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First Flood Risk Management Plans - Member State: Slovenia

Accompanying the document

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)
Second River Basin Management Plans
First Flood Risk Management Plans

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Acronyms

APSFR	Areas of Potential Significant Flood Risk
CBA	Cost-Benefit Analysis
EEA	European Environment Agency
FD	Floods Directive
FHRM	Flood Hazard and Risk Map
FRMP	Flood Risk Management Plan
NWRM	Natural Water Retention Measures
PFRA	Preliminary Flood Risk Assessments
PoM	Programme of Measures
RBD	River Basin District
RBMP	River Basin Management Plan
SEA	Strategic Environmental Assessment
UoM	Unit of Management
WFD	Water Framework Directive
WISE	Water Information System for Europe

Introduction

The Floods Directive (FD) (2007/60/EC) requires each Member State to assess its territory for significant risk from flooding, to map the flood extent, identify the potential adverse consequences of future floods for human health, the environment, cultural heritage and economic activity in these areas, and to take adequate and coordinated measures to reduce this flood risk. By the end of 2011, Member States were to prepare Preliminary Flood Risk Assessments (PFRAs) to identify the river basins and coastal areas at risk of flooding (Areas of Potential Significant Flood Risk – APSFRs). By the end of 2013, Flood Hazard & Risk Maps (FHRMs) were to be drawn up for such areas. On this basis, Member States were to prepare Flood Risk Management Plans (FRMPs) by the end of 2015.

This report assesses the FRMPs for Slovenia[1]. Its structure follows a common assessment template used for all Member States. The report draws on two main sources:

- Member State reporting to the European Commission on the FRMPs[2] as per Articles 7 and 15 of the FD: this reporting provides an overview of the plans and details on their measures.
- The national FRMP – Slovenia prepared one FRMP, which contains general sections and (in separate sections) 17 sub-basin flood plans across the two Units of Management (UoM) in the country.

[1] The present Member State assessment reports reflect the situation as reported by each Member State to the Commission in 2016 or 2017 and with reference to FRMPs prepared earlier. The situation in the MSs may have altered since then.

[2] Referred to as "Reporting Sheets" throughout this report. Data must be reported in a clear and consistent way by all Member States. The format for reporting was jointly elaborated by the Member States and the Commission as part of a collaborative process called the "Common Implementation Strategy": http://ec.europa.eu/environment/water/water-framework/objectives/implementation_en.htm
Whereas a key role of the Commission is to check compliance with EU legislation, the Commission also seeks information to allow it to determine whether existing policies are adequate. It also requires certain information to create a European-wide picture to inform the public.

Overview

Slovenia is divided into two UoMs, which correspond to the River Basin Districts (RBDs) under the Water Framework Directive (WFD): these UoMs are the Danube (SI_RBD_1) and the Adriatic (SI_RBD_2). Slovenia prepared one FRMP that covers both UoMs; the FRMP incorporates 17 sub-basin flood plans – 14 in the Danube UoM and three in the Adriatic UoM. Each sub-basin flood plan includes at least one APSFR.

The management of the two main UoMs/RBDs in Slovenia is performed at the state level[3]. The UoMs/RBDs are further divided into 17 sub-basin units (14 in the Danube UoM and three in the Adriatic UoM).

The FRMP was approved by a government decision (No. 35500-5/2017/8) on 27 July 2017.

The table below gives an overview of both UoMs in Slovenia, including the UoM code, the name, and the number of APSFRs reported. It also shows if the UoM reported all documents required to European Environment Agency's (EEA) WISE[4] – the FRMP as a PDF and the reporting sheet as an XML. Slovenia delivered 13 PDF documents at national level and 2 XML documents at UoM level. The PDF documents include one national FRMP and supplementary documents such as PFRA and APSFR reports and methodology, the Strategic Environmental Assessment (SEA) report, the catalogue of measures and relevant governmental decisions.

Table 1 Overview of UoMs in Slovenia

UoM	Name	Number of APSFRs	XML reported	PDF Reported
SI_RBD_1	DANUBE	51	Yes	Yes (at national level)
SI_RBD_2	ADRIATIC	10	Yes	Yes (at national level)
TOTAL		**61**		

Slovenia's FRMP can be downloaded from the following web page:

- http://www.mop.gov.si/si/delovna_podrocja/voda/zmanjsevanje_poplavne_ogrozenosti/

[3] Slovenia subsequently noted that since 2016, the key actors in water management are the Ministry of the Environment and Spatial Planning and Slovenian Water Agency (Direkcija RS za vode).

[4] http://rod.eionet.europa.eu/obligations/603/deliveries?id=603&tab=deliveries&d-4014547-p=1&d-4014547-o=2&d-4014547-s=3

Overview of the assessment

The table below gives an overview of the evidence found during the assessment of the FRMPs. The following categorisation was used for the column concerning evidence:

- **Evidence to the contrary**: An explicit statement was found stating that the criterion was not met;
- **No evidence**: No information found to indicate that the criterion was met;
- **Some evidence**: Reference to the criterion is brief and vague, without a clear indication of the approach used for the criterion. Depending on the comment in the adjacent column, "some evidence" could also be construed as "weak evidence;
- **Strong evidence**: Clear information provided, describing an approach followed in the FRMP to address the criterion.

Table 2 Overview of the evidence found during the assessment of the FRMPs

Criterion	Evidence	Comments
FRM objectives have been established	Strong evidence	The FRMP includes a list of four, clearly defined general objectives that are described in Slovenia's reporting sheets and in the sub-plans provided with the FRMP.
FRM objectives relate to...		
...the reduction of potential adverse consequences	Strong evidence	This aspect is specified in the definition of objectives in the FRMP and Slovenia's reporting sheets. The four national Flood Risk Management (FRM) objectives are: (1) preventing new risks from floods, (2) reducing existing flood risks, (3) decreasing current flood dangers during and after floods and (4) enhancing awareness about flood endangerment.
...to the reduction of the likelihood of flooding	Strong evidence	The second objective seeks to reduce flood risks, a term which includes the likelihood of flooding, and is linked to prevention measures.
...to non-structural initiatives	Strong evidence	The fourth objective focuses on strengthening public awareness.
FRM objectives consider relevant potential adverse consequences to...		
...human health	Some evidence	Although it is not specified in the objectives set out in the FRMP, Slovenia's reporting sheets state that the objectives address potential adverse consequences to human health, economic activity, environment and cultural heritage[5].

[5] Slovenia subsequently recalled that in the PFRA, all four categories of vulnerability – human health, cultural heritage, economy, environment – were considered in detail.

Criterion	Evidence	Comments
...economic activity	Some evidence	See above under human health.
...environment	Some evidence	See above under human health.
...cultural heritage	Some evidence	See above under human health.
Measures have been...		
...identified	Strong evidence	Slovenia's FRMP defines 20 measure groups that are implemented via projects in each UoM and sub-basin. In its reporting sheets, Slovenia reported 40 measures to WISE: these correspond to the 20 measure groups across its two UoMs.
...prioritised	Strong evidence	Measures have been prioritised on national and sub-basin levels. A simple ranking of the measures was prepared by an expert group at national level. The methodology is explained in the FRMP.
Relevant aspects of Article 7 have been taken into account such as...		
...costs & benefits	Some evidence	In the Slovene FRMP, aspects of costs and benefits are analysed. Costs of measures were estimated, and quantitative information on elements at risk and assessed potential flood damage (which are used as an indication of benefits of flood protection measures) was presented. Cost-benefit assessment was not used for the prioritisation and planning of the measures in the FRMP[6], but the Plan indicates that a cost-benefit method will be used at sub-basin level for flood prevention construction projects (Slovenian measure group U7).
...flood extent	Strong evidence	The flood extent is presented for each APSFR in a corresponding fiche. According to the information reported, flood extent has been used to define the measures.
...flood conveyance	Some evidence	No reference to conveyance routes is included in the FRMP. However, conveyance routes were identified in the preparation of the PFRA, and thus were considered via this preparatory stage.
...water retention	Strong evidence	Natural water retention measures (NWRM) have been planned, in particular for the protection of flood plains through their designation as "natural flood-plains" (which provides formal protection of the most important flood-plains): land-use in these flood-plains should maintain their water retention capacity (e.g. via prohibition of urbanisation).

[6] Slovenia subsequently noted that a CBA is not a requirement of the FD.

Criterion	Evidence	Comments
...environmental objectives of the WFD	Strong evidence	The 20 measure groups set out in the FRMP have been assessed and designated into three categories in regard to their role vis-à-vis the WFD objectives: (1) synergetic influence, (2) potential conflict, and (3) irrelevant for implementation of the WFD. This was carried out based on expert judgment. All the measures that raise potential conflicts with the WFD goals have to be further examined at project level and harmonised with the WFD's objectives.
...spatial planning/land use	Strong evidence	The FRMP includes a clearly defined measure group on land use.
...nature conservation	Some evidence	In 2015, a special study for designating natural flood areas considered the contribution of this type of measure to nature conservation.
...navigation/ port infrastructure	No evidence	Navigation and port infrastructure are not explicitly mentioned[7].
...likely impact of climate change	Some evidence	The reporting sheets and the FRMP indicate that the contribution of each measure to adaptation to climate change was checked[8].
Coordination with other countries ensured in the RBD/UoM	Strong evidence	The FRMP indicates that coordination with neighbouring Member States (AT, HR, HU and IT) occurred via the international Danube and Sava river processes as well as via bilateral relations.
Coordination ensured with WFD	Strong evidence	Slovenia held a joint consultation of its draft FRMP/sub-basin flood plans and its RBMPs. The authorities developing both documents (led by different teams within the same authority) coordinated their work. The objectives of the Floods Directive are incorporated in Slovenia's RBMP.
Active involvement of interested parties	Strong evidence	The FRMP reports that during the drafting process there were several internal and expert consultations as well as consultations for the interested public[9]. Each sub-basin plan has a chapter devoted to public consultation.

[7] Slovenia subsequently noted that flood hazard mapping for all three coastal APSFR's (Piran, Izola and Koper) considered navigation and port infrastructure.

[8] Slovenia subsequently recalled that under the Floods Directive, consideration of climate change is required for the second FRMPs.

[9] Slovenia subsequently informed of a report on public consultation (*Posvetovanje z javnostmi v okviru priprave načrta zmanjševanja poplavne ogroženosti – poročilo*, Ljubljana, January 2016; http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/FRMP_PCP.pdf), which provides detailed information on public consultation process and groups that were actively involved: municipalities, governmental bodies and institutions, public agencies, civil initiatives, associations, research institutions, spatial planning companies, interested individuals, media and others. During the drafting process of the FRMP, workshops in river basin districts were held with interested parties. In the strategic environmental assessment process for the FRMP, additional public consultation and presentations were carried

Good Practices

The assessment identified the following good practices in the Slovenian FRMPs assessed.

Table 3 Good practices in the Slovenian FRMPs

Topic area	Good practices identified
Integration of previous reported information	Slovenia coordinated the PFRA and FHRM stages with neighbouring countries, both bilaterally and via international river basin processes. For each project or spatial plan in flood areas, flood hazard and risk mapping is obligatory. These detailed flood hazard and flood risk maps are included in the graphic viewer "Atlas voda" (Water management Atlas), which is updated with information from new studies twice a year.
Planning/implementing of measures and their prioritization for the achievement of objectives.	The FRMP provides clear information on costs, funding sources and expected funding levels (and is forthright in identifying a funding gap). The FRMP sets out measure groups for spatial planning, NWRM and nature conservation actions. There are strong links with the WFD. For example, measure groups were assessed for their compatibility with the WFD. All the measure groups that have potential conflict with the WFD goals are to be further examined on a project level and harmonised with all the WFD objectives. Monitoring will be carried out every two years and will include a public consultation process.
Consideration of climate change	The contribution of measure groups to climate adaptation was assessed.
Cost-benefit analysis (CBA)	The FRMP sets out a comprehensive approach for CBA at the project or sub-basin level.
Public participation.	After the FRMP was completed, workshops were organised on a sub-basin level to raise awareness of its objectives, assessments and provisions.

Areas for further development

The assessment identified the following areas for further development in the Slovenian FRMPs assessed.

out. Slovenia also pointed out that in the prior PFRA process, a long and active public consultation was carried out (FRMP, p.20).

