



Floods Directive

The Floods Directive establishes a national and international framework for the assessment and management of flood risks aimed at the reduction of the trans-national adverse consequences for human health, the environment, cultural heritage and economic activity.

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1. Introduction

The Floods Directive ([DIRECTIVE 2007/60/EC](#)) establishes a national and international framework for the assessment and management of flood risks aimed at the reduction of the trans-national adverse consequences for human health, the environment, cultural heritage and economic activity (Article 1 of the Floods Directive). The Floods Directive also offers citizens, businesses and governments a clear overall understanding of possible flood risks (vulnerable areas and potential damage), the objectives and measures in place to reduce or control the risks and the order in which the designated response teams will implement the measures (Time for flood protection, 2011, p43).

This European Directive came into effect in 2007. In the Netherlands, the Floods Directive is regarded as an important legal instrument for coordinating objectives and measures pertaining to mitigating flood risk with the catchment partners and/or neighboring countries.



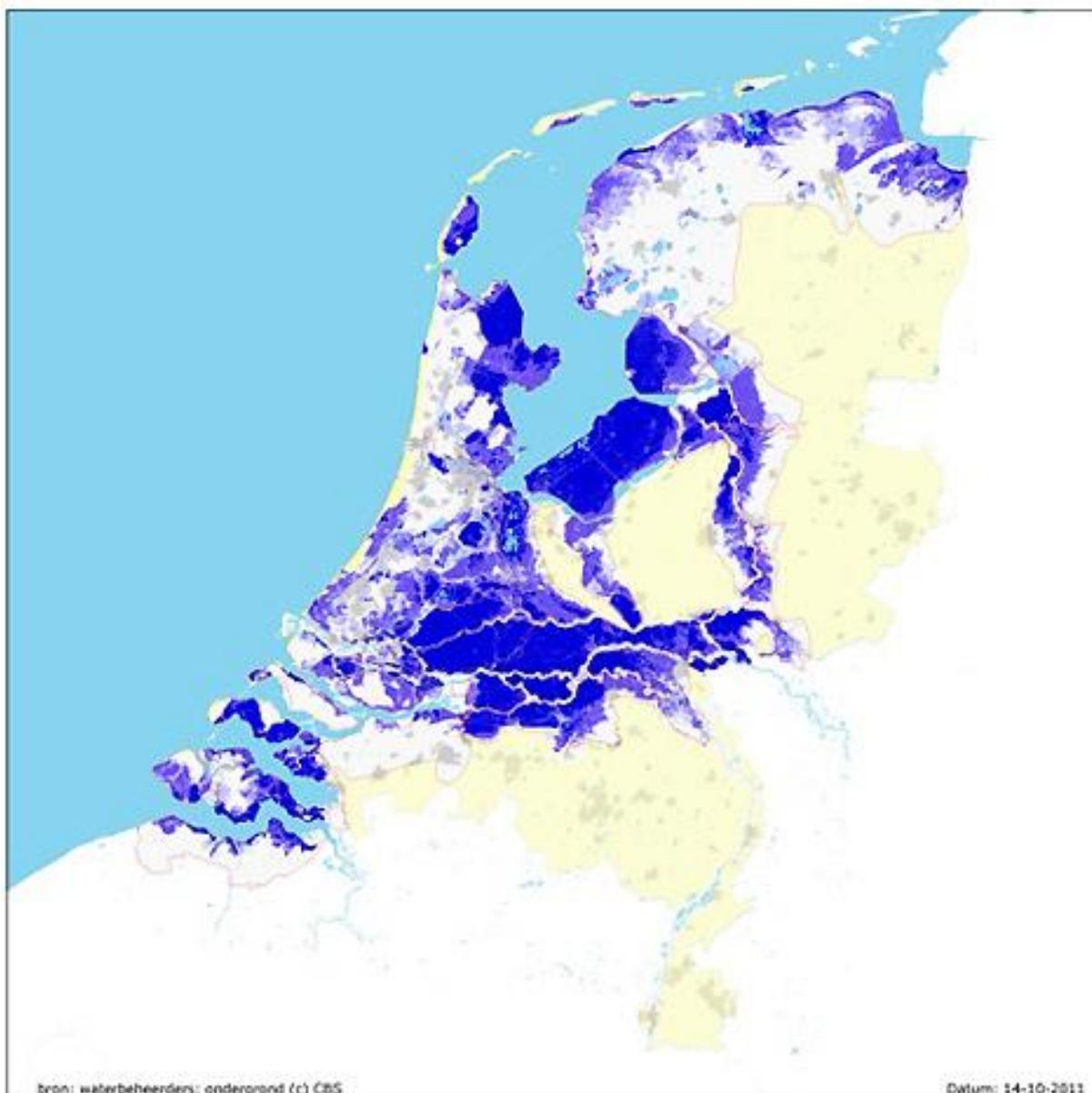
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The Floods Directive is a process directive and contains no quantified objectives and measures. It therefore has no direct impact on the safety standards. The Floods Directive maps and plans are reviewed every six years in a cycle coordinated with the WFD implementation cycle. However, the Floods Directive obligates European Member States to produce the following items based on a number of substantive and procedural requirements:

1. Preliminary Flood Risk Assessment (PFRA) (2011)

The aim of the preliminary flood risk assessment is to identify areas in which potential significant flood risks exist or can be expected to arise in the future based on available or readily derivable information. The Netherlands has not conducted the preliminary flood risk assessment, thereby relying on the discretionary provision of Article 13(1b) of the Floods Directive, which

Maximale waterdiepte (binnendijks) bij overstromingen vanuit hoofdwateren

**Legenda**

ondiep (< 0,5 m)	Dijkringen
diep (0,5 - 2 m)	hoge gronden
zeer diep (> 2 m)	bebouwing

0 50 km

provides that Member States may decide not to undertake the preliminary flood risk assessment for those areas where they have decided before 22

December 2010 to prepare flood hazard and flood risk maps.

2. Flood hazard and flood risk maps (production deadline 22 December 2013)

Flood hazard and flood risk maps are designed to raise awareness among the public and the (local) authorities of the nature and extent of flood risks and provide information for determining an approach to managing the risks. The Floods Directive sets out the requirements in terms of the types and contents of the maps.

3. Flood risk management plans (FRMPs) (development deadline 22 December 2015)

The flood risk management plans include appropriate objectives and measures for managing flood risks. The Floods Directive identifies the issues that should be addressed in the plan.

In the Netherlands, water safety is extensively incorporated into policy and implementation plans. The Netherlands has therefore chosen a more inventory and structure-based path than other Member States, looking to information that is already available and using existing policy plans that address prevention, protection and preparedness. Although an inventory-based approach has been chosen for the implementation of the Floods Directive, it still offers much 'new' material. The maps produced for the Floods Directive, for instance, are new and can help to formulate evacuation plans, spatial plans or for example, the Delta Programme of the Central Government. This will also result in the first structured collection providing an overview of the different policy areas namely prevention, protection and preparedness.

2. Related topics and Delta Facts

Keywords: policy, directive, flood risk assessment, flood hazard maps, flood risk maps, flood risk management plans, EU standard

Delta facts: [Critical infrastructure](#)

3. Multilayer safety strategy

(1 Prevention, 2 Spatial planning, 3 Crisis management)

The Floods Directive addresses all layers of the Multilayer Safety Strategy from the National Water Plan (NWP), particularly through the flood risk management plans which specifically focus on prevention, protection and preparedness.

It is important to note that the definitions for the three layers defined in the Multilayer Safety Strategy do not exactly match the definitions used in the Floods Directive. The table below shows the definitions for the three layers in the NWP and the Floods Directive side by side.

