up before 2018 received Digital Norway's support in 2018.

In 2018 the Ministry of Local Government and Modernisation, the Mapping Authority and regional funds were given at start-up to municipalities that fell outside the priorities of Digital Norway. These funds were not transferable until 2018, while Digital Norway's funds are transferable. It was decided to utilize non-transferable funds in order to get geo-synchronisation for as many municipalities as possible. This has meant that many municipalities are now synchronising, but that the share of municipalities with large plan activity

is lower than what Digital Norway wants. In 2019 priority will be given to municipalities with large plan activity. More municipalities were involved than what was planned for, which has led to a smaller consumption of Digital Norway's funds. Municipalities that cooperate with others are supported with 20,000 NOK in start-up, while a single municipality receives 40,000 NOK. Contributions from Digital Norway partners in 2018 totalled 4 450 000 kr, of which 2 188 409 kr has been used and 2 261 591 kr has been transferred to 2019.

Working group plans for consultation

The Plan data forum established a working group to look more closely at challenges in collecting plan status data. Through geo-synchronisation it is for instance not possible to separate several alternative plans when they are a part of the same plan area or to separate plans that have an overlapping extent. Municipalities also have different routines for how they treat the plan status and it is important to ensure that the right plan is synchronised and with all content. The working group proposed new SOSI attributes in SOSI version 5.0 with recommendations for municipalities regarding the handling of plan status which will be submitted to the Ministry of Local Government and Modernisation for better routines via regulations and standards. A final report with the recommendations was prepared in 2019, and the Ministry of Local Government and Modernisation approved the report and recommended practice for the municipalities. New SOSI attributes can be prepared in the 5.0 version.

Strategic work

The Plan Data Forum has worked on input to the Action Plan for the National Spatial Data Strategy. The Digital Norway Plan Data Forum has also examined its own strategy, action plan and whether changes in the forum's mandate should be recorded so that they will be more adapted to the needs of the present and the future.

Guide for the use of Digital Norway's geoportal

In order to make Norway digital area map (NAP) better known and what benefit it can give ND parties access to plan map data from a node, now updated for many municipalities every night during geo-synchronization, a guide has been made. This gives a description of the concept and shows examples of good practical use. The guide has been communicated at various meeting venues.

Meetings

Five meetings were arranged for the Plan Data Forum in 2018: February 15th, June 12th, September 5th, October 30th and November 27th. The meeting on June 12th was open to all Digital Norway partners. Information about the meetings can be found here.

1.2.8 Property Register Forum

There were no meetings in the Property Register Forum in 2018. Admittedly, one meeting was planned however due to few responses it was decided to postpone the meeting until 2019.
You can find information on the Property Register Forum here.

1.2.9 Annual meeting for the Digital Norway cooperation

No annual meeting was held for Digital Norway in 2018.

1.2.10 Expert group for satellite data

The satellite data group was established in the autumn of 2009. The expert group consists of 15 representatives from 11 agencies that use or plan to use satellite data in their management tasks. The group focuses on the need for satellite data for land use planning including coastal areas and looks at the need for infrastructure, central databases and common solutions. The group also has the task of providing advice to the Norwegian Space Center on what is strategically important for Norway in relation to Copernicus. The Mapping Authority is the secretariat for this group, which usually has 2-3 meetings per year.

The Norwegian Space Center has chosen the Meteorological Institute to develop and operate national ground segments for Copernicus data, and data from the Sentinel satellites is now being made available on **satellittdata.no**. In this context, the role of the group is to contribute to the development of solutions according to the needs and requirements of Digital Norway. It is very important that all steps are automated, in order to keep the costs for Digital Norway partners as low as possible. In 2018 a EuroSDR workshop was held in consultation with members of the expert group to look at the best use of Sentinel-2 data and to obtain information from ESA and other national ground segments.

More information on the expert group's work can be found here:
http://www.kartverket.no/geodataarbeid/Geodatasamarbeid-prosjekter/Satellittdata/

1.2.11 Working group for information security in Digital Norway

There has not been any activity in this group for 2018.