Table 4 Areas for further development in the Slovenian FRMPs

Topic area	Areas identified for further development
Integration of previously reported information in the FRMPs.	Although mapping is carried out on a project level, there is limited information in the FRMP on how the FHRMs were used to prioritise measures. Despite the existence of an online viewer, the "Atlas voda", for some of the APSFRs, no internet links for maps (FHRM) are provided in the FRMP document[10]. The links that are provided do not work. Furthermore, a map or a link to a digital map of UoMs with delineation of the APSFRs is not included in the FRMP[11].
Setting of objectives for the management of flood risk.	The objectives are not specific or measurable.
Planning/implementation of measures and their prioritization for the achievement of objectives.	Although the FRMP links objectives and measures, it is not clear by how much the measures will contribute to the objectives, nor whether the objectives will be achieved within a specific time horizon (due in part to the fact that objectives are not specific or measurable). While the FRMP describes how monitoring of measures will be carried out and presented in a report every two years, a baseline for monitoring progress is not clearly defined in the FRMP.
Consideration of climate change	The FRMP contains little information about climate change impacts on flooding, and it does not appear that climate change was considered in the design of measures[12]. The national climate change adaptation strategy was under development when the FRMP was drafted, but there is no evidence of early coordination.
Use of CBA	CBA will be performed in the process of implementation of the FRMP at the project level, but was not used to identify, prioritise or plan its measures.[13] It is not clear if transboundary effects of measures were assessed

[10] Slovenia subsequently provided an updated table with links to the missing maps for six APSFRs. Also, Slovenia subsequently indicated that some of the APSFRs (Celje and Zagorje ob Savi) could not be mapped in detail because of the ongoing implementation of the structural flood risk reduction measures: for example, maps for Celje were started but the activities were stopped until Cohesion project activities for the Savinja river basin are finished.

[11] Slovenia subsequently noted that a lot of graphic material (including a digital map of UoMs with delineation of the APSFRs) was removed from the FRMP due to the border dispute between Slovenia and Croatia.

[12] Slovenia subsequently noted that under the FD, consideration of climate change is required only from the second cycle. Slovenia also noted that information about climate change impacts in Slovenia was included in the PFRA and that all of the flood risk reduction measures are part of the adaptation to climate change.

[13] Slovenia subsequently noted that a CBA is not a requirement of the FD.

Topic area	Areas identified for further development
	under the CBA methodology.
Public participation	Although a report on public participation was published separately from the FRMP[14], there is little information in the FRMP about the types of stakeholders actively involved in its preparation and the extent of their involvement. There is also little information about the results of the consultation and the FRMP does not refer to the separate report on participation.

Recommendations

Based on the reported information and the FRMP, the following recommendations are made to enhance flood risk management (not listed in any particular order):

- The process for the development of objectives should be better explained in the FRMP. To be able to assess progress, the objectives should be specific and measurable to the extent possible, so their achievement can be ascertained.
- The FRMP should present and explain the baseline for implementation of the measures for monitoring progress.
- The impacts of climate change should be considered better in the development of the next FRMP and its measures. The FRMP and the national climate change adaptation strategy (once adopted) should be coordinated.
- CBA should not be used exclusively at the project level; where possible it could also be employed as a tool in the planning process to identify and prioritise measures and to assess alternatives of possible measures at an early stage of programme development (also at the transboundary level).
- The results of the active involvement of stakeholders in the preparation of the FRMP and of public consultation should be reflected better in the FRMP.
- It will be important to ensure that FRMPs, APSFRs, and FHRMs refer to each other as appropriate and that they are continuously available to all concerned and the public in an accessible format, including digitally.

[14] http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/FRMP_PCP.pdf

1. Scope of the assessment and sources of information for the assessment

1.1 Reporting of the FRMPs

Slovenia prepared one FRMP that covers both of its UoMs and consists of 17 sub-basin flood plans, 14 in the Danube UoM (SI_RBD_1) and three in the Adriatic UoM (SI_RBD_2).

Slovenia did not make use of Article 13.3 of the Floods Directive, which allowed Member States to make use of previous flood risk management plans (provided their content is equivalent to the requirements set out in the Directive).

1.2 Assessment of the FRMPs

The assessment covers the FRMP submitted by Slovenia and any relevant supplementary documents provided with the FRMP. The following UoMs were assessed:

Table 5 UoMs assessed in Slovenia

UoM	Name
SI_RBD_1	DANUBE
SI_RBD_2	ADRIATIC

Slovenia's FRMP can be downloaded from the following web page:

- http://www.mop.gov.si/si/delovna_podrocja/voda/zmanjsevanje_poplavne_ogrozenosti/

2. Integration of previously reported information

2.1 Conclusions drawn from the preliminary flood risk assessment

The conclusions of the PFRA are presented in the FRMP and within all sub-basin flood plans within the FRMP as textual description. There are also short textual descriptions of the APSFRs but no summary map showing the APSFRs covered by the FRMP or by the sub-basin flood plans[15]. However, all PFRA reports and a map showing the APSFRs covered by the FRMP are included in the documentation that Slovenia submitted as part of its reporting to WISE. Each APSFR is presented with a number of internet links to maps but the links to these maps are not working. However, functional links to the maps are provided in a separate spreadsheet file that outlines the process of implementing the Floods Directive, a link to which is provided in all 17 sub-basin plans[16]. All the maps related to the FHRM phase are also publicly available through an on-line application "Atlas voda"[17] (Water Management Atlas).

Links to maps showing APSFRs have been provided in the FRMP; however, these links do not work. As mentioned above, the 17 sub-basin flood plans contain a link to a spreadsheet that presents the process of implementing the Floods Directive. This spreadsheet also provides working links[18] to maps, which present the following information for each of the APSFRs: flood hazard and flood risk maps for 10, 100 and 500 years return period. It appears that maps for eight of the APSFRs are missing (i.e. for ASPFRs Zagorje ob Savi, Celje, Kostanjevica na Krki, Rogaška slatina – steklarna, Ptuj, Odranci, Miren, and Nova Gorica.)[19] [20].

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[15] Slovenia subsequently informed that a lot of graphic material (including a map of UoMs with delineation of the APSFRs) was removed from the FRMP due to the border dispute between Slovenia and Croatia.

[16] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Table that presents the process of implementing The Flood Directive (link provided in sub-basin flood plans):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPOPO.xls

[17] Atlas voda (Water Management Atlas) provides updated information on Integral flood hazard map and Integral flood hazard classes map approximately twice a year:
http://gis.arso.gov.si/evode/profile.aspx?id=atlas_voda%40Arso
Slovenia subsequently provided a direct link to a new updated application of "Atlas voda" that was released in May 2018:
https://gisportal.gov.si/portal/apps/webappviewer/index.html?id=72a68d57f3974207ae79e70c830e07de

[18] Coastal city of Piran APSFR maps, RBD Adriatic (SI_RBD_2) APSFR:
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_61_obmocij_DOFi/42_OPVP_Piran.jpg
River floods Ljubljana – south APSFR maps, RBD Danube (SI_RBD_1) APSFR:
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_61_obmocij_DOFi/01_OPVP_Ljubljana_jug.jpg

[19] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Table that presents the process of implementing The Flood Directive (link provided in the FRMP):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPOPO.xls
Slovenia subsequently provided an updated table with internet links to the missing maps for six APSFRs. However, the flood hazard and flood risk maps for two of the APSFRs (Celje and Zagorje ob Savi) are still missing.

[20] Slovenia subsequently indicated that some of the APSFRs (e.g. Celje and Zagorje ob Savi) could not be mapped in detail because of the ongoing implementation of the structural flood risk reduction measures: For

Conveyance routes have been taken into account in the PFRA: They were included in the preparation of the PFRA in accordance with national rules that define the methodology for their preparation[21].

2.1.1 Coordination with neighbouring Member States on shared RBDs/UoMs

It is reported in the FRMP (p.19-20) that the identification of flood risk areas and the FRMPs themselves have been coordinated with neighbouring Member States in cases where RBDs/UoMs are shared[22]. There was also exchange and harmonisation of data and methods. The FRMP says that harmonisation of FRMPs with Italy was confirmed via a bilateral meeting in December 2015, with Austria via a meeting in September 2015, and with Hungary in November 2015. There was also an attempt to harmonise the FRMPs with Croatia in October 2015, but the unsolved border question halted progress.

Coordination with international FRMPs was assured via international river basin commissions, in particular the preparation of the FRMPs for the Sava river basin and for the Danube river basin.

2.1.2 Information how the PFRA was used in the development of the FHR maps

According to the FRMP, the preparation of the flood hazard and risk maps confirmed the findings of the PFRA in all 17 sub-basin flood plans included in the FRMP[23].

2.2 Presentation of Flood Hazard and Risk Maps (FHRMs) in the FRMP

FHRMs are provided in all 17 sub-basin flood plans included in the FRMP of Slovenia. There is no specific distinction made between the sources of flooding and all maps present the combined effects of more than one source of flooding: The FHRMs cover fluvial, pluvial and seawater floods, floods from artificial water bearing structures and floods from not specified sources. The FHRMs have not been reproduced in the main part of the FRMP, but the plan provides weblinks to the maps: these links, however, do not work, potentially due to a problem with the PDF format of the plan. Working links are provided in the separate document noted

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example, maps for Celje were started but the activities were stopped until Cohesion project activities for the Savinja river basin are finished.

[21] Rules on a methodology to define flood risk areas and erosion areas connected to floods and classification of plots into risk classes (Official Gazette of the Republic of Slovenia, No. 60/07), http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV8318.
Table that presents the process of implementing The Flood Directive (link provided in FRMP): http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPOPO.xls

[22] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Minutes of bilateral water-management commissions. http://evode.arso.gov.si/index72dc.html?q=node/23

[23] FRMP, Chapter 1.2 »EU Flood Directive and Preliminary Flood Risk Assessment in Preparation of the FRMP«, p.9.10.

above, a spreadsheet that presents the process of implementing the Floods Directive[24] as well as in the on-line application "Atlas voda"[25] (Water Management Atlas).

Examples of the links to the FHRMs provided in the spreadsheet are provided below (see the footnotes):

- Seawater FHRMs for the coastal city of Piran[26] (Adriatic RBD, SI_RBD_2)
- Fluvial flood FHRMs for Ljubljana[27] (Danube RBD, SI_RBD_1)

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[24] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Table that presents the process of implementing the Flood Directive (link provided in the FRMP), and it is available also via a Ministry web page on floods:
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPOPO.xls

[25] Atlas voda (Water Management Atlas) that provides updated information twice a year.
http://gis.arso.gov.si/evode/profile.aspx?id=atlas_voda%40Arso
https://gisportal.gov.si/portal/apps/webappviewer/index.html?id=72a68d57f3974207ae79e70c830e07de

[26] The following links are provided for Piran:
Flood Hazard Map – the extent of floods at various return periods (10, 100 and 500 years) – http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/42_Piran/Poplavna_linija_Q10.pdf
Flood Hazard Map – the height of flood water at various return periods (10, 100 and 500 years):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/42_Piran/Globine_pri_Q10.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/42_Piran/Globine_pri_Q100.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/42_Piran/Globine_pri_Q500.pdf
Flood Risk maps – the risk at various return periods (10, 100 and 500 years):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q10_Piran.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q100_Piran.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q500_Piran.pdf

[27] The following links are provided for Ljubljana:
Flood Hazard Map – the extent of floods at various return periods (10, 100 and 500 years):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/01_Ljubljana_jug_3030_3129_3021_3067/Poplavna_linija_Q10.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/01_Ljubljana_jug_3030_3129_3021_3067/Poplavna_linija_Q100.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/01_Ljubljana_jug_3030_3129_3021_3067/Poplavna_linija_Q500.pdf
Flood Hazard Map – the height of flood water at various return periods (10, 100 and 500 years):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPN/01_Ljubljana_jug_3030_3129_3021_3067/Globine_pri_Q100.pdf
Flood Risk maps – the risk at various return periods (10, 100 and 500 years):
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q10_lj_JUG.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q100_lj_JUG.pdf
http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPVP_Si_KPO/ogrozenost_Q500_lj_JUG.pdf

2.2.1 Maps for shared flood risk areas

FHRMs have been prepared for flood risk areas shared with the other Member States in transboundary river basins/UoMs. There are links provided in the FRMP that lead to the minutes of the meetings of bilateral water management commissions (with Italy, Austria, Hungary and Croatia), which discussed also the preparation of FHRMs. Mapping in shared flood risk areas has been coordinated with the neighbouring Member States in all bordering river basins, which is evident from the minutes[28].

