Task 3.1a Asset Management: Template Questionnaire

WP3 Investment Planning and Asset Management

Norway
Norwegian Water Resources and Energy Directorate
Camilla A. Nestegard

Interreg Programme: Flood infrastructure Asset management & Investment in Renovation, adaptation, optimization and maintenance

Asset management tools and approaches within the North Sea Region2. Part A National context - Norway

Question 2.1: Context within which asset management takes place

2.1a – Roles and responsibilities

Organization	Interest	Role	Responsibility
National government			
Ministry of Petroleum and Energy	Maintain an appropriate level of national safety against flooding (and landslides)	Political and societal objectives. Prioritizing areas that have experienced large floods.	Funding Policy
Ministry of Local Government and Modernisation, Ministry of Climate and Environment, The directorate for building quality		Regulatory/ legal framework Set what is considered an appropriate standard (statutory safety level, laid down in legislation) Set regulatory framework	
The Norwegian Water Resources and Energy Directorate	Protection of residents towards flooding according to set safety levels	Operational flood management: accomplishing the prescribed safety by constructing and managing flood protection structures of national importance. This includes including response, recovery and mitigation in larger floods. The directorate has five regional offices, collaborating closely with the municipalities.	Provide financial support and expert guidance to municipalities. NVE administers a comprehensive flood management system that includes guidelines and expert guidance in land use planning, planning and financial assistance for building physical flood protection works such as levees and embankments, a flood warning system, mapping programs for flood inundation and an emergency preparedness system. Funding: Model 1: NVE takes responsibility for planning

			and building flood protective measures on behalf of the municipalities. Model 2: Subsidy scheme, where the Municipality takes responsibility for planning and building protective measures. In both cases, NVE will finance up to 80% of the cost.
Regional government			
County (county authority)		Permitting	Responsible for spatial planning on regional scale, legal framework Planning and Building Act
Local government			
Municipalities	Local integrated development	Permitting	Responsible for spatial planning on local scale Responsible for consideration of hazards in building matters and building permits. Responsibility for their own residents, considering risk and hazard to existing buildings and property, as well as giving guidance and support.
Private owners			
Private owners (of both land and buildings)		Owner of property and buildings	According to Meld.St 15*, individual and owners, responsibility to protect own property and buildings, and activity/sports etc when making use of areas that may be hazardous.

**Meld.St 15- White Paper No. 15 2011-2012 Living with natural hazard- flooding and landslides. By the legislative government branch Stortinget.*

Flood protection is a societal responsibility, where municipalities are responsible for its inhabitants according to the Natural Hazards Insurance Act. NVE may contribute with funding, mapping and expert guidance. In addtition, NVE makes sure that the acts and regulations considering water and rivers are followed, and have a coordinating role in general.

2.1b - Relevant policy, plans and codes

Policy or plan	Level (international;/European/National)	Description	Influence on asset management
Policies			
Floods Directive	European		The Floods Directive is not implemented I Norway, but a few pilots on Flood Risk Management Plans are under progress.
The Planning and Building Act	National	Ensuring that planning promotes civil protection and by reducing risk for loss of lives, damage to health, environment and infrastructure, property etc.	
TEK 10	National	Regulations on technical requirements for building works.	Quantified legal claims to meet safety standards in use of land and in land use planning and property to be developed
The Water Regulation/ Water framework directive		Provide a framework for setting environmental objectives that ensure integrated protection and sustainable use of the water bodies. Ensure the preparation and adoption of River Basin Management Plans (RBMPs) with corresponding Programs of Measures (PoMs), aiming at reaching the environmental objectives, and ensuring that the necessary knowledge base is provided.	According to the Planning and Building Act, River Basin Management Plans (RBMPs) for each district are considered regional plans, which must be adopted by the County Council, and approved by the National Government.
Water Resources Act		Act relating to river systems and groundwater. Ensure public responsible use and management of rivers/watercourses and groundwater	
Civil Protection Act		Protect lives, health and material goods	
Plans			
Public administration plans		Public administration plans for specific rivers or catchment areas	
Codes			
Eurocodes	European	Technical annexes: e.g. geotechnical codes, reliability analysis	Some of the technical eurocodes are incorporated in Norwegian codes.

Guides			
Guidelines for flood and landslide risk management in land use planning	National	A stepwise procedure for assessing the hazards has been designed to fit with the planning process and levels typical for a local municipality.	This procedure ensures that areas with a potential hazard are identified at an early stage in the planning process giving municipalities more reliable and predictable land use plans.

2.1c Planning timescales of interest

Time scale	Associated time horizon (in years)	What AM decisions take place over this timescale?	Who leads these decisions?
Medium term planning			
National safety standards		Sets the safety standards to be provided	Legislative branch
Regional planning strategies and master plans, and municipal master plans, regarding land use and new buildings.	Every four years plans are revised, although in the context of a longer time horizon	None directly related to physical assets	Counties Municipalities
Long term mapping plans, including flood inundation maps	5-10 year plans 3-5 years	Strategic prioritization, based on results from mapping	NVE
Long term funding plan		Strategic prioritization and focus, related to cost/benefit	NVE
Short term plans			
Annual budget and funding plan	Annually	Strategic prioritization and focus, related to cost/benefit Funding based on emergencies, and immediate needs	NVE

2.1d - Requirements of performance

Discuss what kind of performance requirements have to be met, who defines these and how these are determined.

