EUROPEAN
COMMISSION

Brussels, 26.2.2019
SWD(2019) 83 final

COMMISSION STAFF WORKING DOCUMENT

First Flood Rrisk Management Plans - Member State: Lithuania

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

{COM(2019) 95 final} - {SWD(2019) 30 final} - {SWD(2019) 31 final} - {SWD(2019) 32 final} - {SWD(2019) 33 final} - {SWD(2019) 34 final} - {SWD(2019) 35 final} - {SWD(2019) 36 final} - {SWD(2019) 37 final} - {SWD(2019) 38 final} - {SWD(2019) 39 final} - {SWD(2019) 40 final} - {SWD(2019) 41 final} - {SWD(2019) 42 final} - {SWD(2019) 43 final} - {SWD(2019) 44 final} - {SWD(2019) 45 final} - {SWD(2019) 46 final} - {SWD(2019) 47 final} - {SWD(2019) 48 final} - {SWD(2019) 49 final} - {SWD(2019) 50 final} - {SWD(2019) 51 final} - {SWD(2019) 52 final} - {SWD(2019) 53 final} - {SWD(2019) 54 final} - {SWD(2019) 55 final} - {SWD(2019) 56 final} - {SWD(2019) 57 final} - {SWD(2019) 58 final} - {SWD(2019) 59 final} - {SWD(2019) 60 final} - {SWD(2019) 61 final} - {SWD(2019) 62 final} - {SWD(2019) 63 final} - {SWD(2019) 64 final} - {SWD(2019) 65 final} - {SWD(2019) 66 final} - {SWD(2019) 67 final} - {SWD(2019) 68 final} - {SWD(2019) 69 final} - {SWD(2019) 70 final} - {SWD(2019) 71 final} - {SWD(2019) 72 final} - {SWD(2019) 73 final} - {SWD(2019) 74 final} - {SWD(2019) 75 final} - {SWD(2019) 76 final} - {SWD(2019) 77 final} - {SWD(2019) 78 final} - {SWD(2019) 79 final} - {SWD(2019) 80 final} - {SWD(2019) 81 final} - {SWD(2019) 82 final} - {SWD(2019) 84 final}

Table of contents

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
NGO	Non-Governmental Organisation
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 (MS) 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 version of the report assesses the FRMP for Lithuania[1]. Its structure follows a common assessment template used for all Member States. The report draws on the following main sources:

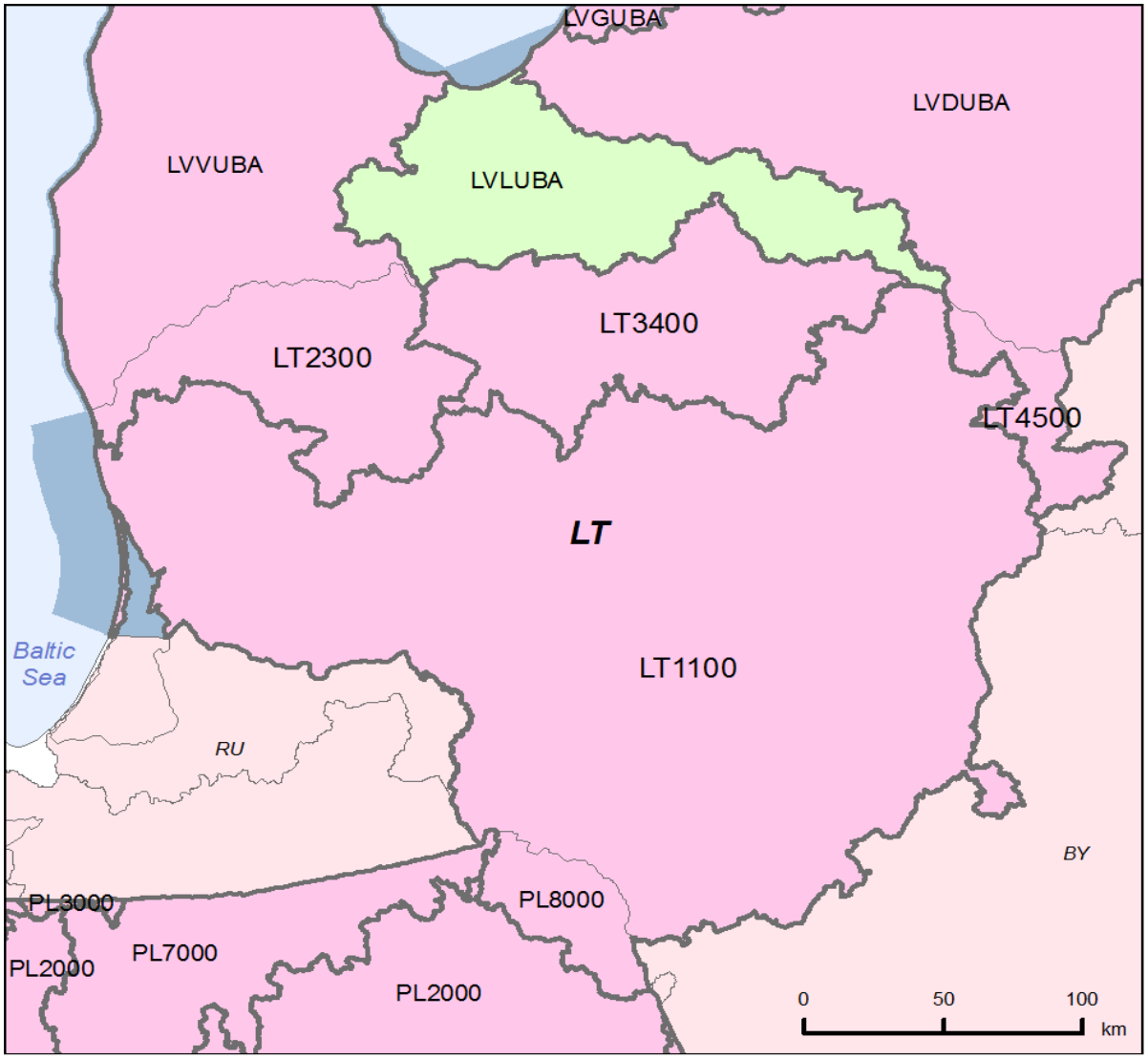
- Member State reporting to the European Commission on the FRMP[2] as per Articles 7 and 15 of the FD: this reporting provides an overview of the plans and details on their measures.
- Lithuania's overarching FRMP: this document covers flood management in the country's four Units of Management (UoMs):
    - LT 1100 Nemunas
    - LT2300 Venta
    - LT3400 Lielupe
    - LT4500 Dauguva
- The Water Sector Development Programme 2017-2023 and the Action Plan of Water Sector Development Programme 2017-2023: in Lithuania the FRMP was adopted via these two legal acts. The assessment also included these two documents.

[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

Figure 1 Map of Units of Management/River Basin Districts



International River Basin Districts (within European Union)
International River Basin Districts (outside European Union)
National River Basin Districts (within European Union)
Countries (outside European Union)
Coastal Waters

Source: WISE, Eurostat (country borders) as presented in the 2012 RBMP assessment reports

Lithuania is divided into four Units of Management (UoMs), which correspond to the River Basin Districts (RBDs) under the Water Framework Directive (WFD). Lithuania has produced a single FRMP to cover these four UoMs.

The FRMP was not officially adopted in Lithuania. It is stated in the preamble of the FRMP that it is a supporting document for two legal documents: the Water Sector Development

Programme 2017-2023[3] and the Action Plan of the Water Sector Development Programme 2017-2023[4]. These two legal acts contain information from the FRMP, though neither includes the FRMP as an annex or provides reference to the FRMP.

Table 1 below gives an overview of the UoMs in Lithuania, 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[5] – the FRMP as a PDF and the reporting sheet as an XML.