2.2.2 Conclusions drawn from the flood hazard and flood risk maps

The FHRMs have been used as a tool in the public participation process. However, the FRMP do not indicate clearly how the FHRMs were used to prepare the content of the plan, in particular, its priorities, objectives, and measures[29] [30].

The FRMPs explain that flood hazard mapping is used and further developed in the process of preparing construction projects and spatial plans. The FRMP moreover states that maps are updated whenever flood protection projects and spatial plans are prepared: This work is carried out by the Slovenian Water Agency under SI measure U1 (Determination and consideration of flood plain areas, see section 4). The preparation of flood hazard maps is obligatory for any new structural flood risk reduction project. In addition, in the preparation of state or municipal spatial planning instruments affecting flood risk areas as well as projects requiring building permits in these areas, the Slovenian Water Agency actively also carries out FRMP measure U1: in this process, for each project or spatial act planned in flood areas, flood hazard and risk mapping is obligatory[31]. The validated data from such studies are then integrated into the detailed flood hazard database, which is publicly available via the online viewer, "Atlas voda" (Water Management Atlas), which is updated with information from new, detailed studies twice a year.

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[28] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Minutes of bilateral water-management commissions. http://evode.arso.gov.si/index72dc.html?q=node/23.
Minutes of the Slovenian-Italian commission on water management 21.-22.1.2014 in Miren, p.8. http://gis.arso.gov.si/related/evode/vg_komisije/SLO-IT-zasedanje_oktober%202014.pdf

[29] Reporting sheets – Slovenia, chapters Summary of Consultation.

[30] Slovenia noted subsequently that Flood Hazard Maps are obligatory for all structural flood risk reduction measures, so all the structural measures are based on flood hazard and risk mapping, however, not all the detailed maps could be shown in the FRMP itself. All the detailed maps are in Atlas voda (Water management Atlas) which is publicly accessible here:
https://gisportal.gov.si/portal/apps/webappviewer/index.html?id=72a68d57f3974207ae79e70c830e07de
or here: http://gis.arso.gov.si/evode/profile.aspx?id=atlas_voda%40Arso

[31] Restrictions on flood risk areas and the methodology for this mapping were established in legislation prior to the FRMP: Decree on conditions and limitations for constructions and activities on flood risk areas (Official Gazette, No.89/08), while the methodology is defined in the Rules on methodology to define flood risk areas and erosion areas connected to floods and classification of plots into risk classes (Official Gazette, No.60/07).

2.3 Changes to the APSFRs or other Flood Risk Areas

The FRMP assessment looked for information on changes in the identification of APSFRs since December 2011, or in the FHRMs since 2013, indicated in the FRMP. The APSRFs identified in the process of preliminary flood risk assessment were adopted legally via a resolution of the government of Slovenia in February 2013. The FRMP does not indicate that any changes have been made in the list of APSFRs[32]. Slovenia did not present flood water depth or level in the preliminary flood risk assessment, but instead a combination of water depth and velocity. This has changed and the FHRMs present also flood water depth[33].

In addition, the FRMP does not indicate any changes in the FHRMs since December 2013. The methodology for their preparation, defined in the 'Rules on a methodology to define flood risk areas and erosion areas connected to floods and classification of plots into risk classes'[34], has not changed.

2.4 Areas for further development in the earlier assessment of the flood hazard and risk maps

The FHRM assessment[35] identified the following areas for further development for Slovenia:

- Climate change had not been included in the analysis.[36]
- No potential adverse consequences on the environment were shown in the maps.

Information on amendments to address these areas for further development has not been found in the FRMP[37]. A review of the FHRMs indicates that climate change has not been explicitly addressed in the maps; The online water atlas map viewer now shows a range of protected areas, including Natura 2000 sites and water protection areas.

2.5 Good practices and areas for further development regarding integration of previously reported information

The following **good practice** was identified:

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[32] FRMP, Chapter 1.2 "EU Flood directive and Preliminary Flood Risk Assessment in Preparation of the FRMP", p.9-10.

[33] Reporting sheets – Slovenia, chapters Summary of the Flood Extend. EU overview of methodologies used in preparation of Flood Hazard and Flood Risk Maps, 2015.

[34] Official Gazette of the Republic of Slovenia, No. 60/07

[35] European Commission, Assessment of Flood Hazard and Flood Risk Maps – Member State Report: SI – Slovenia, November 2014. Available at: http://ec.europa.eu/environment/water/flood_risk/pdf/fhrm_reports/SI%20FHRM%20Report.pdf

[36] Slovenia's PFRA report considered climate change; it states that "so far there is no concrete proof of the influence of climate change on incidences of river floods in Slovenia; trends on maximal flows show even slight reduction of flows; average level of sea and the frequency of sea floods are in increasing trend" (p. 26). Climatic variability was considered via the analysis of all recorded pluvial and water flow values.

[37] FRMP. Reporting sheets – Slovenia, chapters Summary of the Flood Extend.

- Flood hazard mapping is obligatory as part of the process for new structural flood risk reduction projects and for state and municipal spatial instruments. Validated data from such studies are then integrated twice a year into Slovenia's detailed flood hazard database, which is publicly available online via the "Atlas voda" viewer.

The following **areas for further development** were identified:

- Although mapping is used on a project level, there is limited information in the FRMP on how the FHRMs have been used to prioritise measures on the FRMP level.
- For some of the APSFRs, no internet links to FHRMs are provided in the FRMP document. The links that are provided do not work. Furthermore, a link to a digital map of UoMs with delineation of the APSFRs is not included in the FRMP[38] [39].

[38] Slovenia noted subsequently that geographic detail (including a map of UoMs with delineation of the APSFRs) was removed from the FRMP due to a border dispute.

[39] Information is available from the online viewer, "Atlas voda".

3. Setting of Objectives

3.1 Focus of objectives

Slovenia has set four main objectives at the national level, valid for both UoMs/RBDs and for all sub-basin flood plans. They are[40]:

1. prevention of new risks from floods (consideration of flood plains in land use and spatial planning);
2. reduction of the existing flood threat (construction, management of flood protection water infrastructure);
3. decreasing the existing flood threat during and after floods (increasing the quality of flood forecasts, intervention protocols, and damage estimates to speed up restoration) and
4. enhancement of awareness about flood threats.

Consequently, it can be concluded that in Slovenia[41]:

- The objectives aim to reduce the adverse consequences of floods;
- The objectives aim to reduce the likelihood of flooding;
- The objectives refer to non-structural measures[42].

3.2 Specific and measurable objectives

In Slovenia, the objectives are neither specific nor measurable.

However, there is a clear link between the objectives and the 20 measure groups that are defined in the Slovenian catalogue of flood prevention measures[43], and then with the projects in each sub-basin flood plan. All sub-basin plans set out the same four main objectives.

3.3 Objectives to reduce adverse consequences from floods

The first three objectives set out to reduce adverse consequences from floods[44]. Moreover, Slovenia's reporting sheets state that the objectives seek to address adverse consequences to human health, economic activity, environment and cultural heritage.

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40 Reporting sheet – Slovenia, chapter Summary of the Objectives; FRMP, Chapter 5, Annex A.
41 These categories are included in Art. 7 of the Floods Directive.
42 Non-structural measures include measures such as flood forecasting and raising awareness of flooding as well as land use planning, economic instruments and insurance
43 FRMP, p.15-16.
44 Reporting sheet – Slovenia, chapter Summary of the Objectives

3.4 Objectives to address the reduction of the likelihood of flooding

The objectives address flood risk, which is understood to include likelihood of flooding[45]. The second objective, 'reducing the existing flood threat', specifically seeks to reduce the likelihood of flooding; moreover, it is linked to measure groups to prevent flooding[46]. The first objective, by promoting floodplains, also seeks to reduce the likelihood of flooding.

3.5 Process for setting the objectives

The FRMP indicates that the objectives were coordinated at the national level and discussed with stakeholders before their establishment at river basin/river sub-basin level[47]. Further details, however, are not provided.

3.6 Good practices and areas for further development regarding setting objectives

The following **good practices** were identified:

- The focus of the main objectives was discussed with stakeholders prior to their establishment. The focus of the objectives was further emphasised with a common methodology developed for defining flood risk and dealing with FRM. This kind of practice provides comparable results throughout the country.
- The FRMP links the objectives with the 20 measure groups that are defined in the Slovenian catalogue of flood measures and also with the individual projects identified for each sub-basin flood plan.

The following **area for further development** was identified:

- Objectives are not specific or measurable.

[45] The assessment adopts the generally accepted definition of risk as a product of consequence times likelihood, thereby also in alignment with Art. 7(2) of the FD.
[46] Reporting sheet – Slovenia, chapter Summary of the Objectives.
[47] Reporting sheet – Slovenia, chapter Summary of the Objectives.

4. Planned measures for the achievement of objectives

In the reporting sheets, Slovenia has reported 40 aggregated[48] measures and no individual measures. Of the 40 measures, 20 are reported for each of the two UoMs[49]. The measures reported by Slovenia cover all four measure aspects[50]: prevention (20 measures), protection (18 measures), preparedness (10 measures) and recovery and review (four measures). As some measures cover more than one measure aspect or type, when looking across there are a total of 52 measures (this implies double-counting). (See Tables A1 and A2 and Figures A1 and A2 of Annex A for further information.)

Slovenia's FRMP, however, presents the number of measures differently: Slovenia's catalogue of flood risk reduction measures includes 20 groups of measures. These 20 groups of measures are used in each UoM and in all 17 sub-basins. For each measure group, there are regular activities performed by state and other agencies, and there can be a series of specific projects (these include both construction and non-construction projects; the number of projects per sub-basin ranges from 22 to 63).

The 40 aggregated measures set out in Slovenia's reporting sheets correspond to the 20 measure groups: all 20 measure groups are reported once for each of the two UoMs[51].

4.1 Cost of measures

Table 6 Estimated overall budget for the measures in the assessed FRMPs

	Estimated overall budget of planned measures in the FRMP (2017-2021) in EUR in constant prices
Both UoMs	540 000 000

Source: Reporting sheet and FRMPs

The FRMP provides an estimated overall budget for the implementation of structural and non-structural measures in the FRMP planned in both UoMs: EUR 540 m in constant prices (approximately EUR 110 m per year in constant prices), for the period 2017-2021.

[48] The Reporting Guidance mentions "Measures can be reported as individual measures (recommended for major projects) or aggregated measures,…" and also notes that measures may be comprised of "many individual projects". European Commission, Guidance for Reporting under the FD (2007/60/EC), 2013, pp. 54-58.

[49] The information reported to WISE was the starting point for the assessment in this section. The majority of the statistics presented are based on processing of information reported to WISE. Assuming that the Member States accurately transferred the information contained in their FRMPs to the reporting sheets (the sheets are the same for all Member States and are not customisable) and barring any undetected errors in the transfer of this information to WISE arising from the use of interfacing electronic tools, these statistics should reflect the content of the FRMPs.

[50] See Annex B for the list of all EU measure aspects and measure types.

[51] The measure groups are categorised into five areas, which correspond to the four measure aspects set out at EU level: prevention, awareness (reported under prevention), protection, and recovery and review.

The costs of the groups of measures that are already being implemented were estimated based on the expenditure for their implementation in past years (e.g. costs of flood forecasting). Costs of new measures or new parts of measures were estimated based on the planned activities, selected tariffs, data from adopted programmes and assessments of experts. Costs of structural measures were estimated based on the preliminary assessments and data from investment documentation gathered from the Slovenian Water Agency and municipalities[52].

The FRMP provides details on the costs of construction projects in each sub-basin plan[53]: Appendix C to the FRMP[54] presents 207 construction projects in Slovenia that are listed together with estimates of their costs, while Appendix F lists all international and bilateral projects and their estimated budgets. Costs of non-structural as well as structural measures are included in the estimated overall budget for implementation of the FRMP.

The FRMP states, however, that in the period of 2017-2021, only approximately EUR 400 m (or EUR 80 m per year) is likely to be available from financing sources. The FRMP nonetheless also presents an optimistic scenario, by which almost EUR 530 m can be ensured.

In addition to the budget for projects, the FRMP includes an overview of bilateral and transnational projects (ongoing and in preparation)[55], which lists 11 projects and provides their estimated costs (in total EUR 25.9 m, of which EUR 10 m is planned for the Ministry of the Environment and Spatial Planning and for bodies under the Ministry). The FRMP states that these costs are included in the estimated total budget.

4.2 Funding of measures

The FRMP lists the following sources of funding for the measures: the national Water Fund, the national Climate Fund, national and local public budgets, EU Cohesion funds and various INTERREG programs[56].