Multilayer Safety Strategy	Floods Directive
Prevention preventing a flood disaster through interventions in the water system or the construction/maintenance of flood defences.	Protection taking measures, both structural and non-structural, to reduce the likelihood of floods and/or the impact of floods in a specific location
Spatial planning Risk-informed spatial planning and measures that can reduce the extent of damage, the number of casualties and social disruption	Prevention preventing damage caused by floods by avoiding construction of houses and industries in present and future flood-prone areas
Crisis management Good (organisational) preparation for dealing efficiently with a possible flood disaster in order to reduce casualties and damage	Emergency response Developing emergency response plans (and related organisational and technical measures) in case of a flood event. Preparedness Providing instructions and a code of conduct to the public (businesses/institutes) on what to do in the event of flooding. Recovery and lessons learned Returning to normal conditions as soon as possible and mitigating both the social and economic impacts on the affected population.

4. Schematic

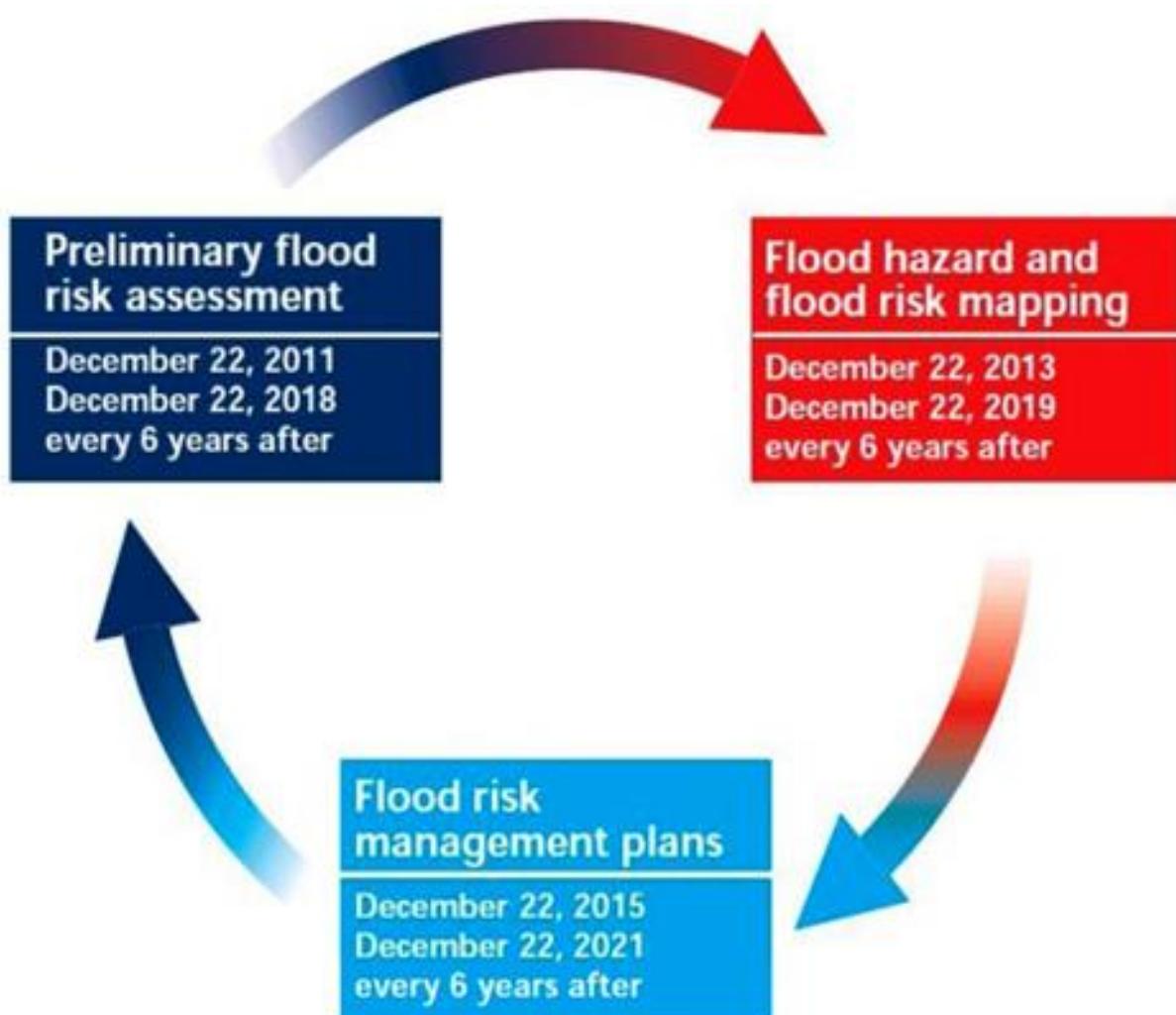
Planning cycle of the Floods Directive

The diagram below shows the Floods Directive planning cycle. The maps and plans are updated every six years.

Preliminary flood risk assessment (PFRA)

Flood hazard and flood risk maps

Flood risk management plans (FRMP)



Source: Floods Directive [Action Plan \(2010\)](#)

In addition to the above products that are compulsory under the Floods Directive, the Directive also defines a number of binding regulations which must be reflected in the development of these maps, the flood risk management plans and implementation of objectives and measures:

- **catchment basin approach:** flood risks are to be considered for the entire catchment basin;
- **safety chain:** measures must address the reduction of risks, reducing probability and/or consequences, crisis management and aftercare (prevention, protection and preparedness);
- **risk approach:** objectives and measures are based on an assessment of the flood probability and the potential consequences of a flood event;

- **sustainability:** the flood risk assessment and the preparation of the flood risk management plans should take into account other EU directives and the consequences of climate change;
- **solidarity or non-transference of risk:** Member States should refrain from measures that would increase the risk of flooding in other Member States, unless these measures have been agreed upon among the Member States;

Lastly, two process requirements are in place:

- **public engagement:** stakeholders are actively engaged in the development, assessment and adjustment of the FRMPs. Member States will make the PFRAs, flood hazard and flood risk maps and the FRMPs available to the public ([Action Plan](#), 2010, p7).
- **harmonisation with the Water Framework Directive (WFD):** efficient use of existing structures in the WFD, which aligns with the Floods Directive in terms of catchment basin approach, see governance.

5. Technical specifications

n/a

6. Governance

The following parties are involved with the Floods Directive:

Scale	Party	Role
International level	European Commission	Manages the Directive and is responsible for implementation and reviewing of the Directive by Member States
	Germany, Belgium, England and France - as partners of the Netherlands in the International River Commissions	Responsible for mandatory international coordination of water safety
National level	Ministry of Infrastructure and the Environment	Ultimately responsible for implementation and reporting to Brussels
	Department of Waterways and Public Works	Responsible for implementation and reporting to Brussels
	Ministry of Security and Justice	Liaison on behalf of the safety regions
	Inspectorate for Transport, Public Works and Water Management	Responsible for review of policies and regulations
	Delta Commissioner	Involved with climate change
Local level	Water Boards (UvW)	Responsible for providing information about primary and secondary barriers and regional flood simulation and the like

	Provinces (IPO)	1. Coordination at regional level; 2. Management of flood risk maps; 3. Responsible for providing information about primary and secondary barriers and regional flood simulation and the like
	Association of Dutch River Municipalities	Provide information about secondary barriers, emergency management plans at safety region level
	Safety regions	Provide information primarily about emergency management plans

Coordination of flood hazard and flood risk maps

The maps are produced for areas at potential and/or significant flood risk from main and regional rivers. They are made for both unprotected and protected (by standardised barriers) areas at risk of flooding. Per the Floods Directive requirements and consultation with potential users, the working group Implementation of the Floods Directive Maps (IEUFD Maps) has advised what information should be provided on the maps. It includes maximum water depths, flow velocity (if applicable), arrival time of first water and sources of flooding. The water managers and provincial authorities are primarily responsible for creating and/or providing the basic information for the hazard maps. International coordination about the maps is done in the International River Commissions ([Action Plan](#), 2010, p13).