Table 1 Overview of UoMs in Lithuania

UoM	Names	Number of APSFRs	XML Reported	PDF Reported
LT1100	NEMUNAS	100	Yes	At national level
LT2300	VENTA	11	Yes	
LT3400	LIELUPE	16	Yes	
LT4500	DAUGUVA	2	Yes	
TOTAL		129		

The final version of the FRMP, as well as previous versions, can be downloaded from the following web page:

- http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

[3] Approved by the Government of Lithuania (Decree No. 88 of February 1, 2017).
[4] Approved by the Minister of Environment and Minister of Agriculture (Order D1-375/3D-312 of May 5, 2017).
[5] 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

Table 2 below gives an overview of the evidence found during the assessment of the FRMP. 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 FRMP

Criterion	Evidence	Comments
FRM objectives have been established	Strong evidence	Lithuania has developed one FRMP covering all four UoM. Objectives are identical for all UoMs and have been coordinated at national level. In addition, objectives: • are specific and measurable • have a quantitative target to achieve (e.g. no new buildings that are not flood proof shall be constructed in the medium probability flood zone)
FRM objectives relate to...		
...the reduction of potential adverse consequences	Strong evidence	The FRMP identifies as the overall objective, the reduction of flood risk and of potential adverse consequences (the FRMP in addition sets 17 more specific objectives).
...to the reduction of the likelihood of flooding	No evidence	Reduction in the likelihood of flooding is not specifically mentioned as part of the FRMP objectives.
...to non-structural initiatives	No evidence	Non-structural initiatives are not specifically mentioned in the FRMP objectives.
FRM objectives consider relevant potential adverse consequences to...		
...human health	Strong evidence	The FRMP sets 10 objectives aiming to reduce flood risk to human health and the

Criterion	Evidence	Comments
		environment. Objectives are specific and measurable, with quantitative targets (e.g. no new buildings that are not flood proof shall be constructed in the medium probability flood zone).
...economic activity	Strong evidence	The FRMP sets five objectives aiming to reduce flood risk to economic activities.
...environment	Strong evidence	As above, the FRMP sets 10 objectives aiming to reduce flood risk to human health and the environment.
...cultural heritage	Strong evidence	The FRMP sets two objectives aiming to reduce flood risk to cultural heritage.
Measures have been...		
...identified	Strong evidence	Lithuania has reported measures under four aspects: Prevention (five measures for each UoM), Protection (two to six measures per UoM), Preparedness (five measures for each UoM), Recovery and review (one measure for each UoM). The number of measures per UoM ranges from 13 (LT4500 Dauguva) to 17 (LT1100 Nemunas).
...prioritised	Strong evidence	The FRMP measures were assigned one of three priorities: very high, high or low priority. Priorities are set based on cost-benefit analysis (CBA).
Relevant aspects of Article 7 have been taken into account such as...		
...costs & benefits	Strong evidence	The selection and prioritisation of measures was based on Cost-Benefit Analysis. The FRMP provides description of costs and benefits for all groups of measures (e.g. preventive, preparation, recovery measures). The most detailed CBA was carried out for preventive (structural) measures.
...flood extent	Strong evidence	Flood extent and flood risk were the most important factors for identification and prioritisation of the measures.
...flood conveyance	Some evidence	Lithuania has developed flood hazard and flood risk maps for all large and medium size rivers