Table 7 Funding of measures

	All UoMs
Distribution of costs among those groups affected by flooding	
Use of public budget (national level)	✓
Use of public budget (regional level)	
Use of public budget (local level)	✓

[52] The methodology for the assessed costs of measures in the FRMP (all sub-basin flood plans) is described in Chapter 4.1 and in more detail in the Appendix B (6.1 Stroški protipoplavnih ukrepov) of the FRMP.

[53] These are all listed under Slovenian measure group U7, "Planning and implementation of construction flood prevention measures": FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223.

[54] FRMP, Appendix C, p.244-250 and Appendix F, p.256-258.

[55] Appendix F of the FRMP.

[56] FRMP, Chapter 4.2, p.224 and Appendix E, p.254-255.

	All UoMs
National Water Fund	✓
National Climate Fund	✓
Private investment	
EU funds (generic)	
EU Structural funds	✓
EU Solidarity Fund	✓
EU Cohesion funds	✓
EU CAP funds	
International funds	

Source: Reporting sheet and FRMPs

4.3 Measurable and specific (including location) measures

The measure groups are general[57], while the projects are much more concrete.

In its reporting sheets, Slovenia has indicated the location of all measures (i.e. measure groups) as the basins of specific rivers[58]. In the FRMP, the locations given for specific projects are much more detailed providing location, short description of the project and possible financial resources.

Nonetheless, the FRMP does not provide targets or measures for the expected results of the measures or the projects. Even though the FRMP provides the most detailed information for construction projects (measure group U7), this still does not indicate the contribution to overall flood risk reduction each project or group of projects would make.

The following table lists all the locations indicated for Slovenia's projects:

Table 8 Location of measures

	All UoMs
International	✓
National	✓
RBD/UoM	✓
Sub-basin	✓
APSFR or other specific risk area	✓
Water body level	✓
More detailed than water body	

[57] FRMP, Chapter 1.3.3, p.15-17.

[58] All measures in SIRBD1 will be implemented in the basins of the rivers Sava, Ljubljanska Sava, Ljublanica, Gradascica, Kaminska Bistrica, Litija Sava, Savinja, Krka, Sotla, Drava, Slovenske Mure and Ledava. The location for all measures in SIRBD2 is reported as the basins of the rivers Idrijca and Vipava.

4.4 Measures and objectives

The FRMP indicates which measure groups contribute to the achievement of which objectives; however, it is not clear by how much the measures will contribute nor whether the objectives will be achieved once all projects are implemented[59, 60].

4.5 Geographic coverage/scale of measures

As noted above, the FRMP provides information about the location of specific projects corresponding to each measure group. The location is provided in three different ways: (1) types of areas to which the project is aimed (whole state, flooded area, or river basin), (2) short descriptions of relevant projects with the names of locations (name of a river or town etc.), and in some cases also (3) potential sources of financing, which indicate that some projects will be international (supported by bilateral or regional programmes) while others are local (financed by a municipality).

Specific construction projects are prepared at river sub-basin level, APSFR or water body level, and their expected effects would take place at this level[61].

In its reporting sheets, as noted above, Slovenia reported on the geographic level of groups of measures; however, Slovenia did not provide, in addition, information on the geographic coverage of the expected effects of the groups of measures.

4.6 Prioritisation of measures

In its reporting sheets, Slovenia provided the **priority** of all measures (i.e. the measure groups set out in the FRMP). The majority of the measures are of 'very high' priority (38 measures, or around 73 % of all measures), followed by measures of 'critical' priority (10 measures, or about 19 % of the total). Only four measures were reported as 'low' priority and no measures were reported as 'high' or 'moderate' priority. The distribution of the priority of the measures across the two UoMs is even (for details see Tables A3 and A4 in Annex A).

According to the information in the FRMP[62], three categories for prioritisation are used: high, moderate and low. The FRMP further explains that the following five measure groups for

[59] FRMP, Chapter 1.3.3, p.15-17.

[60] Slovenia subsequently explained that a common method for assessing the benefits of non-structural flood protection measures has not yet been developed and is the subject of expert discussions. Slovenia's aim with its measures and detailed projects is to significantly reduce flood risk and to continuously monitor implementation every two years with a report and to reassess the flood risk situation in Slovenia every six years as per the Floods Directive.

[61] FRMP, Chapter 1.3.3, p.15-17, Chapters 2 'RBD Danube' and 3 'RBD Adriatic', p.22-223.

[62] FRMP, p.3.

Slovenia were identified as having the highest priority for implementation (on a scale of 1 up to 5, with 5 representing the highest priority):

- Planning and implementation of flood prevention construction measures (Slovenian measure group U7) received 3.95 points;
- Regular maintenance of watercourses, water objects as well as water and littoral areas (Slovenian measure group U10) received 2.85 points;
- Ensuring financial resources for civil service of water management (Slovenian measure group U13) received 2.20 points;
- Forecasting of floods received 1.31 points (Slovenian measure group U15J)
- Execution of individual (self-protection) flood protection measures (Slovenian measure group U8) received 1.24 points;

Other measure groups received lower scores.

The FRMP explains that prioritisation was carried out by expert judgement: a survey among water professionals was carried out at national level to determine the priorities of the 20 measure groups. Each water professional gave priorities to the five most important measure groups (giving them 5, 4, 3, 2 or 1 point while the rest of the measures received 0.2 points). Then the average number of points per measure group was calculated. This input was used in prioritisation. CBA was not used for prioritising the measures (see also section 6)[63] [64].

Slovenia did not provide information on the timetable of measures in its reporting sheets. The FRMP indicates that the general **timeframe** for implementation of the specific projects is 2017-2021; further details, however, are not provided. All measure groups are composed of different specific projects; some are ongoing and some are continuous activities. For some ongoing and planned EU projects in the indicative list of EU projects (Appendix F), the FRMP provides more specific timeframes for implementation of the projects, which range from 2016-2018 for earlier projects to 2018-2020 for later projects[65] [66].

[63] FRMP, Chapter 1.3.3., Catalogue of measures, p. 17, footnote 18.

[64] Slovenia subsequently explained that this survey was not the only criterion for prioritisation. Expert judgment and experience with performing different types of measures were used, as well as the results of the detailed public consultation process.

[65] Appendix F of the FRMP (p.256-258).

[66] Slovenia subsequently noted that some of the projects were not approved or confirmed at the time of the FRMP's preparation or were still in preparation, so a detailed time frame was not possible to estimate. Information and monitoring of the time frame will be done via the FRMP implementation monitoring process (with a report every two years), as set out in the FRMP.

4.7 Authorities responsible for implementation of measures

Slovenia did not report information to WISE about the level of responsibility of the assigned responsible authorities; however, it reported the authorities responsible for each measure (i.e. measure groups).

Overall, all responsible authorities are at the national level and constitute two types of authorities: ministries of the government (e.g. Ministry of the Environment and Spatial Planning, Ministry of Agriculture, Forestry and Food, Ministry of Finance) or agencies (e.g. Slovenian Environment Agency, Slovenian Water Authority, Administration for Protection and Rescue.). Around a quarter of the measures were assigned only one responsible authority but most measures were assigned multiple responsible authorities[67].

While the FRMP itself does not provide a summary of authorities responsible for measures, the sub-basin plans provide this information. The authorities listed are:

(1) National administrative bodies: The Ministry for Environment and Spatial Planning, and the Slovenian Water Agency with its eight regional offices, a body of the Ministry;

(2) Executive bodies: Companies holding concessions for water management, specifically for construction projects[68];

(3) For organisation of civil protection in case of interventions due to floods: The national Administration for Civil Protection and Disaster Relief with 13 regional offices, a body of the Ministry of Defence.

While most of the responsibility (according to the national Slovenian water management legislation) in fact lies on the state/national level and state agencies, some of the tasks were assigned to local communities, as seen in the sub-basin lists of projects. Some of the projects were assigned to private sector actors as well.

4.8 Progress of implementation of measures

According to the reporting sheets, nearly all measures in Slovenia are ongoing (50 measures) and two measures have not started. No measures were reported as ‘completed’ or ‘ongoing construction’ (for details see Tables A5 and A6 in Annex A).

Concerning construction measures, the FRMP contains a list of planned projects with information on the stage of implementation of each, including necessary technical and

[67] Reporting sheets.

[68] These include: VGP d.d., Hidrotehnik, vodnogospodarsko podjetje, d.d., Drava vodnogospodarsko podjetje Ptuj d.d., Vodnogospodarsko pojetje Novo mesto d.d., and Mura – Vodnogospodarsko podjetje d.d., d.d.

administrative steps[69]. The implementation is monitored through seven steps (see below under monitoring).

4.9 Measures taken under other Community Acts

Member States have been asked to report on other Community Acts under which each measure has been implemented: the reporting sheet does not provide any information, however. The FRMP itself does not mention measures under the WFD[70, 71] or the Seveso Directive (though information is provided on Seveso installations located in the APSFRs).

4.10 Specific groups of measures

The following measure group addresses spatial planning and land use: adaptation of land-use in river basins (Slovenian measure group U3). In addition, measure groups for flood plains also include land use elements[72].

Slovenia's framework for spatial planning has evolved since 2000. The first important step of halting or controlling buildings/development in floodplains occurred in 2002 under the Water Law passed that year: its Article 86 prohibits any kind of construction that would increase flood risk. Whenever further urbanisation is allowed, protection and compensation measures are required[73].

NWRM have been planned in Slovenia. There are two such measures: Slovenian measure U1 - Determination and consideration of flood plain areas (that partially corresponds to NWRM measures F05, F14, N02, and N03 from Annex B), and measure U2 - Identification, establishment, and protection of important natural high-water flood plain areas (that corresponds to NWRM measures F05[74], F14[75], N02[76], and N03[77])[78].

Measures that specifically consider nature conservation. One measure specifically considers nature conservation (Identification, establishment, and protection of natural flood areas of high waters, Slovenian measure group U2). In 2015, a special study for designating

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69 FRMP, Appendix C, p.244-250.
70 Slovenia's Programmes of Measures for its second RBMPs, however, include implementation of the whole FRMP as a measure ("U1a – protection from adverse effects of floods").
71 Slovenia subsequently informed that Slovenian the planning for measure group U2 (Identification, establishment, and protection of important natural high-water flood plain areas), in all of the 17 sub basins, and some other measures was done in coordination with WFD/RBMP planning.
72 Reporting sheets. Corresponding to EU measure type M21.
73 Reporting sheets; Water Law, Article 86, Official Gazette of the Republic of Slovenia, No.67/2002. https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2002-01-3237?sop=2002-01-3237
74 Land use conversion.
75 Overland flow areas in peatland forests.
76 Wetland restoration and management.
77 Floodplain restoration and management.
78 FRMP, Chapter 1.3.3., Catalogue of measures, p. 17.

natural flood areas was completed (it includes a proposal for formal protection of the most important flood-plains in the sense of protecting their water retention capacity)[79]. This measure is important because its results can have many synergetic effects for the implementation of the goals of the WFD and other sectoral policies (such as biodiversity, climate adaptation and green infrastructure).

The measures in the Slovenian FRMP do not specifically consider **navigation and port infrastructure** or **dredging** to increase the river channel capacity and its ability to convey water for flood alleviation purposes[80].

4.11 Recovery from and resilience to flooding

The role of insurance policies is discussed in the Slovenian FRMP, with regard to the recovery from flooding, preparedness/resilience to flood or other issues. A general description of a measure group 'U18 - assessment of damages and execution of reconstruction after floods' emphasises that it is necessary to provide:

- regular training and education of members of the commission for assessment of flood damage;
- equal treatment of victims;
- participation of insurance companies; and
- ensuring a quick and professional treatment of victims.

Besides that, the list of specific projects includes two projects for each sub-basin under measure U20 (Systemic, normative, financial and other measures) that are related to insurance policies: both deal with establishing a scheme of subsidising of insurance premiums[81].

There is no specific information in the FRMP on what type of insurance is currently available.

4.12 Monitoring progress in implementing the FRMP

Progress in the implementation of planned measure groups and projects will be monitored via a report to the Government of Slovenia every two years, where it will be shown how and if the listed/planned measures/projects are being developed or being implemented and how they relate to objectives in each of the 17 sub-basins. A draft of the report will go through 'public unfolding', a basic level of public consultation that usually includes a public presentation on

[79] Reporting sheet – Slovenia, Summary of Flood Extent. FRMP, Chapter 1.3.3. Catalogue of flood prevention measures, p.15-16.