Coordination of the FRMPs

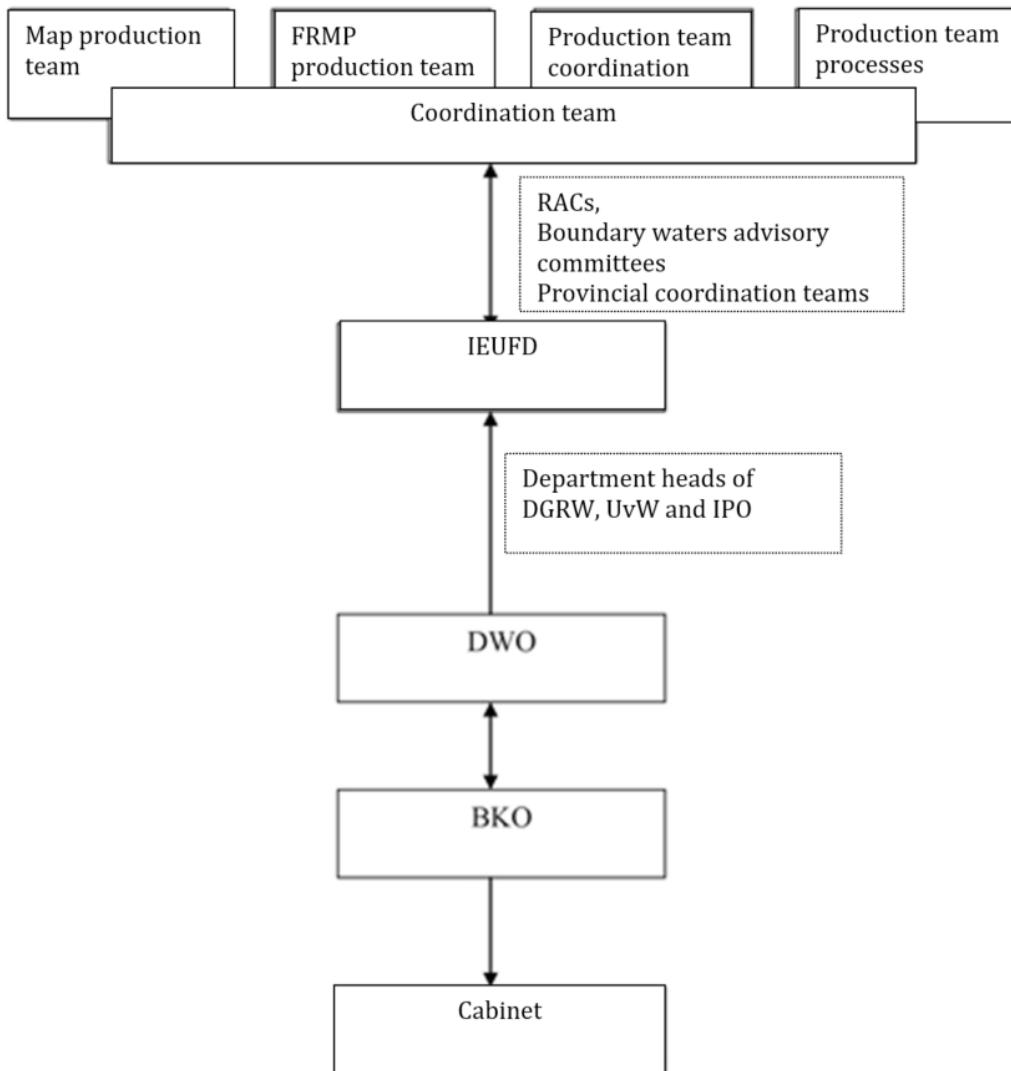
For the timely and correct implementation of the Floods Directive, two national coordination teams have been set up, the project group Implementation of Floods Directive (IEUFD) and the National Coordination Group. IEUFD is responsible for process-based/administrative coordination. The National Coordination Group is responsible for the substantive development and implementation of the Floods Directive, focusing primarily on the FRMPs. The FRMPs consist of two parts: plan Part A, the description, objectives and measures of the international catchment basin, and plan Part B: the national description of the catchment basin. Four FRMPs will be developed: the Rhine, Meuse, Scheldt and Ems.