Criterion	Evidence	Comments
		of the country. These river segments are understood to be flood conveyance routes; however, flood conveyance is not explicitly stated in the FRMP.
...water retention	Strong evidence	To increase natural water retention, the FRMP proposes a measure to plant new forests in specific sub-basins and drainage divide[6] between these sub-basins. This measure is implemented in sub-basins of two UoMs (LT2300 and LT1100).
...environmental objectives of the WFD	Some evidence	The WFD is briefly mentioned as contributing towards achievement of the flood management objectives, but no further information is provided whether environmental objectives of the WFD were explicitly considered.
...spatial planning/land use	Strong evidence	The FRMP emphasises the importance of the establishment of a flood zoning system. One of the FRMP's measures foresees the drafting of provisions to regulate new construction in flood prone areas.
...nature conservation	Strong evidence	Nature conservation issues were taken into account during the process of identification of protection measures. The location and type of dykes were selected considering environmental factors (migration of animals, protection of valuable vegetation and soil), and the incorporation of the dykes into natural landscape. Natural water retention measures (afforestation in selected sub basins and areas along the drainage divide), as well as Natura 2000 territories were considered in the analysis of structural measures (protective dykes). Natura 2000 areas as well as national protected areas are presented in the interactive flood map.
...navigation/port infrastructure	No evidence	Navigation/port infrastructure was not considered in the FRMP.

[6] A drainage divide is the line that separates neighbouring drainage (catchment) basins.

Criterion	Evidence	Comments
...likely impact of climate change	Some evidence	It is briefly mentioned in the FRMP that measures were selected taking into account anticipated changes in climate and land use, but no further explanation is provided. A summary of climate change is reported in the reporting sheets: climate change scenarios are based on 2021-2050 projections. The extent and magnitude of high probability floods (10% probability) is expected to decrease, however no significant changes are foreseen on the medium (1%) and low probability flood events (0.1%). Nonetheless, climate aspects are only briefly mentioned in the FRMP itself.
Coordination with other countries ensured in the RBD/UoM	Strong evidence	Lithuania has exchanged information on preliminary flood risk assessment, flood hazard and flood risk maps and the FRMP with Latvian and Polish authorities. Methodological issues related to preliminary flood risk assessment, flood risk mapping and development of the FRMP were presented and discussed at meetings of the Lithuanian – Polish Transboundary Water Commission.
Coordination ensured with WFD	Some evidence	Lithuania's Environmental Protection Agency is the Competent Authority for implementation of both the Water Framework Directive and the Floods Directive and in principle coordinates planning and implementation of the two directives. The Flood Risk Management Plan and River Basin Management Plans were approved by the Government of Lithuania under the same official legislation: Water Sector Development Programme 2017-2023. However, it is not clear if this Programme effectively integrates the implementation of the plans.
Active involvement of interested parties	Some evidence	Active involvement was weak, and mainly carried out via two public seminars.

Good practices

The assessment identified the following good practices in the Lithuanian FRMP.

Table 3 Good practices in the Lithuanian FRMP

Topic area	Good practices identified
Integration of previously reported information in the FRMP.	The FRMP integrates FHRMs and uses this information to identify measures and set priorities for the implementation. Furthermore, additional GIS information, created during development of the FRMP, is presented as additional layers on the Flood map enabling users to zoom to the area of interest and get information on inundation depth (flood hazard map), population affected, potential economic losses (flood risk map) and proposed measures.
Setting of objectives for the management of flood risk.	Objectives are specific and measurable; some objectives have a quantitative target to achieve (e.g. no new buildings that are not flood proof shall be constructed in the medium probability flood zone). Objectives have been coordinated at national level among the UoMs.
Planning/implementing of measures and their prioritization for the achievement of objectives.	For protection measures (dykes and protection of roads) the FRMP provides detailed information on location, length of protective dykes in km and area protected in km^2, population to be protected, envisaged flood damage reduction. A layer with detailed information on the planned measures is integrated in the national Flood map. Sustainable land-use practices, such as improvements in water retention, structural and non-structural approaches to reducing the likelihood and consequences of flooding, drafting legal provisions for the regulation of new construction in flood prone areas, revision of national legislation on flood damage compensation mechanisms, are included in the measures. Economic instruments for flood risk management, such as the promotion of insurance schemes, are included in the measures.
Use of CBA in the FRMP assessed.	CBA is used in the prioritisation of structural measures at national level, with an explanation of what is included in the calculation of costs. There is also a method to consider the multi-benefits of measures applied, i.e. benefits to objectives other than flood risk, e.g., environmental objectives, cultural heritage and public health.