- **Required criteria (i.e.** What criteria must be met regardless of cost)

The legal safety standard must be met. According the The Planning and Building Act and TEK 10, there are three safety classes for floods, classified as F1 - floods with a 1/20 annual occurrence probability, F2 - 1/200 annual occurrence probability and F3- 1/1000 annual occurrence probability. This legal framework applies to the placement and construction of new buildings, ranging from garages to

hospitals. Areas and buildings with higher vulnerability, such as e.g nursing homes, must meet the criteria of safety class F3.

With regard to planning and building protection measures against floods for existing buildings and inhabited areas, the most common approach is 1/200 annual occurrence of a flood, plus an addition due to climate change that is differentiated across the water systems.
There is no set legal standard for protection measures for existing buildings, and the safety level is determined based on cost/benefit analysis and other relevant factors.

2.1e Governance and other aspects

Funding

- Who pays, the asset management plan to be developed, for maintenance, capital investment and how secure is this funding stream into the future?

NVE manages å yearly budget granted from The Ministry of Petroleum and Energy to fund physical assets in flood protection, normally up to 80% of the cost. The funding stream into the future is quite secure, although budgets may vary from year to year.
There is no existing national asset management plan, as the municipalities and owners are responsible for maintenance of their assets.

Question 2.2: Challenges and barriers to be overcome

Questions 2.2a to 2.2d seek to tease out the issues in our understanding of asset performance over time and the availability of supporting data.

2.2a Barriers in the understanding of the current system

The assets owner's role is somewhat unclear

In general it is the asset owners that are responsible for asset management, inspection, maintenance and revenue. It is the municipalities that mainly are the owners of larger assets, whereas smaller assets are mainly privately owned. However, it is not always clear who is responsible for maintenance, due to a lack of a central register of all physical assets and protection measures.
The NVE may support and fund damages on assets, caused by floods.

2.2b Future change

We would like to understand how future change is accounted for. In particular:

In climate

What guidance is provided on climate change:

Norway needs to adapt to a changing climate, we have experienced an increase in temperature, and we have already observed an unambiguous increase in what we consider as extreme rainfall by 35 percent the last 30 years. Consequences of this are:

- more rain floods
- sea level rise
- flooding in urban areas caused by storm water runoff

It is expected that the majority of costs related to climate change and flooding is tied to storm water runoff in urban areas, but the responsibility for these kinds of incidents is not legally placed with a national institution at this point. However, this is under discussion, and it is possible that NVE will be the responsible authority.

In addition, there seems to be a change in flood patterns from larger floods in the big rivers and waterfalls in rural areas, to rapid floods in shorter and steeper rivers/creeks, often with mass transport, in urban (and rural) areas, that cause large damage to property and infrastructure.

Land use planning is a key tool in climate change adaptation- preventing that new buildings and infrastructure are built in risk areas.

For rivers with an expected increase in runoff by more than 20%, it is recommended to take this into account in both land use planning and protection measures planning.

In socio-economics

- Population growth – Yes/no

  Norway is quite sparsely populated with approximately 5 million inhabitants, and a large part of the population living in rural areas. One of the main challenges lies within increased urbanization and meeting challenges of flooding in urban areas caused by storm water runoff

2.2c Funding barriers

Everyone has a finite pot of money – but is the structure of funding or payment a barrier to optimal / best asset management (compensation for example).

In Norway maintenance has to be financed by the asset owner, though reinforcement may be financed by the NVE, particularly with regard to damaging floods.
Therefore, the municipalities economic situation is an important factor in asset management.

2.2d How successful is asset management

Is it known whether the asset management is being delivered successfully?

It is the asset owners, in main the municipalities, that are responsible for maintenance of the physical assets.
See 2.2 a for further details.

Question 2.3: Overview of tools and data used (where this is known)

Specific challenges and gaps in understanding
What are you particularly grappling with

2.3b Deterioration

With and without management….

The deterioration of assets is not exactly known. It should managed by inspection and monitoring, but we do not have a complete overview of deterioration as it is the asset owners that are responsible for this. However, this is an important focal area for NVE.

Question 2.4: Decision process

The following question explore the aspects that shape the choices made.

2.4a Investment planning and prioritization

The investments in flood protection measures is mainly prioritized by risk and cost/benefit, in a yearly process. NVE has a newly developed cost/benefit tool, that also allows considering the climate change effect on floods when prioritizing between different measures.

2.4b Social justice

How are the three principles of justice considered:

- Equality – Are all citizens treated equally in the FRM process? If no, why not? If so, how is this ensured?

  Areas with the highest risk and societal cost/benefit calculations are prioritized.

- Are the most vulnerable members of society prioritized? If no, why not? If so, how is this ensured?

  Public buildings like schools and nursing homes is a parameter in the total assessment of a flood protection plan.

- Utility – Is it a required to ensure the best return for each euro spent? If no, why not? If so, how is this ensured?

  A cost/benefit analysis is part of the basis for prioritizing, but not the sole component.