1.2.12 Marine/Maritime Working Group

The Marine/Maritime Forum (MMF) has not had any joint activities in 2018. The Mapping Authority has worked with representatives in MMF through the Marine Basemap in the Coastal Zone project and the Marine Sea Area Tool.

This forum is the national focal point that works to provide public administration and marine and maritime industries with access to relevant data and services through the national geoportal. The tasks of the group focus on the following areas:

Sea area management: The Sea Area Tool was an important topic at a conference on the academic basis for updating the plans on May 28th 2019. A lot of work has been done to meet the needs that members of the Professional Forum have had for the Area Tool to be able to create both digitally and on paper, in addition to statistical analyses. Activities have included development, establishment and adaptation of datasets, distribution and map services. Integrated usage of the metadata Catalog from Geonorge.no is a central and valuable service to ensure users have access to relevant documentation for relevant data and services in use. The Norwegian Environment Agency, the Norwegian Coastal Administration (Barentswatch) and the Norwegian Mapping Authority have actively worked for sea area management processes in Norway through the Areal Tool Project. The project collaborates closely with the Professional Forum for Holistic and Ecosystem Based Management of Norwegian Sea Areas, which is a central premise and user group for the work. Twelve agencies have participated in this cooperation thus far.

Coastal zone management: The Mapping Authority, Norway's Geological Survey and the Institute of Marine Research have jointly prepared a proposal for the Government to realise marine basemaps in the coastal zone. In 2018, the Mapping Authority worked on obtaining an overview of the needs of the municipal, county and state administrations in order to facilitate an authoritative data basis for coastal zone management. The Mapping Authority has also been in dialogue with private business actors along the coast to map their needs. Marine basemaps are set as one of the measures in the action plan for the National Spatial Data Strategy.

INSPIRE: Now that there is a good database to meet the needs of marine management and coastal zone management, the time is ripe to begin working on sharing experiences with INSPIRE and DOK.

There have been no meetings in 2018. A meeting will be held in week 43 2019 with election of the leader for MMF. Through work in the projects Marine Sea Area Tool and Marine Basemap in the Coastal Zone, the Mapping Authority has been in contact with most of the participants in MMF.

1.3 Regional organisation

Digital Norway's collaboration includes parties with very different organisation and localisation. It is of utmost importance both that the cooperation works in the individual county, and that there are good interactions between work at national and regional level. Particularly for national parties that are not represented in all counties, it is important to have a uniform organisation and implementation from county to county.

Due to the Mapping Authority's organisation with only 12 county map offices, the parties have in some cases chosen to merge so that two counties operate together. Most counties now have an organization in accordance with the recommended model, but there are still some different variants. The variants are largely introduced for practical reasons in that the work is taken care of in fewer forums.

The most important task for the county geodata committee and the underlying trade unions is the work on preparing the county geodata plan and following up the actual implementation. Planning of projects related to basic geodata, thematic geodata, planning data and other measures respectively, is carried out by the respective specialist committees. The County Geodata Committee deals with a comprehensive plan, which among other things shall contain strategic initiatives related to competence development and focus on facilitation for increased use of data and services. The plan must follow a set national template.

At the end of 2018, there were revised county data sheets for the period 2019-2022 for all counties.
Read more about the regional organisation and county geodata plans.

2 Partner deliveries in Digital Norway

2.1 Deliveries to the public basemap (DOK)

2.1.1 Background

The public basemap (DOK) is public and quality-assured geographical data that is adapted for the municipal planning and construction work. DOK is described in §2-1 of the Planning and Building Act and the associated map and plan regulations. The first list of DOK candidates was published by the Ministry of Local Government and Modernisation on July 1st 2014. The list is reviewed annually. As of January 1st 2019, the DOK candidate list consists of 146 data sets.

Datasets on the list are candidates until the documentation and services are approved to be in accordance with requirements that exist for DOK data (see 2.1.2). The national spatial data coordinator checks the submitted documentation, but it is the Ministry of Local Government and Modernisation who makes the final approval.