Areas for further development

The assessment identified the following areas for further development in the Lithuanian FRMP assessed.

Table 4 Areas for further development in the Lithuanian FRMP

Topic area	Areas identified for further development
Integration of previously reported information in the FRMPs.	The interactive Flood map is not accessible via recent browsers as it uses outdated technology[7].
Planning/implementation of measures and their prioritization for the achievement of objectives.	It is not clear how measures will contribute to the objectives, and by how much they would contribute. It is also not clear whether the objectives will be achieved when all measures are implemented. There are no indications if or how information on the progress of implementation will be provided.
Consideration of climate change in the FRMP assessed.	The FRMP does not provide a reference to the National Climate Change Adaptation Strategy. Climate change considerations are practically missing in the FRMP.
Use of CBA in the FRMP assessed.	There is no mention of CBA in the FRMP. No CBA was carried out for non-structural measures; there was no consideration of CBA for transboundary effects.
Public participation.	Efforts for public participation and stakeholder engagement were limited, focusing on only two public meetings. The Water Sector Development Programme 2017-2023[8] and the Action Plan of the Water Sector Development Programme 2017-2023 did not undergo a public participation process.
Flood risk governance.	The FRMP was not officially adopted. It is stated in the preamble that the FRMP is a supporting document for the Water Sector Development Programme 2017-2023 and the Action Plan of the Water Sector Development Programme 2017-2023: The latter two documents are official legal acts. However, the FRMP is not annexed and not cited in the two legal acts. The Water Sector Development Programme 2017-2023 contains only a small share of the provisions of the FRMP. The final FRMP is brief (it is one third the length of the version presented for public consultation) and does not include relevant technical information, such as on climate change or CBA. The SEA report of the FRMP is not available on the Lithuanian Environmental Protection Agency website dedicated to flood risk management.
International issues in flood risk management.	No information is provided whether coordination of the FRMP has been carried out with Lithuania's third country neighbours: Belarus and Russia.

[7] The interactive Flood map requires installation of the Microsoft Silverlight plugin. Microsoft Silverlight is no longer supported in many web browsers: Not in Google Chrome since September 2015, and in Firefox since March 2017. There is no Silverlight plugin available for Microsoft Edge.

[8] Approved by the Government of Lithuania (Decree No. 88 of February 1, 2017).

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 full FRMP (including annexes with all relevant technical information) should be adopted or clearly referenced in legal documents such as the Water Sector Development Programme.
- It will be important to ensure that FRMPs, APSFRs, and FHRMs are continuously available to all concerned and the public in an accessible format, including digitally.
- To be able to assess progress, the FRMP should clearly indicate how the measures will contribute to the objectives and by how much they would do so.
- The second cycle FRMP should dedicate space to climate change issues and coordinate with the National Climate Change Adaptation Strategy.
- The public consultation process should be strengthened and greater active involvement of stakeholders ensured.
- Information on the international dimension of flood risk management should be strengthened in the FRMP.

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

1.1 Reporting of the FRMP

Lithuania has reported one FRMP covering the four UoMs in its territory. All river basin districts and UoMs are managed at national level. In addition to the PDF of the FRMP, two legal acts – the Water Sector Development Programme 2017-2023[9] and the Action Plan of the Water Sector Development Programme 2017-2023[10] – were also submitted. Four reporting sheets were submitted, although the summary text is the same for all.

Lithuania did not use Art. 13.3 for the FRMP, which allows 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 FRMP

This assessment reviewed three documents reported by Lithuania:

- National FRMP (May 2017), which covers all four UoMs in Lithuania (see table below).
- Water Sector Development Programme 2017-2023.
- Action Plan of the Water Sector Development Programme 2017-2023.