The attached diagram shows a schematic of the project organisation:

Harmonisation with the Water Framework Directive

The process and contents of the Floods Directive and the Water Framework Directive (WFD) are coordinated and harmonised. The Floods Directive and the WFD are interconnected in the following ways:

1. At organisational level, both fall under the Common Implementation Strategy of the Water Framework Directive. The Floods Directive is part of the Floods Working Group, an official working group in which all Member States and non-governmental organisations (NGOs) are represented. This working group has several tasks, including: harmonisation of the interpretation of the Directive, interpretation of and agreement on the terminology (e.g. a definitions list - what is a potential significant risk?), establishing agreements on reporting obligations through the reporting sheets (e.g. what minimum information must a map contain?) and the exchange of knowledge and harmonisation with other directives. The working group operates under a Steering Committee and the Water Directors Meeting for the administrative coordination. Issues on which no agreement can be reached in the working group, Steering Committee and/or the Water Directors Meeting, can be submitted to a legislative committee consisting of national officials from the Member States, who can then make a binding ruling on any point of contention.
2. The Floods Directive refers directly or indirectly to the WFD. The direct reference includes taking over the approach to public engagement in the WFD; the indirect reference consists of harmonising the objectives and measures of the Floods Directive with the WFD. Where possible, appropriate steps should be taken to achieve common synergies, thereby justifying conflicting objectives/measures.
3. The Floods Directive planning cycle coincides with that of the WFD (both have a six-year cycle); however, the WFD runs in an earlier phase (the first round of plans for the WFD is ready). In addition, the process (e.g. the way information is gathered) and the manner of reporting of the Floods Directive are very similar to those of the WFD. In the next cycle, further integration between the Floods Directive and the WFD will be considered if possible. Physical integration of the products is being discussed as both aspects, water safety and water quality, are very different. The European Commission favours the integration of the products.



Harmonisation with existing Dutch policy

In the area of harmonisation with other existing Dutch policy, it is important to emphasize that because many flood risk mitigation policies are already in place in the Netherlands, existing information and policy are used for the Floods Directive. Two principles thereby have been: 'Simple and efficient' and 'No additional administrative burden *[check consistency of use in other documents]'. In accordance with the first principle, simple and efficient, the Floods Directive is used as a base for inventory and structure for readily available information, but to coordinate and integrate all existing documents at international level. The current policy (objectives and measures) that has been previously established in the national or regional context is reported in the FRMPs. Existing policy plans therefore serve as input for prevention, protection and preparedness. The second principle, no additional administrative burden, is based on the fact that support for the existing

policy is created through public engagement; therefore no new administrative engagement processes will be started for the Floods Directive. Also, no new administrative conference forums will be set up in place of existing structures already in place, but connection will be sought in existing structures such as the Regional Administrative Conferences (RACs). A statutory consultation period of six months is however required for adopting the FRMPs. Under the Water Act, the FRMPs are part of the NWP. These will therefore be jointly submitted for inspection.

Consequences for water boards

The Floods Directive will change little for the water boards, as the Floods Directive is responsive to current policy and available information, and the responsibilities or legal duties of the water boards. However, the Floods Directive offers a platform for consultation with provinces and safety regions, see also Costs and Benefits.

Innovative aspects of the Floods Directive

As noted in the introduction, the Netherlands has chosen a more inventory and structure-based approach than other Member States, as water safety is an integral part of our existing policy and implementation plans. Per the Floods Directive, we therefore look at what information is already available and use existing policy plans on prevention, protection and preparedness. The Floods Directive also offers much 'new' material, such as the maps that are produced for the Floods Directive. Besides, the integration of existing policy on protection, prevention and crisis management in the FRMPs is innovative; this integrated approach ensures coherence between the three layers of flood risk management. Existing powers of administrative bodies remain unaffected.