2.1.2 Data requirements

To ensure good quality of documentation and proper use of the data, several requirements were set for a dataset to become a DOK candidate. The specific requirements are described on **The Norwegian Mapping Authority's DOK site.**

In addition, datasets must meet the following technical criteria:

Number	Criteria	Requirement
1	Metadata	Metadata in Geonorge
2	Product sheet	Product sheet in Geonorge
3	Presentation rules	Presentation rules in Geonorge, SLD
4	Product specification	Specification with UML model
5	Data as per specification	File in SOSI format and GML format Object types, properties and codes according to specification Coordinate system etc
6	Viewing service	WMS service for the dataset
7	Downloading service	WFS or atom feed, Geonorge API

2.1.3 Status of the data

It usually takes up to one year's time for a dataset to go from candidate to approved dataset. 97 datasets were approved as of January 1st 2019.

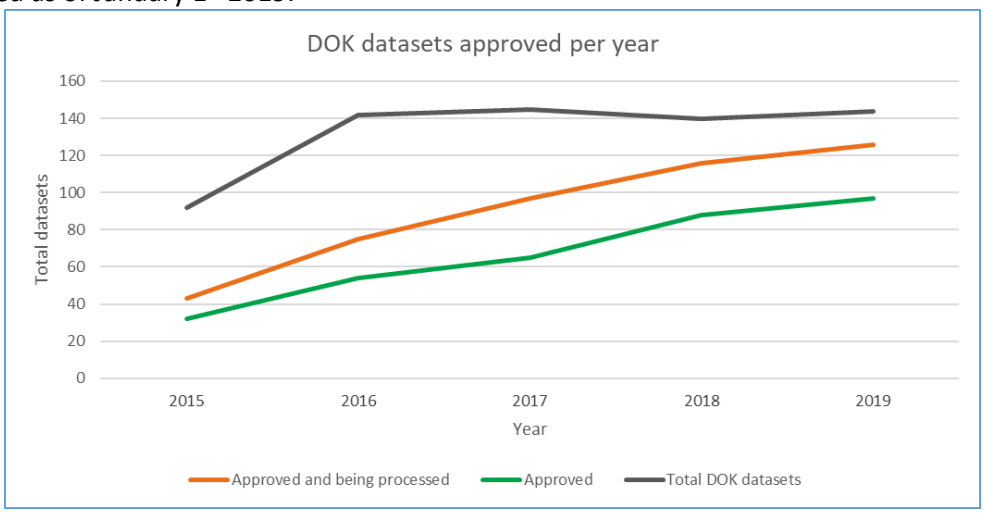


Figure: Status of DOK data per January 1st, 2019.

2.1.4 The municipalities' confirmation of DOK

Each year the municipalities choose which datasets will be utilised to support work related to the Planning and Building Act. These can be datasets that are on the national DOK list, other national datasets or local or regional datasets that the municipality wants to use. In 2018, approximately 230 municipalities are DOK in Geonorge. This has been done in collaboration with the county map offices.

Here is an overview of the municipalities that have confirmed
Here is an overview of the coverage per dataset from each municipality that has confirmed

2.1.5 Technical challenges

There are still major challenges in getting national agencies to document data according to the requirements and further supply data according to documented standards. Establishing UML models and product specifications is resource-intensive, although the spatial data coordinator assists agencies in this effort. SOSI realisation and download services are requirements that are difficult to fulfil.

Datasets are documented in Geonorge.no and most agencies provide data via the portal and underlying services. Some agencies are delayed in offering their datasets via Geonorge.no, which prevents full utilisation of DOK. Parallel distribution is also practised - datasets are supplied both via Geonorge.no and from the specialist agencies from other solutions. This gives users uncertainty about which datasets are "authoritative data".

2.1.6 Plan for improvement of DOK data

The Ministry of Local Government and Modernisation asked the Mapping Authority to organise quality enhancement and other improvement measures related to the DOK datasets to accommodate findings of a suitability analysis done in 2017. The agencies responsible for the datasets were challenged to implement changes.