[80] FRMP, Chapter 1.3.3., Catalogue of measures, p. 17, Lists of projects for each sub-basin in Chapters 2 "RBD Danube" and 3 "RBD Adriatic", p.22-223.

[81] FRMP. Reporting sheets.

the Internet, public debate and other forms of public consultation. After it is confirmed by the government, it will be published[82].

There is no specific information on what is monitored with the exception of the construction measure group and projects: Seven steps of implementation for each construction project are envisioned and progress will be monitored through these steps[83] [84]. Many measure groups are also ongoing activities, and there are no clear targets and/or indicators for assessing whether other non-construction measures have been implemented, and no dates were specified for the completion of each measure.[85]

The FRMP does not indicate a specific baseline against which progress will be monitored and assessed.[86]

4.13 Coordination with the Water Framework Directive

The table below shows how the development of the FRMP has been coordinated with the development of the second River Basin Management Plan (RBMP) of the WFD.

Table 9 Coordination of the development of the FRMPs with the development of the second River Basin Management Plans of the WFD

	All UoMs
Integration of FRMP and RBMP into a single plan	
Joint consultation of draft FRMP and RBMP	✓
Coordination between authorities responsible for developing FRMP and RBMP	✓
Coordination with the environmental objectives in Art. 4 of the WFD	✓
The objectives of the Floods Directive were considered in the preparation of the RBMPs [a]	✓
Planning of win-win and no-regret measures in the FRMP	✓
The RBMP PoM includes win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and NWRM [a]	✓
Permitting or consenting of flood risk activities (e.g. dredging, flood defence maintenance or construction) requires prior consideration of WFD objectives and RBMPs	✓
Natural water retention and green infrastructure measures have been included [87]	✓

[82] Reporting sheet – Slovenia, Summary of the Progress FRMP, subchapter »Način spremljanja izvajanja gradbenih in negradbenih protipoplavnih ukrepov« in each of the 17 sub-basin flood plans.

[83] FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223. Table that presents the process of implementing The Flood Directive (link provided in sub-basin flood plans): http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/voda/opvp/OPOPO.xls

[84] The seven steps are: (1) preparation of expert studies; (2) preparation of a spatial instrument; (3) acceptance of a spatial instrument; (4) preparation of a project for the acquisition of building permit; (5) building permit obtained; (6) ongoing construction; (7) construction in operation.

[85] FRMP, Chapter 4.3, p.224-225.

[86] Slovenia subsequently explained that the baseline is the results of the PFRA (map of potential flood risk in different categories of vulnerability: human health, economy, cultural heritage, environment) and the FHRMs for the APSFRs.

	All UoMs
Consistent and compliant application of WFD Article 4(7) and designation of heavily modified water bodies with measures taken under the FD e.g. flood defence infrastructure	✓
The design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, have been adapted to take into account WFD Environmental Objectives [a]	✓
The use of sustainable drainage systems, such as the construction of wetland and porous pavements, have been considered to reduce urban flooding and also to contribute to the achievement of WFD Environmental Objectives [88]	

Notes: [a] based on reporting under the WFD

The development of the FRMP has been coordinated with the development of the second RBMP of the WFD. There were joint consultations of the draft FRMP/sub-basin flood plans and RBMPs and coordination between authorities responsible for developing both documents (the same authority, different teams).

In the FRMP, all flood risk management measure groups have been sorted into three categories depending on their influence on achieving of the WFD goals: (1) synergetic influence, (2) potential conflict with the WFD goals, and (3) irrelevant for implementation of the WFD. All the measure groups that have potential conflict with the WFD goals are to be further examined on a project level and harmonised with all the WFD objectives.

In the second RBMP, there is a measure called "U1a – protection from adverse effects of floods", which is actually the implementation of the FRMP, as explained in the text describing the measure.[89]

4.14 Good practices and areas for further development with regard to measures

The following **good practices** were identified:

- The FRMP provides clear information on costs, funding sources and expected funding levels (and is forthright in identifying a funding gap).
- The FRMP sets out measure groups for spatial planning, NWRM and nature conservation actions.
- There are strong links with the WFD. For example, measure groups were assessed for their compatibility with the WFD. All the measure groups that have potential conflict

[87] Slovenia subsequently informed that Slovenian measure group U2 (Identification, establishment, and protection of important natural high-water flood plain areas), in all of the 17 sub basins, and some other measures, were prepared in detailed coordination with WFD/RBMP planning.

[88] Slovenia subsequently indicated that these activities are part of the U3 measure group, on adaptation of land-use in river basins, and are carried out in each of the 17 sub basins.

[89] Reporting sheet – Slovenia, Summary of the Development; FRMP, Chapter 1.3.3., Catalogue of measures, p. 17; RBMP, Program of measures of water management, Measure U1a – Protection from adverse effects of floods, p.211-213.

with the WFD goals are to be further examined on a project level and harmonised with all the WFD objectives.

- Monitoring will be carried out every two years and will include a public consultation process.

The following **areas for further development** were identified:

- Although the FRMP links objectives and measures, it is not clear by how much the measures will contribute to the objectives and whether the objectives will be achieved with their implementation (also as objectives are not specific or measurable).
- Whereas the FRMP describes how monitoring of measures will be carried out and presented in a report every two years, a baseline for monitoring progress is not clearly defined in the FRMP.

5. Consideration of climate change

Slovenia's FRMP indicates that the contribution of each of measure group to adaptation to climate change was checked by expert judgement.[90] (Moreover, for projects that contribute to adaptation, the national Climate Fund is a potential source of financing, as noted in section 4)[91]. However, it does not appear that any measure groups or projects were specifically developed to address climate change, nor that climate was considered in their design.[92]

The FRMP does not contain a reference to the national Strategic Framework for Climate Change Adaptation (which was released after the FRMP, in December 2016). The FRMP does not indicate whether climate change scenarios were considered in its development; nor does it discuss possible shifts in the occurrence of extreme events, or changes in numerical recurrence times, or main sources of flooding under long term climate change scenarios.[93]

5.1 Good practices and areas for further development concerning climate change

The following **good practice** was identified:

- The contribution of measure groups to climate change adaptation was assessed.

The following **area for further development** was identified:

- The FRMP contains little information about climate impacts on flooding, and it does not appear that climate change was considered in the design of measures.
- No reference to a coordination between the FRMP and the national climate change adaptation strategy when both documents where still under parallel development.

[90] FRMP, Appendix A, p.226-235.

[91] Reporting sheet – Slovenia, chapters Summary of the Objectives, and Summary of the Flood Extent. FRMP, p.20.

[92] Slovenia subsequently provided information that the FRMP itself is recognised as a key climate change adaptation measure. Moreover, whenever new (structural) flood protection measures are planned or designed in detail, the most recent information (also on climate change impacts) are included.

[93] "Slovenia is performing a detailed analysis of climate change impacts regarding flood risk management and it will be included in the second PFRA." (information subsequently provided by Slovenia)

6. Cost-benefit analysis

In the FRMP, costs of measures were estimated (see section 4) and quantitative information on elements at risk and on potential flood damage (which provides an indication on benefits of flood protection) were taken into account[94]. In the FRMP, the methodology for the estimates of the costs of measures is described[95].

A CBA has not been used in the prioritisation and planning of the measures in the FRMP, but a methodology is set out to use CBA at the project or the sub-basin level.

The FRMP states[96] that CBA will be performed in the process of preparing investment documentation, according to the national decree[97]. The CBA will be performed at the project level for measures that fall into Slovenian measure type U7, "Planning and implementation of structural flood protection measures". According to the national methodology (Article 5), this requires comparing costs and benefits of various alternatives, but it also allows comparison of just two alternatives: with or without intervention. The recommended structure of costs, as well as one of the possible methods for assessing the benefits, are presented in Annex B of the FRMP: this includes costs of new investments, operating, maintenance, administrative and other direct costs of planned flood protection measures, and benefits in terms of reduction of damage to human health, the environment, cultural heritage and economic activity of the affected areas[98].

The environment, ecosystem services, possible sources of greater pollution, as well as water services such as water supply and waste water collection and treatment are included in the assessment of reduced flood damage due to the implementation of flood protection measures. The method includes also proposed monetary values (per unit of endangered element) for both, estimated costs and benefits (resulting from the decrease in damage due to application of measures). The recommended structure of costs and method for assessing the benefits are applicable to all types of flood protection measures. Assessing of transboundary effects is not explicitly mentioned. It appears that CBA will be applied mainly on a project basis in the last

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94 FRMP, Chapter 4 and especially Subchapter 4.3, 'Aspects of costs and benefits of non-structural and structural flood protection measures', p.224-225. Subsequently Slovenia referred to the report "Ocena stroškov ukrepov NZPO in razpoložljivih sredstev po virih financiranja, 12.7.2017" that provides detailed estimates of costs and financial sources by measure groups on a state level.

95 FRMP, Subchapter 4.1 and Subchapter 6.1.

96 FRMP, Subchapter 4.3, 'Aspects of costs and benefits of non-structural and structural flood protection measures'.

97 In accordance with the national Decree on the uniform methodology for the preparation and treatment of investment documentation in the field of public finance. Official Gazette of the Republic of Slovenia, No. 60/06, 54/10 in 27/16, http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED3708

98 FRMP, Subchapter 4.3. Aspects of costs and benefits of non-structural and structural flood protection measures, p.224-225; and Appendix B – Methodology of the Assessment of Costs and Benefits of Flood protection Measures, p.236-243.

phase of planning, when a CBA is required for investments from public funds according to the national decree[99].

6.1 Good practices and areas for further development

The following **good practice** was identified:

- The FRMP sets out a comprehensive approach for CBA at the project and sub-basin level.

The following **area for further development** was identified:

- The application of CBA for measures with potentially transboundary effect is unclear.
- CBA will be performed in the implementation of the FRMP at the project level, but was not used to select and prioritise the Plan's measures.

[99] Decree on the uniform methodology for the preparation and treatment of investment documentation in the field of public finance (Official Gazette of the Republic of Slovenia, No. 60/06, 54/10 and 27/16).

7. Governance including administrative arrangements, public information and consultation

7.1 Competent authorities

In 2010, in accordance with the Water Law, the ministry responsible for water was tasked, as the competent authority, to prepare the FRMP: the Ministry of Agriculture and Environment of the Republic of Slovenia used to be the competent authority for both UoMs. Following a reorganisation, the Ministry of the Environment and Spatial Planning of the Republic of Slovenia is currently the competent authority for both UoMs[100] [101]. The most recent documents reported to the European Commission are dated 2014.

7.2 Public information and consultation

The table below shows how the public and interested parties were **informed**, according to the FRMP concerning the draft FRMPs. Information how the consultation was actually carried out and which stakeholders participated is presented in the rest of the section:

Table 10 Methods used to inform the public and interested parties of the FRMPs

	All UoMs
Media (papers, TV, radio)	✓
Internet	✓
Digital social networking	
Printed material	
Direct mailing	
Invitations to stakeholders	✓
Local Authorities	✓
Meetings	✓

Source: FRMPs

In Slovenia, the public and stakeholders were informed about the preparation of the FRMP through the internet: all the documents (including the FRMP and background studies) were (and in early 2018, still are) available on government web sites. In addition, the public and stakeholders were informed through invitations, meetings, and workshops, through local water authorities that exhibited the draft plans as well as through press conferences[102].

[100] FRMP, Chapter 1.2.1, p.10.

[101] Slovenia subsequently noted that since 2016, the key actors in water management are the Ministry of the Environment and Spatial Planning and Slovenian Water Agency (*Direkcija RS za vode*).

[102] Reporting sheets – Slovenia, chapter Summary of Consultation. FRMP, Chapter 1.3.7. Public Consultation regarding FRMP, p.19-20. Primorski vodni dnevi: http://www.mop.gov.si/si/medijsko_sredisce/novica/archive/2015/2/select/napovednik_dogodkov/article/12448/5819/

The table below shows how the actual **consultation** was carried out:

Table 11 Methods used for the actual consultation

	All UoMs
Via Internet	✓
Digital social networking	
Direct invitation	✓
Exhibitions	✓
Workshops, seminars or conferences	✓
Telephone surveys	
Direct involvement in drafting FRMP	

Source: FRMPs

The actual consultation was carried out first of all via the internet. People were able to submit their comments online. The FRMP states that there were more than 50 comments on the draft FRMP collected in this way from various stakeholders (associations, local communities and other groups).