The national FRMP covers the following UoMs:

Table 5 UoMs in Lithuanian National FRMP

UoM code	UoM Name
LT1100	Nemunas
LT2300	Venta
LT3400	Lielupe
LT4500	Dauguva

According to the EPA website dedicated to flood risk management[11], the FRMP (version 1.5) was presented at public seminars in March 2015. The FRMP was then updated in July 2015 to take into consideration the recommendations of the SEA (version 1.6). Based on the information on the EPA website, this should be regarded as the version of the FRMP after the public consultation. This version of the FRMP is 69 pages long.

[9] Approved by the Government of Lithuania (Decree No. 88 of February 1, 2017).
[10] Approved by the Minister of Environment and Minister of Agriculture (Order D1-375/3D-312 of May 5, 2017).
[11] http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

The final version of the FRMP dated May 2017 was reduced to 21 pages with no explanation provided for the reduction in pages. This final version of the FRMP was reported to the Commission and used in the assessment. Few provisions of this version were incorporated in the Water Sector Development Programme 2017-2023 and the Action Plan of the Water Sector Development Programme 2017-2023. None of the legal acts include the FRMP as an annex or provide a reference to it.

2. Integration of previously reported information

2.1 Conclusions drawn from the preliminary flood risk assessment

The PFRA conclusions are presented in the FRMP in the form of a short textual description and small maps (differentiated by UoM)[12]. In the textual description, the FRMP provides a list of river segments (54 rivers, total length 3 800 km) and coastlines of the Baltic Sea and Curonian Lagoon (255 km) that were identified as flood risk areas in the PFRA. These river segments cover all large and medium-sized rivers in Lithuania[13]. The PFRA does not specifically refer to flood conveyance routes[14].

Flood risk areas shared with other Member States are not specifically identified in the plan, however all significant transboundary water bodies are covered by Flood Hazard and Flood Risk maps. Additional information on preliminary flood risk assessment can be accessed on the web page of the Environmental Protection Agency specifically dedicated to flood risk management[15]. The APSFR map is also available on the Lithuanian EPA webpage dedicated to flood risk management[16], although the FRMP does not provide specific links to the maps showing APSFR[17].

2.1.1 Coordination with neighbouring Member States on shared RBDs/UoMs

Information on the preliminary flood risk assessment was provided to Latvian and Polish competent authorities. Issues related to the preliminary flood risk assessment were presented and discussed at the meetings of the Lithuanian – Polish Transboundary Water Commission[18]. The FRMP provides no information whether the PFRA, FHRM or FRMP was coordinated with Belarus or Russia. Lithuania shares with Russia lower reach of Nemunas River, which accounts for the majority of historical floods in Lithuania.

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

The FRMP provides no specific information on which ways the PFRA was used for developing the flood hazard and flood risk maps[19].

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

The flood hazard and flood risk maps have been referenced in the FRMP. A description of the online, interactive flood map containing FHRM layers[20], illustrations (screenshots) and a

[12] FRMP pp. 1, 14, Annex I
[13] FRMP p. 1
[14] http://vanduo.gamta.lt/cms/index?rubricId=57ed5b04-d0bf-49b0-878b-28dc16ac8571
[15] http://vanduo.gamta.lt/cms/index?rubricId=57ed5b04-d0bf-49b0-878b-28dc16ac8571
[16] http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba
[17] FRMP p. 2
[18] FRMP pp. 14-15
[19] FRMP p. 1

description of flood risk and flood hazard maps are provided on the Lithuanian EPA webpage dedicated to flood risk management (and the maps can be accessed from this web page)[21]. The FRMP makes reference to this webpage[22].

This interactive map shows flood hazard and flood risk maps as separate layers, and includes fluvial floods, seawater floods, and floods from artificial water bearing structures (e.g. from reservoirs and impoundments, drainage systems), and shows the combined effects of more than one source of flooding shown.