Expected introduction of the Environmental Act

The expected introduction of the Environmental Act will bring about changes for the Floods Directive. At present, the Flood Risk Management Plans as well as the WFD Catchment Basin Management Plans are delivered as appendix to the National Water Plan. If the Environmental Act is indeed introduced (depending on political developments) then an Environmental Vision will supersede and replace the NWP. The form of the FRMP might then need to be adjusted or incorporated as a separate plan into the Act. As of yet, it is not clear what form should be chosen.

7. Costs and benefits

Costs

In financial terms, only very limited costs are associated with Floods Directive. The Floods Directive uses the existing management platform of the WFD. It also uses data that need to be collected in accordance with existing policy. The only costs are temporary additional capacity needs within the coordinating parties and the management costs of the maps and reporting costs. There are no social costs associated with the Floods Directive.

Benefits

The benefits of the Floods Directive consist primarily of mitigating adverse consequences of floods, as described in the introduction. It offers a national infrastructure for the production of unambiguous, robust, up-to-date and reliable maps using information provided by the water boards.

It also provides a platform and networking opportunity for water boards, provinces and safety regions.

Lastly, the catchment basin integrated and sustainable approach (characteristics that are included in the process requirements of the Floods Directive) are clear benefits of the Floods Directive. In accordance with the catchment basin approach, flood risks are to be considered for the entire catchment basin. The boundaries of the catchment basins, as used in the Floods Directive, correspond with the boundaries used for the implementation of the WFD. The integrated approach, for example,



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consists of a coherent collection of the objectives and measures specified in existing policy plans for protection, prevention and preparedness. These objectives and measures may be from current policy on flood risk management at both national and regional level. And then finally, the focus on sustainability consists of using the effects of climate change to inform the development of the FRMPs and taking into account integration with the WFD, other European directives and international policy.

8. Lessons learned and on-going study

Developments round the Floods Directive and estimated planning

1. Flood hazard and flood risk maps

The Lizard flooding database, which contains the flood risk data, is currently being used by a number of leaders within provinces (such as the province of Zeeland) and some water boards. The website www.risicokaart.nl will serve as a public platform for access to the maps produced from the data in the Lizard flooding database. The flood risks module will be posted to this website, which is already operational; all flood hazard and risk maps are expected to be posted by mid-2013. Deltares coordinates studies on ways to improve visualisation of the maps and on identifying and mapping uncertainties (e.g. assumptions and detail level in models).

2. Flood risk management plans (FRMPs)

The basic FRMPs are currently in development. There will be four catchment basin FRMPs, one for each of the catchment basins, which currently consist of a combination of national and regional policy. In the next phase, which will run to the third quarter of 2012, these documents will be further completed and edited. Also assessed will be the link in objectives and measures between the different elements of the Floods Directive: prevention, protection and preparedness.

Administrative coordination will take place in 2014 and 2015, the plans will be available for inspection and subsequently finalised. The FRMPs will be operational in 2016.

On-going related research

1. Flood-wise

FLOOD-WISE is a European project in which water managers from various European countries exchange experiences with flood risk management with

the aim of preventing flooding in river valleys. The objective of FLOOD-WISE is to improve trans-national flood management.

2. AMICE

AMICE project (Adaptation of the Meuse to the Impacts of Climate Evolutions) is a study about the adaptation of the Meuse to climate change. It studies existing flood management structures in the Meuse catchment basin, the design of new management structures that can deal with flooding, drought as well as increasing water demand, and existing flood measures.

<http://www.amice-project.eu/fr/amice-project.php>

9. Knowledge gaps

The knowledge gaps on this topic are few, as the Netherlands took the lead in introducing the Floods Directive. Significant knowledge gaps in the Floods Directive, however, are:

- How can one deal with uncertainties, assumptions and differences in levels of detail in models? (e.g. the failure probability)
- How can the information in both the plans and the maps be made as accessible as possible, both physically and in terms of content?