The agencies' responses are summarised in this report:
https://www.kartverket.no/globalassets/geodataarbeid/det-offentlige-kartgrunnlaget/dok-egnethet-tiltaksplan-2018-2020_rapport.pdf.

The improvement plan with measures for the DOK datasets is updated annually.
https://www.kartverket.no/globalassets/geodataarbeid/det-offentlige-kartgrunnlaget/dok-egnethet-tiltaksplan-2018-2020_etatsvise-planer.pdf

2.2 Follow up of the Geodata Law and Inspire

The Act on Infrastructure for Geographical Information entered into force in part from September 3rd 2010. Remaining provisions in the Geodata Act on public spatial data services and harmonisation, collaboration ability and documentation, cf. Sections 5 and 8 of the Geodata Act, were implemented on May 1st 2012. The geodata regulations came into force on August 8th 2012. Several additions have been introduced that incorporate various regulations from the EU: in 2014, 2016, 2017 and 2018. The Act ensures access to geodata nationally and across national borders, and further development is required for operation of the national spatial data infrastructure.

The Act also implements the EU directive on the establishment of an infrastructure for geographical information in the European Community (INSPIRE). The directive requires that Norway must establish and operate a network of electronic services for searching, viewing, downloading, transforming and using geodata.

2.2.1 Geographical and thematic scope

The Geodata Act applies to specified geodata in electronic form and associated spatial data services that relate to Norwegian land and sea territory.

The scope of the Act is limited thematically to: Themes as set out in Appendices I, II and III to the INSPIRE Directive and topics covered by the Planning and Building Act section 2-1 on the public map basis and § 2-2 on the municipal plan register. Agencies that have data covered by this law are responsible for providing and facilitating data. The Mapping Authority is responsible for following up and provides guidance for the agencies.

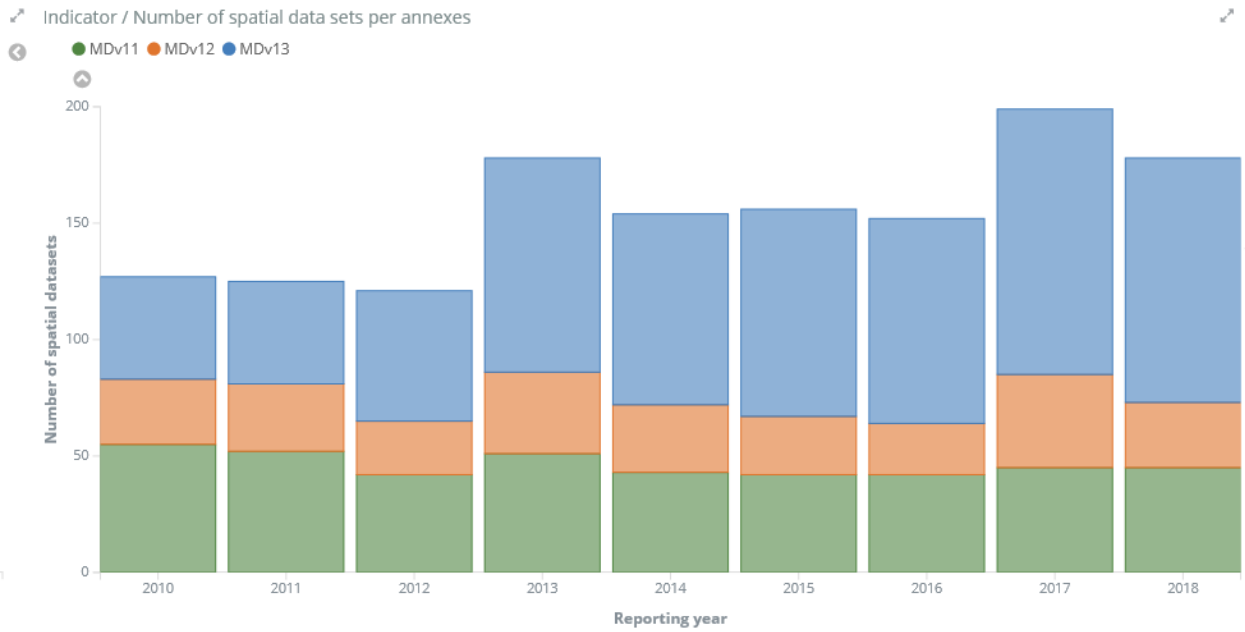
The Act ensures that data becomes available in a public form so that it covers the needs for maps and geographical information of public administration and time critical functions in society.