2.2.1 Maps for shared flood risk areas

Rivers of the transboundary UoMs LT2300 Venta and LT3400 Lielupe originate in Lithuania and discharge to Latvia. Flood hazard and flood risk maps were produced for the Lithuanian sections of all significant transboundary water bodies shared with Latvia (where river sections cover the border area, maps were prepared only for the Lithuanian side). These water bodies were identified as flood risk areas in the PFRA. Lithuania also shares few small rivers with Poland (UoM 1100 Nemunas): these rivers originate in Poland and flow to Lithuania. Due to their small size, transboundary Lithuanian-Polish rivers were not identified as being linked to flood risk areas. Flood hazard and flood risk maps have also been produced for large and medium size transboundary rivers shared with the Russian Federation and Belarus.

Information on flood hazard and flood risk mapping was provided to Latvian and Polish competent authorities, and issues related to flood hazard and flood risk mapping were presented and discussed at the meetings of the Lithuanian – Polish Transboundary Water Commission[23]. As noted above, the FRMP provides no information whether there was coordination with Belarus or Russia.

2.2.2 Conclusions drawn from the flood hazard and flood risk maps

Flood hazard and risk maps (FHRMs) have been used to develop the FRMP:

- The FHRMs have been used to set priorities for flood risk management (e.g. locations, economic activities, assets)
- The FHRMs have been used as a tool in the public participation process
- Specific objectives on flood risk reduction have been defined based on the FHRM
- Measure and locations have been defined based on the FHRM

---

[20] http://potvyniai.aplinka.lt however, it should be noted that this requires a website plugin, which is not always supported by updated browsers.

[21] http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

[22] FRMP p. 2

[23] FRMP pp. 1-3, p. 14, Annex 1

The FRMP states that the FHRMs were extensively used by the competent authority in its development[24]. In the FRMP, objectives and measures are set depending on the probability of a flood event. Flood risk maps were used to identify areas needing structural flood protection measures.

2.3 Changes to the APSFRs or other Flood Risk Areas

Any changes in the identification of Areas of Potential Significant Flood Risk or other Flood Risk Areas since December 2011 should be reflected in the FRMP. However, the FRMP provides no information about such changes to the APSFRs or to the FHRMs since December 2013.

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

The following areas for further development were found in the 2014 assessment of Lithuania's flood hazard and risk maps:

- According to Article 6(5)(c) of the Floods Directive, Member States should report potentially affected protected areas identified in Annex IV (i) (iii) and (v) to Directive 2000/60/EC (Water Framework Directive). Lithuania did not report adverse consequences on the environment in the mapping of the risk from low probability floods.
- According to Art 6(1), Member States should prepare FHRMs for the area identified under Art 5(1) (APSFRs Areas Potential Significant Flood Risk). In the case of Lithuania, it was difficult to check if all the APSFRs have been mapped.

Information in these two areas can now be found on the FHRMs and the interactive map viewer.

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

The following **good practices** were identified:

- The FRMP integrates flood hazard and flood risk maps and uses this information to identify measures and set priorities for the implementation.
- GIS information created during development of the FRMP is presented as additional layers on the Flood map enabling users to zoom to the area of interest and get information on key details such as: inundation depth (flood hazard map), population affected, potential economic losses (flood risk map) and proposed measures.

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

[24] FRMP p. 4, 5, 7, 9.

- The FRMP provides no information on whether there was coordination with Belarus or Russia.

3. Setting of Objectives

3.1 Focus of objectives

The FRMP sets common objectives for all four UoMs. The FRMP identifies as the overall goal, the reduction of flood risk and of potential adverse consequences. The FRMP sets 17 detailed objectives which are organised in three categories:

1. Reduce flood risk to human health and the environment (10 objectives)
2. Reduce flood risk to economic activities (five objectives) and
3. Reduce flood risk to cultural heritage (two objectives).

The objectives provided in the FRMP are regarded as a road map, and specific details on "what", "where", "how" and "when" are provided for individual measures. All the FRMP objectives apply equally across all four UoMs.