As indicated above, public presentations were organised across the country in cooperation with local authorities[103].

After the publication of the final FRMP, Slovenia organised workshops with local inhabitants in flood-risk areas and with local water professionals. In December 2015, there were four workshops for the basins of Savinja river (at Ljubno ob Savinji), Mura and Drava rivers (at Murska Sobota), Sava river (at Ljubljana) and Soča and Adriatic rivers (at Nova Gorica) that explained the FRMP. In 2017, a public discussion and exhibition was held, covering both UoMs[104].

The table below shows how the **documents** for the consultation were provided:

Table 12 Methods used to provide the documents for the consultation

	All UoMs
Downloadable	✓
Direct mailing (e-mail)	
Direct mailing (post)	
Paper copies distributed at exhibitions	
Paper copies available in municipal buildings (town hall, library etc.)	✓

[103] Reporting sheets – Slovenia, chapter Summary of Consultation. FRMP, Chapter 1.3.7. Public Consultation regarding FRMP, p.19-20. FRMP, Chapters 2 »RBD Danube« and 3 »RBD Adriatic«, p.22-223: http://www.mop.gov.si/si/delovna_podrocja/voda/zmanjsevanje_poplavne_ogrozenosti/posvetovanje_z_javnostmi/

[104] Reporting sheets – Slovenia, chapters Summary of Consultation. FRMP, Chapter 1.3.7. Public Consultation regarding FRMP, p.19-20.

Source: FRMPs

The documents for the consultation were available for downloading from the internet. They were also available at local offices of water authorities where they were publicly displayed.[105]

7.3 Active involvement of Stakeholders

There is no information in the FRMP on which groups of stakeholders were actively involved in the development of flood risk management plans.[106] The reporting sheets indicate that after the draft FRMP was publicly presented (and available for downloading from the internet), there were several internal presentations of the FRMP to government bodies under the Ministry of the Environment and Spatial Planning, including flood warning and defence bodies.[107]

7.4 Effects of consultation

The FRMP reports that comments were collected at all public presentations but does not provide information on how these or written comments were used to amend the draft FRMP.[108] The FRMP does note, however, that information about relevant construction projects planned at municipal level were collected and included in an informative list of construction projects to be considered.

7.5 Strategic Environmental Assessment

The FRMP underwent an SEA procedure. The FRMP has an Appendix G with "General protection guidelines and mitigation measures", taken from the SEA Report. The reporting sheets clarify that the draft FRMP and its draft SEA report were publicly presented together at public discussions and exhibitions[109].

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[105] Reporting sheets – Slovenia, chapters Summary of Consultation. FRMP, Chapter 1.3.7. Public Consultation regarding FRMP, p.19-20.

[106] Reporting sheets – Slovenia, chapters Summary of Consultation. FRMP, Chapter 1.3.7. Public Consultation regarding FRMP, p.19-20. Sections on public consultations in each of the sub-basin plans in Chapters 2 and 3 of the FRMP.

[107] Slovenia subsequently provided additional information – a report on public consultation (*Posvetovanje z javnostmi v okviru priprave načrta zmanjševanja poplavne ogroženosti – poročilo*, Ljubljana, January 2016; does not appear to be published), which provides detailed information on public consultation process and groups that were actively involved: municipalities, governmental bodies and institutions, public agencies, civil initiatives, associations, research institutions, spatial planning companies, interested individuals, media and others. In the strategic environmental assessment process for the FRMP, additional public consultation and presentations were carried out. Slovenia also pointed out that in the prior PFRA process, a long and active public consultation was carried out (FRMP, p.20).

[108] The report on public consultation (*Posvetovanje z javnostmi v okviru priprave načrta zmanjševanja poplavne ogroženosti – poročilo*, Ljubljana, January 2016, p.38-39) states that the Ministry tried to integrate all relevant comments into a revised version of the FRMP. Some comments, such as suggestions to define additional areas as APSFRs, will be evaluated and considered in the second FRMP.

[109] FRMP, Appendix G, p.259-262; Reporting sheets – Slovenia, chapter Summary of Consultation. Slovenia subsequently provided link to news on public consultation on the FRMP and the SEA report: http://www.mop.gov.si/si/medijsko_sredisce/novica/7567/ and

7.6 Good practices and areas for further development regarding governance

The following **good practice** was identified:

- Workshops were held to present and raise awareness of the completed FRMP on a sub-basin level.

The following **areas for further development** were identified:

- Although a report on public participation was published separately, the FRMP contains almost no information about the types of stakeholders actively involved in the preparation of the FRMP, nor the extent of their involvement. The FRMP does not contain a reference to the separate report.
- There is little information in the FRMP about the results of the consultation.

http://www.mop.gov.si/si/medijsko_sredisce/novica/7623/

Annex A: Supplementary tables and charts on measures

This Annex gives an overview of the data on measures reported by Slovenia in its reporting sheets. These tables and charts were used for the preparation of section 4 on measures. As noted in section 4, the FRMP presents a different structure for measures. This Annex, however, is only based on Slovenia's reporting sheets.

Background & method

This document was produced as part of the assessment of the Flood Risk Management Plans (FRMPs). The below tables and charts below are a summary of the data reported on measures by the Member States, and were used by the Member State assessor to complete the questions on the Flood measures. The data are extracted from the XMLs (reporting sheets) reported by Member States for each FRMP, and are split into the following sections:

- **Measures overview** – Tabulates the number of measures for each UoM;
- **Measure details: cost** – Cost & Cost explanation;
- **Measures details: name & location** – Location & geographic coverage;
- **Measure details: authorities** – Name of responsible authority & level of responsibility;
- **Measure details: objectives** – Objectives, Category of priority & Timetable;
- **Measure details: progress** – Progress of implementation & Progress description;
- **Measure details: other** – Other Community Acts.

On the basis of the Reporting Guidance (which in turn is based on the Floods Directive)[110], not all fields are mandatory, and, as such, not all Member States reported information for all fields.

Some of the fields in the XMLs could be filled in using standardised answers – for example, progress is measured via the categories set out in the Reporting Guidance. This means that producing comprehensive tables and charts required little effort. For many fields, however, a free data format was used. For some Member States, this resulted in thousands of different answers, or answers given in the national language.

In such situations, tables and charts were developed using the following steps:

- A first filter is applied to identify how many different answers were given. If a high number of different answers are given, Member States assessors were asked to refer to the raw data when conducting the assessment, and this Annex does not reflect these observations.

[110] http://icm.eionet.europa.eu/schemas/dir200760ec/resources

- If a manageable number of answers are given, obvious categories are identified, and raw data sorted.
- Measures missing information may be assigned categories based on other fields (for example, if the level of Responsibility Authority is missing, the information may be obvious from the field "name of Responsible Authority").
- Measures where obvious categories cannot be defined based on other available information (as in the example above on the name of the Responsible Authority), are categorised as "no information".

Types of measures used in reporting

The following table[111] is used in the reporting on the types of measures. Each type of measures is coded as an M-number. Measures are grouped in an 'aspect'.

NO ACTION M11: No Action	**PREPAREDNESS** M41: Flood Forecasting & Warning M42: Emergency response planning M43: Public Awareness M44: Other preparedness
PREVENTION M21: Avoidance M22: Removal or relocation M23: Reduction M24: Other prevention	**RECOVERY & REVIEW** M51: Clean-up, restoration & personal recovery M52: Environmental recovery M53: Other recovery
PROTECTION M31: Natural flood management M32: Flow regulation M33: Coastal and floodplain works M34: Surface Water Management M35: other protection	**OTHER MEASURES** M61: Other measures

[111] Guidance for Reporting under the Floods Directive (2007/60/EC): https://circabc.europa.eu/w/browse/a3c92123-1013-47ff-b832-16e1caaafc9a

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Measures overview

Table A1 - Total number of measures

Number of individual measures	0
Number of aggregated measures	40
Number of aggregated measures including measures which have been allocated to more than one measure type	52
Total number of measures	40
Total number of measures including measures which have been allocated to more than one measure type	52
Range of number of measures between UoMs, including measures which have been allocated to more than one measure type (Min-Max)	equally distributed
Average number of measures across UoMs including measures which have been allocated to more than one measure type	26

Notes: As described in section 4, Slovenia's FRMP contains a different structure: it presents 20 "measure groups", with specific projects under each measure group in the two UoMs. The 40 measures presented here correspond to the 20 measure groups across the two UoMs.

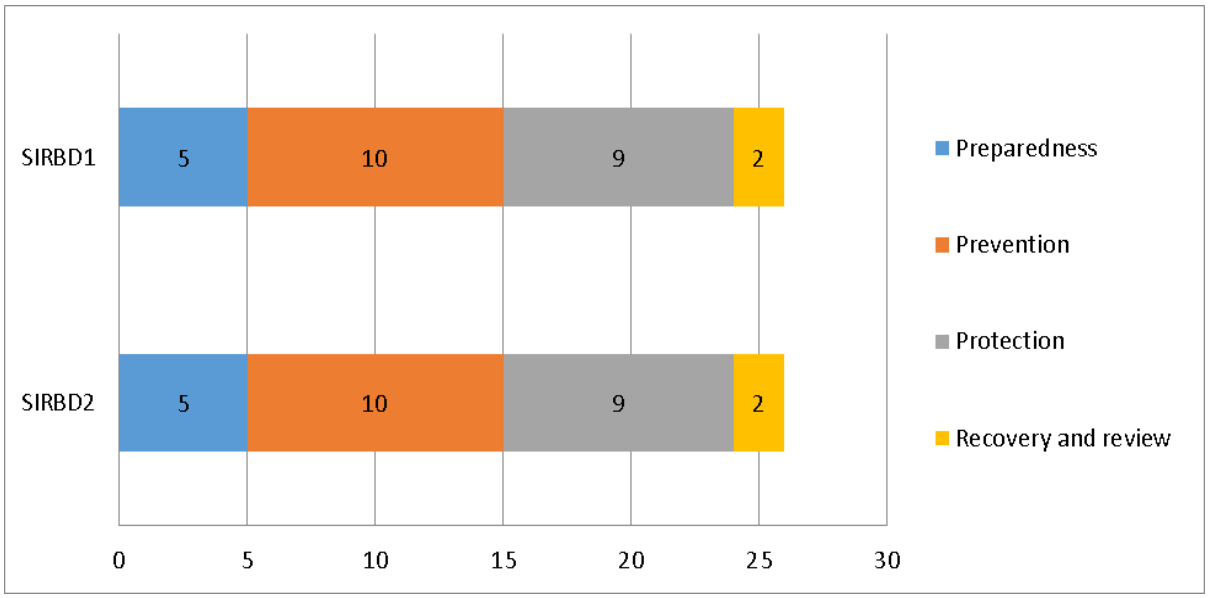
Table A2: Total number of measures (aggregated and individual), per measure aspect and UoM, including duplicates

	Prevention				**Total**	**Protection**				**Total**	**Preparedness**				**Total**	**Recovery & review**		**Total**	**Other**	**Grand Total**
	M21	**M22**	**M23**	**M24**		**M31**	**M32**	**M33**	**M35**		**M41**	**M42**	**M43**	**M44**		**M51**	**M53**			
SIRBD1	3	1	1	5	10	1	1	1	6	9	2	1	1	1	5	1	1	2		26
SIRBD2	3	1	1	5	10	1	1	1	6	9	2	1	1	1	5	1	1	2		26
Grand Total	**6**	**2**	**2**	**10**	**20**	**2**	**2**	**2**	**12**	**18**	**4**	**2**	**2**	**2**	**10**	**2**	**2**	**4**	**0**	**52**
Average per UoM	**3**	**1**	**1**	**5**	**10**	**1**	**1**	**1**	**6**	**9**	**2**	**1**	**1**	**1**	**5**	**1**	**1**	**2**	**0**	**26**

Notes: The total includes measures assigned to more than one measure type. All measures are aggregated as Slovenia did not report any individual measure.