2.2.2 Status of partner deliveries

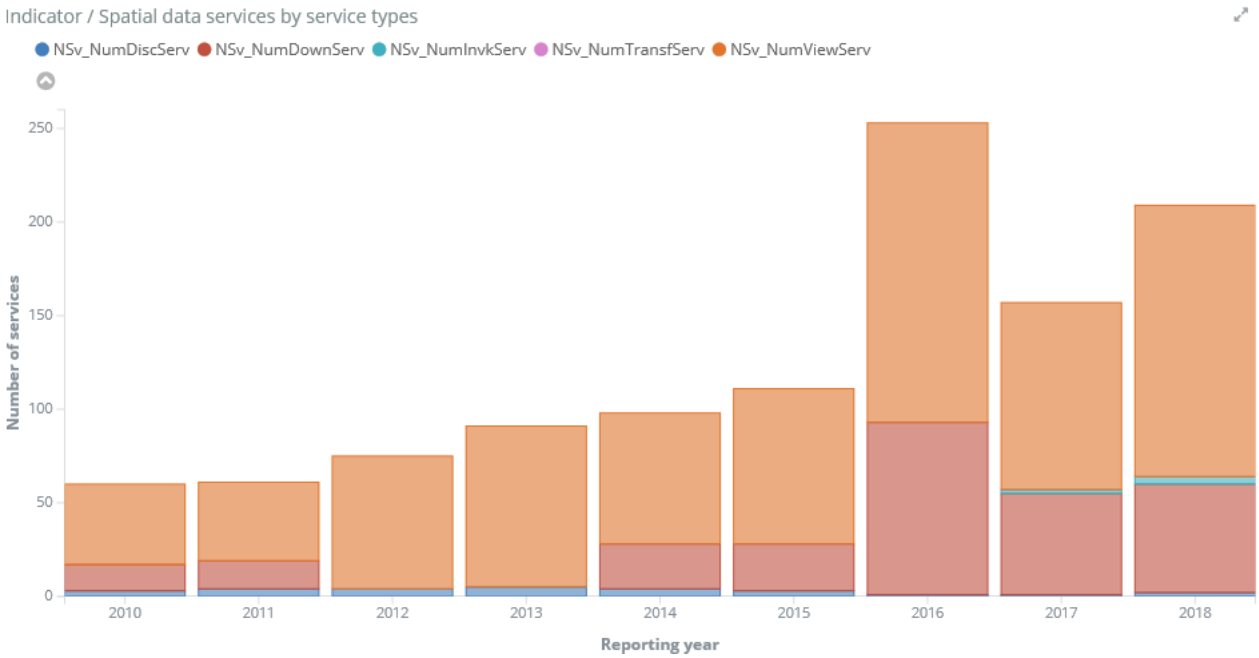
The Geodata Act and INSPIRE set deadlines for various deliveries and solutions from the partners in Digital Norway. It is a duty to deliver existing data in the form in which they are available. From 2013, there has been a requirement for delivery of metadata for attachments (Annexes I and II). The following requirements and deadlines are available;

- 2014 Metadata requirements
- 2014 Metadata service
- 2014 viewing service requirements (wms / wmts)
- 2015 Download service (wfs / atom) Appendices I and II
- 2016 Download service (wfs / atom) Annex III
- 2020 Harmonized data - Inspire Annex I
- 2023 harmonized data - Inspire Annexes II and III