10. References & links

- [EU Reporting sheets](#)
- [EU Richtlijn Overstromingsrisico's - Het toepassingsbereik \(Ministerie van I&M, 2011\)](#)
- EU Floods Directive (2007/60/EC) - Regional Information Conference on developing flood hazard and flood risk maps (PPT presentation, 2012)
- [Europese Richtlijn Overstromingsrisico's - Overstromingsrisico's in plannen en op de kaart \(Min I&M, 2010\)](#)
- [Handboek "Overstromingsrisico's op de kaart" \(productieteam Kaarten, 2012\)](#)
- Implementatieplan – EU Richtlijn Overstromingsrisico's (juni 2008)
- Flood risks on the map - Timetable for developing maps as part of the national implementation of the EU Floods Directive (DG Water, 2010)
- [Richtlijn 2007/60/EG van het Europees Parlement en de Raad \(2007\)](#)
- Surface Water Monitoring Guidelines in the Water Framework Directive (2006)
- ROR Plan van aanpak – Implementatie van de EU Richtlijn Overstromingsrisico's – Kaarten, plannen en reporting (2010)

- [Tijd voor waterveiligheid – Strategie voor Overstromingsrisicobeheersing \(RLG, RVW, VROMRaad, 2011\)](#)
- [Voorstel voor toepassingsbereik EU Richtlijn Overstromingsrisico's \(Stowa, 2011\)](#)

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Authors

- Hanne van den Berg
- Kymo Slager
- The Delta Fact is based in part on external interviews with and/or review of:
- William van Berkel (Ministry of Infrastructure and the Environment)
- Efrath Silver (Association of Water Boards)
- Ylva Peddemors (Province of Zeeland, IPO)

11. Experiences

Interview of 28 June 2012 with Ms Y. Peddemors of the province of Zeeland

Are any initial experiences known/recorded?

To date, experiences with the Floods Directive consist mainly of supplying data for the National Flood Information Database (NFID), the information base that serves the development of the flood hazard and flood risk maps.

Ylva Peddemors' involvement in supplying the data for the Floods Directive is twofold: from the province of Zeeland and as national functional manager for the national flood information database (NFID). Lizard Flooding is used for this database. Lizard Flooding has been officially managed by the Joint Management Organisation (JMO) at the IPO since early 2012. The national flood information is exported from the Lizard Flooding web application for use in the Floods Directive. To facilitate this, besides the usual metadata a number of additional metadata fields also need to be added. Ab van den Berg, who was hired within the IPO, is responsible for ensuring that the flood data meet EU standards.

Experiences to date

The provincial managers of flood data at the provinces of Overijssel (Gert Ruben van Goor) and Groningen (Monique Buiting) have run a few tests to determine whether

the required data can be delivered to Lizard Flooding in accordance with Floods Directive standards. The initial experience with the new metadata fields was successful. It should be noted that the Floods Directive requires much more detailed information than in the past. Other provinces and parties responsible for providing scenarios still have to send those in.

Furthermore, a first meeting (a so-called 'Floods Directive and Lizard Flooding road-show') was held for the purpose of introducing the database system for use within the Floods Directive. The province of Limburg (provincial administrator/coordinator Jaap Goudriaan) had the honour of organising it for his region. Attendees included: the water boards involved, the regional Department of Waterways and Public Works, the Joint Management Organisation (JMO) of the IPO, the Safety Region, the Floods Directive maps production team and the Lizard Flooding software supplier. They looked at how Lizard Flooding operated generally and then more specifically in relation to the Floods Directive. This meeting was a positive experience for attendees. In September, the road-shows will go to Groningen/Drenthe, Gelderland and North Holland/South Holland/Utrecht.

12. Disclaimer

The knowledge and diagnostic methods presented in this publication are based on the latest insights in the professional field(s) concerned. However, if applied, any results derived therefrom must be critically reviewed. The author(s) and STOWA cannot be held liable for any damage caused by application of the ideas presented in this publication.