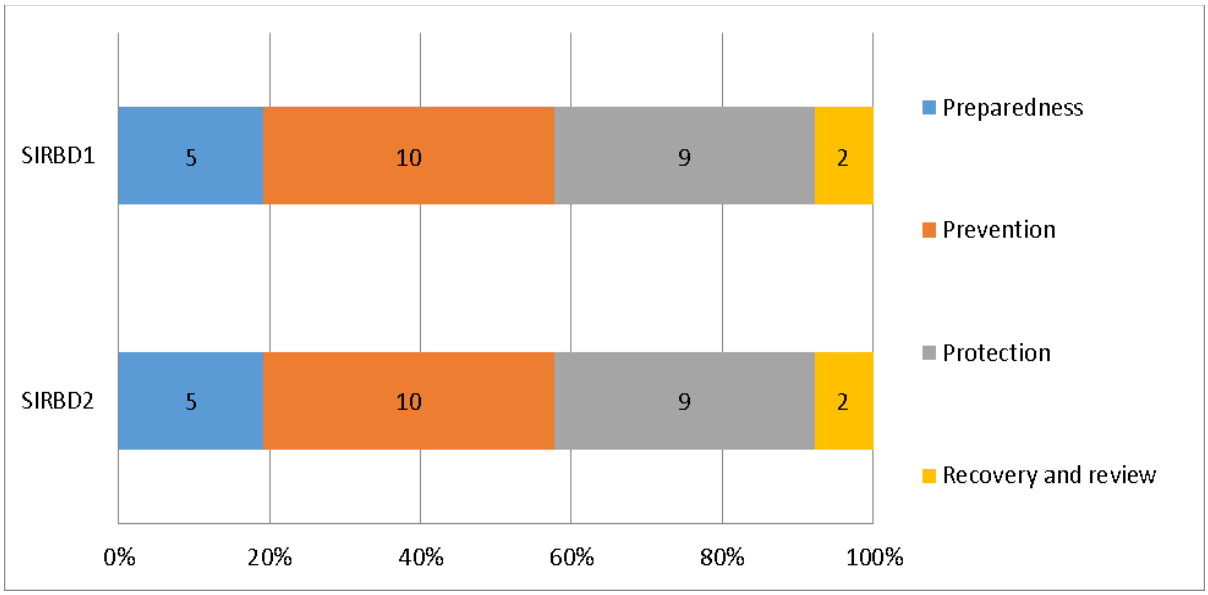
The information in Table A2 is visualised in Figures A1 and A2 below:

Figure A1: Number of total measures (individual and aggregated) by measure aspect



Notes: The total includes measures assigned to more than one measure type. All measures are aggregated as Slovenia did not report any individual measures.

Figure A2: Share of total measures (aggregated and individual) by measure aspect



Notes: The total includes measures assigned to more than one measure type. All measures are aggregated as Slovenia did not report any individual measures.

Measure details: cost

Member States were requested to report information on:

- Cost (optional field);

- Cost explanation (optional field).

Slovenia did not report any information about the cost or cost explanations for any of the measures in the reporting sheets. (As noted in section 4 above, the FRMP contains information on the costs of structural and non-structural measures, in Chapter 4.1 and in Appendix B).

Measure details: name & location

Member States were requested to report on the following:

- Location of implementation of measures (mandatory field);
- Geographic coverage of the impact of measures (optional field).

Location of measures

In the reporting sheets, Slovenia provided information about the location of all measures. Overall, all measures in UoM SIRBD1 will be implemented in the river basins of the rivers Sava, Ljubljanska Sava, Ljublanica, Gradascica, Kaminska Bistrica, Litija Sava, Savinja, Krka, Sotla, Drava, Slovenske Mure and Ledava. The location for all measures in UoM SIRBD2 is reported as the river basins of the rivers Idrijca and Vipava.

Geographic coverage

Slovenia did not provide any information about the geographic coverage of the effects of any of the measures in the reporting sheets. (As noted in section 4 above, the FRMP contains information on the geographic coverage of structural and non-structural measures in Chapters 2 and 3).

Measure details: objectives

Member States were requested to report on:

- Objectives linked to measures (optional field, complementary to the summary provided in the textual part of the XML);
- Category of priority (Conditional, reporting on either ‘category of priority’ or ‘timetable’ is required);
- Timetable (Conditional, reporting on either ‘category of priority’ or ‘timetable’ is required).

Objectives

Slovenia reported objectives for all measures in the reporting sheets. A range of different objectives were reported for the UoMs. Consequently, it was not possible to aggregate the information.

Category of priority

Slovenia provided information for the priority of all measures. The following categories are used in the reporting sheet:

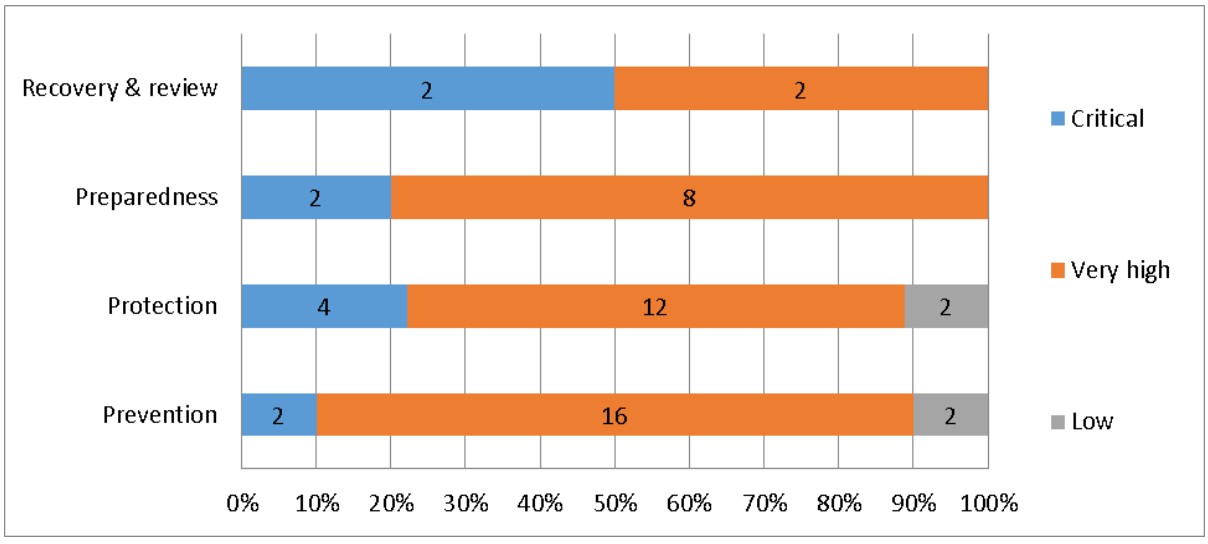
- Critical;
- Very high;
- High;
- Moderate;
- Low.

Table A3: Category of priority by measure aspect

	Critical	Very high	Low	Grand Total
Prevention	2	16	2	20
Protection	4	12	2	18
Preparedness	2	8		10
Recovery & review	2	2		4
Grand Total	**10**	**38**	**4**	**52**

Notes: The total includes measures assigned to more than one measure type. No measures were categorised as 'high' or 'moderate' priority.

Figure A3: Visualisation of Table A3: Category of priority by measure aspect



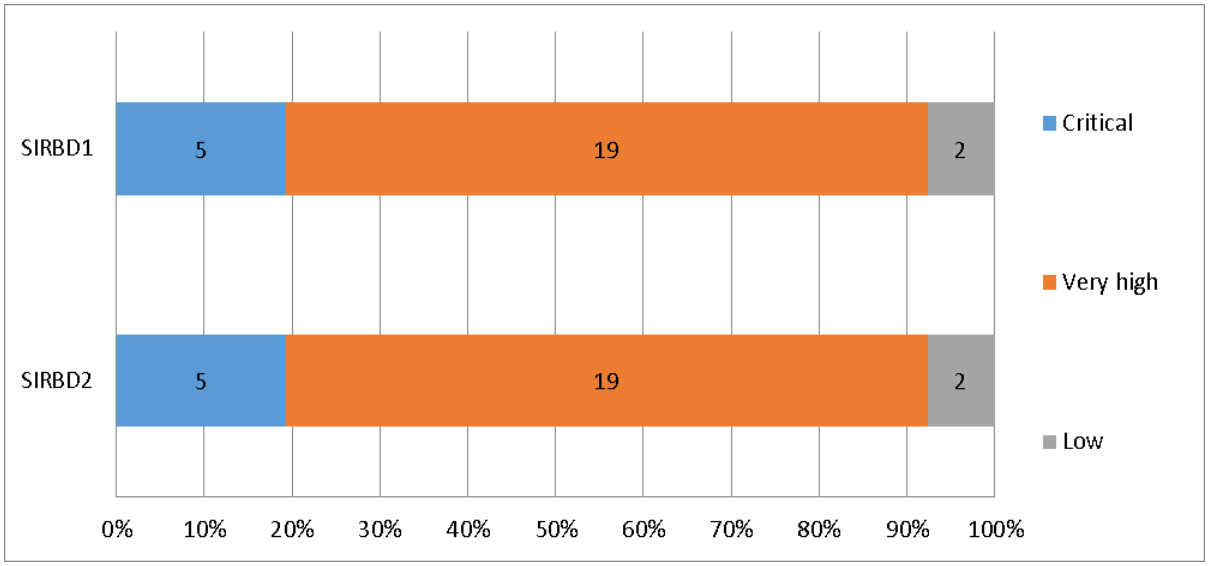
Notes: The total includes measures assigned to more than one measure type. No measures were categorised as 'high' or 'moderate' priority.

Table A4: Category of priority by UoM

	Critical	Very high	Low	Grand Total
SIRBD1	5	19	2	26
SIRBD2	5	19	2	26
Grand Total	**10**	**38**	**4**	**52**
Average per UoM	**5**	**19**	**2**	**26**

Notes: The total includes measures assigned to more than one measure type. No measures were categorised as 'high' or 'moderate' priority.

Figure A4: Visualisation of Table A4: Category of priority by UoM



Notes: The total includes measures assigned to more than one measure type. No measures were categorised as 'high' or 'moderate' priority.

Timetable

Slovenia did not provide any information about the timetable of the measures in the reporting sheets.

Measure details: authorities

Member States were requested to report on:

- Name of the responsible authority (optional if 'level of responsibility' is reported);
- Level of responsibility (optional if 'name of the responsible authority' is reported).

Slovenia did not provide information about the level of responsibility of the assigned responsible authorities in the reporting sheets, however, after examining the reported

authorities for each measure it appears that all responsible authorities operate at the national level. Overall, Slovenia assigned two types of authorities as responsible for the measures: ministries of the government (e.g. Ministry of the Environment and Spatial Planning, Ministry of Agriculture, Forestry and Food, Ministry of Finance etc.) or agencies (e.g. Slovenian Environment Agency, Slovenian Water Authority, Administration for Protection and Rescue etc.). Around a quarter of the measures were assigned only one responsible authority but most measures were assigned multiple responsible authorities. (As noted in section 4 above, the FRMP contains information on the responsible authorities to perform specific structural or non-structural measures in Chapters 2 and 3).

Measure details: progress

Member States were requested to report on:

- Progress of implementation of measures (mandatory field) – this is a closed question whose responses are analysed below;
- Progress description of the implementation of measures (optional field) – this is an open text question for which not all Member States reported and whose answers are not analysed here.

Slovenia reported information about the progress of implementation of the measures. The Progress of implementation was reported as[112]:

- COM (completed);
- OGC (ongoing construction);
- POG (progress ongoing);
- NS (not started).

A full definition of these terms can be found at the end of this section.

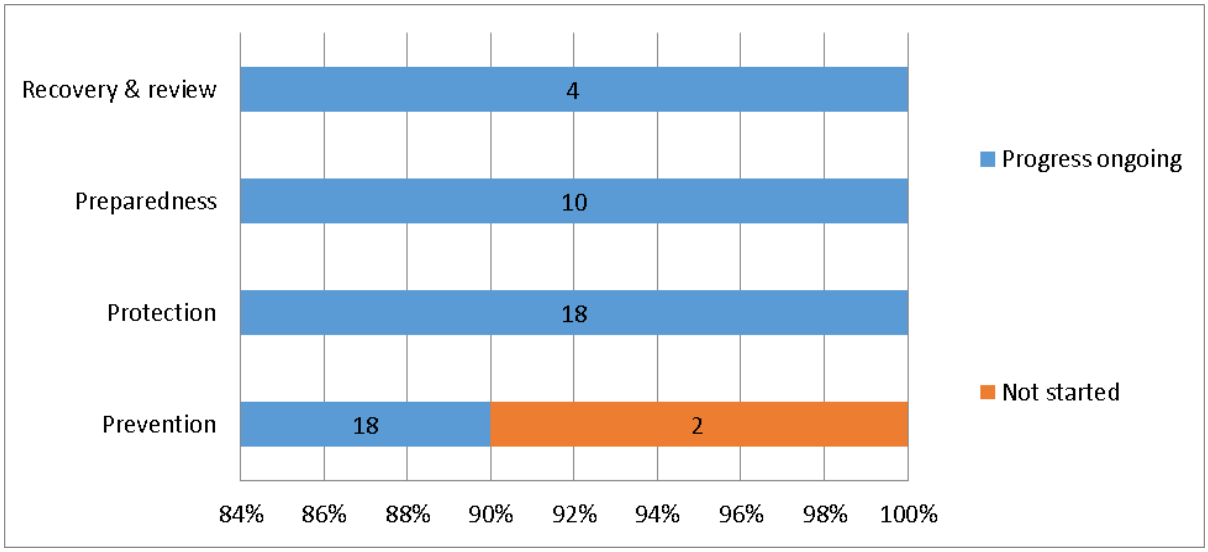
Table A5: Progress of implementation by measure aspect

	Progress ongoing	Not started	Grand Total
Prevention	18	2	20
Protection	18		18
Preparedness	10		10
Recovery & review	4		4
Grand Total	**50**	**2**	**52**

[112] Guidance for Reporting under the Floods Directive (2007/60/EC): https://circabc.europa.eu/w/browse/a3c92123-1013-47ff-b832-16e1caaafc9a

Notes: The total includes measures assigned to more than one measure type. No measures were reported as ‘completed’ or ‘ongoing construction’.