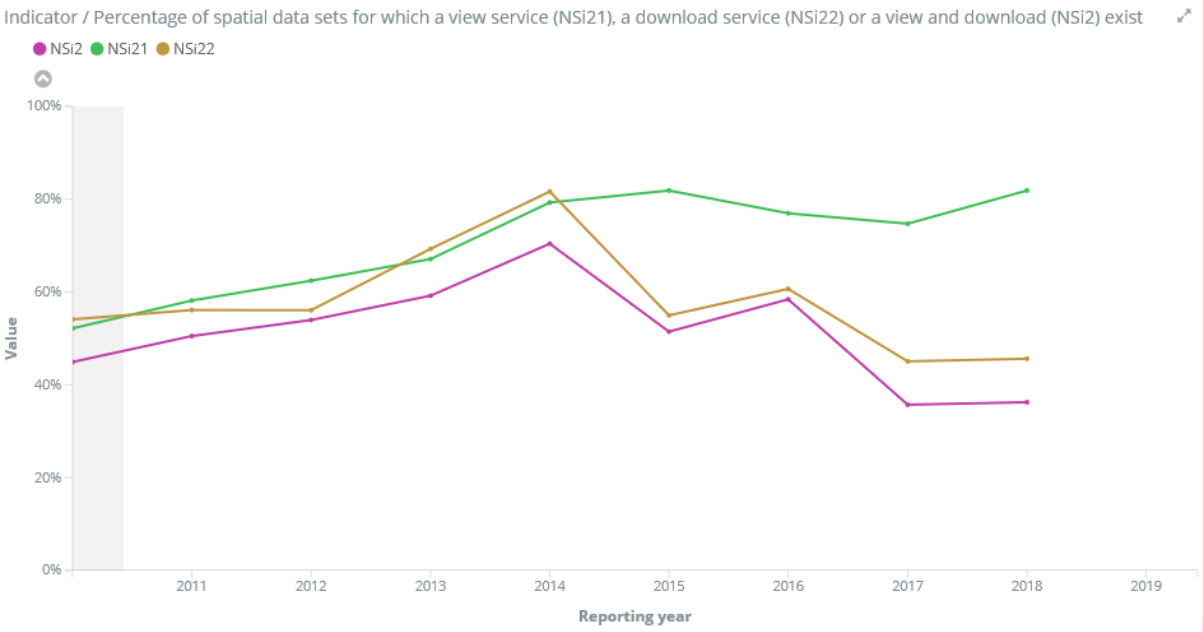
In 2018 Digital Norway has made 182 datasets available as Inspire data sets. The national agencies have identified these datasets in relation to the thematic and geographical scope of the law. Apart from the harmonization requirement, most other deadlines have expired. There are different situations when it comes to delivering according to the requirements. There is a national action plan for the realization of Inspire in the period 2017-2023. Many agencies are interested in sharing data and metadata, view and download services. However, the interest in transforming data into European harmonized data structures has been weak, because it is resource-intensive and because the utility value is viewed as limited. The requirements for harmonisation have otherwise not expired, and the requirements come into force in 2020 and 2023 for different groups of data.