Figure A5: Visualisation of Table A5: Progress of implementation by measure aspect



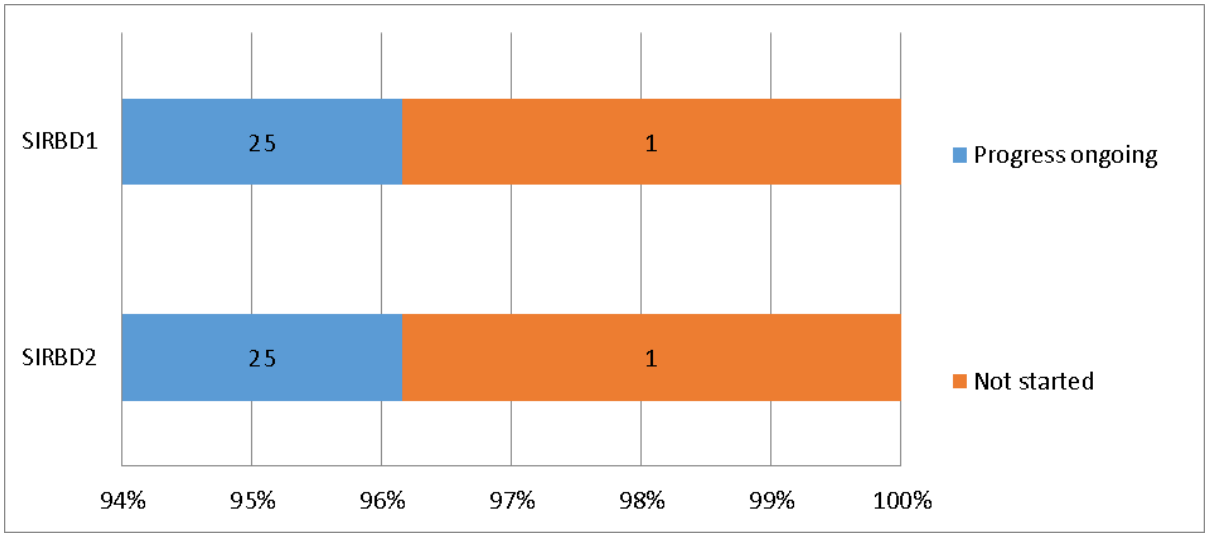
Notes: The total includes measures assigned to more than one measure type. No measures were reported as ‘completed’ or ‘ongoing construction’.

Table A6: Progress of implementation by UoM

	Progress ongoing	Not started	Grand Total
SIRBD1	25	1	26
SIRBD2	25	1	26
Grand Total	**50**	**2**	**52**
Average per UoM	**25**	**1**	**26**

Notes: The total includes measures assigned to more than one measure type. No measures were reported as ‘completed’ or ‘ongoing construction’.

Figure A6: Visualisation of Table A6: Progress of implementation by UoM



Notes: The total includes measures assigned to more than one measure type. No measures were reported as 'completed' or 'ongoing construction'.

The categories describing the progress of measures are defined in the EU Reporting Guidance Document on the Floods Directive:

For **measures involving construction or building works** (e.g. a waste water treatment plant, a fish pass, a river restoration project, etc.):

- Not started (NS) means the technical and/or administrative procedures necessary for starting the construction or building works have not started.
- Progress on-going (POG) means that administrative procedures necessary for starting the construction or building works have started but are not finalised. The simple inclusion in the RBMPs is not considered planning in this context.
- On-going construction (OGC) means the construction or building works have started but are not finalized.
- Completed (COM) means the works have been finalised and the facilities are operational (maybe only in testing period in case e.g. a waste water treatment plant).

For **measures involving advisory services** (e.g. training for farmers):

- Not started (NS) means the advisory services are not yet operational and have not provided any advisory session yet.
- Progress on-going (POG) means the advisory services are operational and are being used. This is expected to be the situation for all multi- annual long/mid-term advisory services that are expected to be operational during the whole or most of RBMP cycle.
- On-going construction (OGC): Not applicable
- Completed (COM) means an advisory service that has been implemented and has been finalised, i.e. is no longer operational. This is expected only for advisory services that are relatively short term or one-off, and which duration is time limited in relation to the whole RBMP cycle.

For **measures involving research, investigation or studies**:

- Not started (NS) means the research, investigation or study has not started, i.e. contract has not been signed or there has not been any progress.
- Progress on-going (POG) means the research, investigation or study has been contracted or started and is being developed at the moment.
- On-going construction (OGC): Not applicable
- Completed (COM) means the research, investigation or study has been finalised and has been delivered, i.e. the results or deliverables are available (report, model, etc.).

For measures involving administrative acts (e.g. licenses, permits, regulations, instructions, etc.):

- Not started (NS) means the administrative file has not been opened and there has not been any administrative action as regards the measure.
- Progress on-going (POG) means an administrative file has been opened and at least a first administrative action has been taken (e.g. requirement to an operator to provide information to renew the licensing, request of a permit by an operator, internal consultation of draft regulations, etc.). If the measure involves more than one file,

the opening of one would mean already “ongoing”.
- On-going construction (OGC): Not applicable
- Completed (COM) means the administrative act has been concluded (e.g. the license or permit has been issued; the regulation has been adopted, etc.). If the measure involves more than one administrative act, “completed” is achieved only when all of them have been concluded.

Measure details: other

Member States were requested to report on:

- Other Community Act associated to the measures reported (optional field);
- Any other information reported (optional field).

Slovenia did not provide information about other Community Acts that might be relevant or any other additional information for the measures in the reporting sheets.

Annex B: Definitions of measure types

Table B1 Types of flood risk management measures[113]

	No Action
M11	No Action, No measure is proposed to reduce the flood risk in the APSFR or other defined area,
	Prevention
M21	Prevention, Avoidance, Measure to prevent the location of new or additional receptors in flood prone areas, such as land use planning policies or regulation
M22	Prevention, Removal or relocation, Measure to remove receptors from flood prone areas, or to relocate receptors to areas of lower probability of flooding and/or of lower hazard
M23	Prevention, Reduction, Measure to adapt receptors to reduce the adverse consequences in the event of a flood actions on buildings, public networks, etc...
M24	Prevention, Other prevention, Other measure to enhance flood risk prevention (may include, flood risk modelling and assessment, flood vulnerability assessment, maintenance programmes or policies etc...)
	Protection
M31	Protection Natural flood management / runoff and catchment management, Measures to reduce the flow into natural or artificial drainage systems, such as overland flow interceptors and / or storage, enhancement of infiltration, etc and including in-channel, floodplain works and the reforestation of banks, that restore natural systems to help slow flow and store water.
M32	Protection, Water flow regulation, Measures involving physical interventions to regulate flows, such as the construction, modification or removal of water retaining structures (e.g., dams or other on-line storage areas or development of existing flow regulation rules), and which have a significant impact on the hydrological regime.
M33	Protection, Channel, Coastal and Floodplain Works, Measures involving physical interventions in freshwater channels, mountain streams, estuaries, coastal waters and flood-prone areas of land, such as the construction, modification or removal of structures or the alteration of channels, sediment dynamics management, dykes, etc.
M34	Protection, Surface Water Management, Measures involving physical interventions to reduce surface water flooding, typically, but not exclusively, in an urban environment, such as enhancing artificial drainage capacities or though sustainable drainage systems (SuDS).
M35	Protection, Other Protection, Other measure to enhance protection against flooding, which may include flood defence asset maintenance programmes or policies
	Preparedness
M41	Preparedness, Flood Forecasting and Warning, Measure to establish or enhance a flood forecasting or warning system
M42	Preparedness, Emergency Event Response Planning / Contingency planning, Measure to establish or enhance flood event institutional emergency response planning
M43	Preparedness, Public Awareness and Preparedness, Measure to establish or enhance the public awareness or preparedness for flood events
M44	Preparedness, Other preparedness, Other measure to establish or enhance preparedness for flood events to reduce adverse consequences

[113] Guidance for Reporting under the Floods Directive (2007/60/EC): https://circabc.europa.eu/w/browse/a3c92123-1013-47ff-b832-16e1caaafc9a

	Recovery & Review
M51	Recovery and Review (Planning for the recovery and review phase is in principle part of preparedness), Individual and societal recovery, Clean-up and restoration activities (buildings, infrastructure, etc), Health and mental health supporting actions, incl. managing stress Disaster financial assistance (grants, tax), incl. disaster legal assistance, disaster unemployment assistance, Temporary or permanent relocation, Other
M52	Recovery and Review, Environmental recovery, Clean-up and restoration activities (with several sub-topics as mould protection, well-water safety and securing hazardous materials containers)
M53	Recovery and Review, Other, Other recovery and review Lessons learnt from flood events Insurance policies
	Other
M61	Other

Catalogue of Natural Water Retention Measures

NWRM cover a wide range of actions and land use types. Many different measures can act as NWRM, by encouraging the retention of water within a catchment and, through that, enhancing the natural functioning of the catchment. The catalogue developed in the NWRM project represents a comprehensive but non prescriptive wide range of measures; other measures, or similar measures called by a different name, could also be classified as NWRM.

To ease access to measures, the catalogue of measures hereunder is sorted by the primary land use in which it was implemented: Agriculture; Forest; Hydromorphology; Urban. Most of the measures however can be applied to more than one land use type.

Table B2 List of NWRM

Agriculture	Forest	Hydro Morphology	Urban
A01 Meadows and pastures	F01 Forest riparian buffers	N01 Basins and ponds	U01 Green Roofs
A02 Buffer strips and hedges	F02 Maintenance of forest cover in headwater areas	N02 Wetland restoration and management	U02 Rainwater Harvesting
A03 Crop rotation	F03 Afforestation of reservoir catchments	N03 Floodplain restoration and management	U03 Permeable surfaces
A04 Strip cropping along contours	F04 Targeted planting for 'catching' precipitation	N04 Re-meandering	U04 Swales
A05 Intercropping	F05 Land use conversion	N05 Stream bed re-naturalization	U05 Channels and rills
A06 No till agriculture	F06 Continuous cover forestry	N06 Restoration and reconnection of seasonal streams	U06 Filter Strips

Agriculture	Forest	Hydro Morphology	Urban
A07 Low till agriculture	F07 'Water sensitive' driving	N07 Reconnection of oxbow lakes and similar features	U07 Soakaways
A08 Green cover	F08 Appropriate design of roads and stream crossings	N08 Riverbed material renaturalisation	U08 Infiltration Trenches
A09 Early sowing	F09 Sediment capture ponds	N09 Removal of dams and other longitudinal barriers	U09 Rain Gardens
A10 Traditional terracing	F10 Coarse woody debris	N10 Natural bank stabilisation	U10 Detention Basins
A11 Controlled traffic farming	F11 Urban forest parks	N11 Elimination of riverbank protection	U11 Retention Ponds
A12 Reduced stocking density	F12 Trees in Urban areas	N12 Lake restoration	U12 Infiltration basins
A13 Mulching	F13 Peak flow control structures	N13 Restoration of natural infiltration to groundwater	
	F14 Overland flow areas in peatland forests	N14 Re-naturalisation of polder areas	

Source: www.nwrm.eu