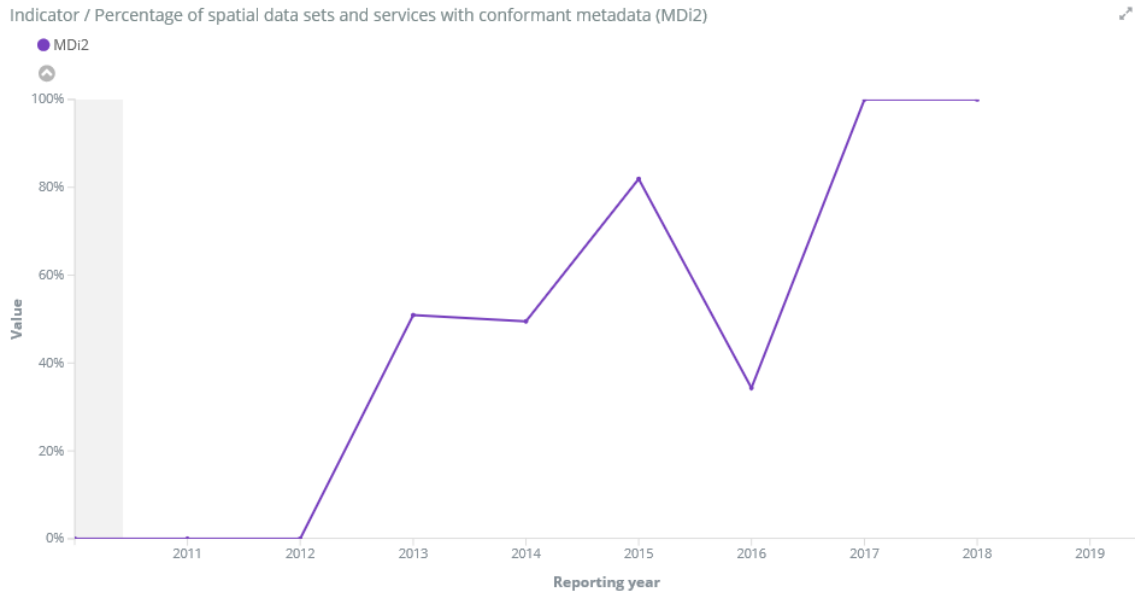
The Norwegian geographic infrastructure has broad representation from similar sectors. Many agencies are active and offer sector-specific data. This explains the high proportion of environmental and subject issues as annex III data (blue).



In general, we have many good viewing services (WMS / WMTS) in Norway (light brown). Some services have a few maps, others can have over 100 map layers. The access to services is very good, with good documentation through Geonorge.no. Sharing of download services (WFS, Atom Feed, etc.) has increased in the last 3 years. Norway has a central metadata / search service (CSW catalog service web), which distributes all metadata from all datasets and services documented in the national geoportal. Metadata information is provided further (through harvesting) to other European and national portals, eg. Inspire Geoportal and the EU's portal for open data.



About 80% of all datasets have associated viewing services, while about 50% of the datasets have associated download services (WFS, Atom Feed and Geonorge.no download API). Work is underway to get a more complete offer of download services.



The situation regarding metadata has improved significantly in recent years. If one looks at how good the data is in relation to technical requirements (conformity) then we are now close to 100%. There has been a special focus on improving the technical structure for metadata and metadata services through courses, workshops and close follow-up of partner agencies.

3 The national geoportal GEONORGE.NO

Geonorge.no as a national solution has been around for almost 15 years and has served as a metadata portal with documentation and display of data and services. Work on developing a new and better geoportal with new common components and new functions has been ongoing since 2014.

Geonorge.no is increasingly used by both data providers and computer users. New features, new modules and an ever-increasing set of data and services make Geonorge increasingly attractive.

Several improvements have been made both in 2018 both in development and design. The biggest ones are:

- Improved search functionality. Can now search both in the map directory and articles in Geonorge.no
- Metadata and content display: Continuous improvement of the quality of metadata

- Map Solution
  - Integration between map client and map directory
  - Integration of maps in metadata display is done by municipal and grid-based coverage maps

- Download Solution
  - Substantially greater supply of data through download solution, eg. FKB and all Mapping data
  - Download API implemented at agencies

- Registers
  - The object directory has improved and is now more intuitive to use
  - Report function for generating INSPIRE report

- Model-based distribution
  - Large increase in model-based distributions. 45 datasets where several of these have also generated wfs and wms services

- Authorisation and authentication
  - GeoID is implemented through My page (a personalised page in Geonorge.no)
  - Newly developed BAAT api for authorisation on My page

- Information and training: 7 webinars are held with the following theme:
  - Get to know Geonorge.no better
  - Review of the metadata editor
  - Downloading map data
  - How to create and deliver digital cartography
  - Distribution Solutions
  - How to use Geonorge.no in QGIS
  - Geonorge.no for the municipality

Annex: Yearly costs and returns

National partners	Annual cost 2018
Statistics Norway	512 696
Norwegian Armed Forces	2 641 253
Norwegian Directorate for Civil Protection (D	768 013
Norwegian Veterinary Institute	161 532
Directorate for Cultural Heritage	577 961
Geological Survey of Norway	332 362
The Norwegian Water Resources and Energy I	925 044
Norwegian Public Roads Administration	3 017 898
Avinor	669 962
Bane NOR	970 333
County Governor's Offices via Ministry of Loca	3 042 045
Telenor	1 318 345
The Norwegian Coastal Administration	793 905
Statskog SF	203 740
Norwegian Food Safety Authority	305 116
Norwegian Institute for Nature Research (NIN	422 436
Institute of Marine Research	136 370
The Court Administration of Norway, unit for I	1 150 240
The Norwegian Institute for Cultural Heritage	340 865
Norwegian Biodiversity Information Centre	301 740
Statnett SF	1 371 556
The Norwegian Institute for Water Research (	381 836
Education sector	-
Directorate of Fisheries	478 684
Regional health authorities	1 054 960
Sami Parliament	79 860
Statsbygg	1 329 439
Statkraft Energy	1 101 460
Norwegian Trekking Association	272 740
Finnmarks property (FeFo)	44 702
The Norwegian Meteorological Institute	281 540
Ministries	1 185 182
The Norwegian Police	3 240 284
Norwegian Communications Authority	301 740
Norwegian Broadcasting Corporation (NRK)	416 740
Norwegian Environment Agency	1 344 197
Norwegian Agriculture Agency	188 306
Norwegian Polar Institute	-
Directorate for Building Quality	296 295
Norwegian Institute of Bioeconomy Research	334 586
Nye Veier (4 months)	233 592
The Directorate for Minerals Management	348 740
Norwegian Railway Directorate	272 740
The Norwegian Church Endowment (Ovf)	330 740
Norwegian Mapping Authority	386 760

Annual costs divided between partner types

	2018	2017	2016	2015	2014
National partners	33 868 535	32 299 741	31 979 778	31 829 371	35 041 192
Municipalities	4 021 250	3 926 259	4 068 248	4 717 668	5 724 467
Energy companies	3 725 168	3 209 904	3 155 678	3 211 767	3 531 518
Counties	3 344 299	2 966 752	2 890 052	2 881 642	3 045 955
Sum	**44 959 250**	**42 402 655**	**42 093 756**	**42 640 448**	**47 343 132**

Returns to rights holders

	2018	2017	2016	2015	2014
Norgeibilder.no	1 343 008	1 387 389	1 410 967	1 419 135	1 057 491
Geovekst	16 196 380	16 634 129	16 612 394	16 503 548	15 853 739
Other municipalitie	6 864 707	7 405 882	7 286 155	7 190 175	6 787 311
Plan	4 403 202	2 128 841	1 919 092	1 647 021	1 296 499
Norwegian Mappin	10 320 907	10 336 703	10 361 022	11 341 816	17 079 584
Norwegian Polar In	-	-	-	-	746 044
Aerial photography	5 831 045	4 509 711	4 504 126	4 538 753	4 522 463
Sum	**44 959 250**	**42 402 655**	**42 093 756**	**42 640 448**	**47 343 132**

* Includes FKB, orthophoto and plan data

Annual cost returned to rights holders in 2018

	All	National	Local	Other municipalities
Norgeibilder.no	1 343 008	991 185	339 558	12 265
Geovekst	16 196 380	14 879 444	1 316 936	
Other municipalitie	6 864 707	6 033 114	831 593	
Plan including othe	4 403 202	3 366 762	1 036 440	
Norwegian Mappin	2 275 096	1 104 571	1 170 525	
Norwegian Mappin	8 045 811	3 421 528	4 438 783	185 500
Aerial photography	5 831 045	4 071 929	1 697 792	61 325
TOTAL	**44 959 250**	**33 868 533**	**10 831 627**	**259 090**