In terms of the categories set out in Art. 7 of the Floods Directive:

- The objectives aim to reduce the adverse consequences of floods
- The objectives refer to measures that will be implemented

The objectives in the FRMP do not include an aim to reduce the likelihood of flooding[25], nor do they refer to non-structural measures[26].

3.2 Specific and measurable objectives

In Lithuania, all 17 objectives are specific and many are measurable, and 12 objectives have a clear and quantitative target to achieve. The objectives, however, are not time bound: it is not clear when they are to be achieved and they do not relate to the FRMP cycle. Moreover, the objectives are not linked to measures (see section 4.4), and consequently it is not clear how the objectives will be achieved.

Examples of measurable objectives are provided below:

- Objective 10: No new buildings for human habitation shall be built in high probability flood zone (10% probability).
- Objective 12: No new buildings that are not flood proof shall be built in the medium probability flood zone (1% probability).

[25] 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.

[26] Non-structural measures include measures such as flood forecasting and raising awareness of flooding as well as land use planning, economic instruments and insurance.

3.3 Objectives to reduce adverse consequences from floods

In Lithuania's FRMP, objectives specify the reduction of adverse consequences of floods on:

- Human health and environment;
- Economic activity;
- Cultural heritage.

The following examples demonstrate this:

- Objective 3: No new significant pollution sources that may be hazardous to environment and public health shall be established in low probability flood zone (0.1% probability).
- Objective 14: Diversion routes are prepared for major roads located in the medium probability flood zone (1% probability).
- Objective 16: Increase level of protection for cultural heritage units located in flood hazard areas.

3.4 Objectives to address the reduction of the likelihood of flooding

The objectives do not specifically address reducing the likelihood of flooding.

3.5 Process for setting the objectives

Lithuania has developed one national-scale FRMP covering all four UoMs. This has ensured that the objectives have been coordinated on a national level across UoMs[27]. As public participation and stakeholder involvement were weak (see section 7), it appears that significant stakeholder input was not provided for the objectives. The FRMP does not specify whether anticipated changes in climate were considered for setting the objectives (and little information is provided on climate change – see section 5).

3.6 Good practices and areas for further development regarding setting objectives

The following **good practices** were identified:

- Objectives are specific and measurable.
- Some objectives have a quantitative target to achieve (e.g. no new buildings that are not flood proof shall be constructed in the medium probability flood zone)
- Objectives have been coordinated at national level across the UoMs.

[27] List of comments to one of earlier versions of the FRMP (not reported, but available on the website of the EPA) indicates coordination with municipalities and relevant ministries.

4. Planned measures for the achievement of objectives

Lithuania has reported a total of 61 aggregated[28] measures (and no individual measures)[29]. The number of measures per UoM ranges from 13 (LT4500 Dauguva) to 17 (LT1100 Nemunas)[30].

Lithuania has reported measures under the four main aspects of flood management:

- Prevention and Preparedness (five measures for each aspect per UoM)
- Protection (2-6 measures per UoM)
- Recovery and review (one measure for each UoM)[31].

The most numerous type of measures – two to five measures per UoM, between 15% and 29% - are Measure Type 34[32] for Protection.

See Tables A2 and A3 and Figures A1 and A2 in Annex A for further information.

It can be noted that the FRMP refers on several occasions to 'ongoing' measures. These have not been reported, and in general the FRMP provides relatively little information on them, as it focuses on new measures.

4.1 Cost of measures

Table 6 Overall budget for the measures in the assessed FRMP

	Estimated overall budget of planned measures (2015-2021) in EUR
Costs for four measures across all four UoMs	60.7 m

Source: Reporting sheets and FRMP

Lithuania provided information on the costs of three protection and one preparedness measures (7% of the 61 measures reported). In addition, Lithuania reported the cost of six measures

[28] 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.

[29] No information was found in the FRMP concerning how Lithuania defined aggregated and individual measures.

[30] 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.

[31] See Annex B for the list of all measure aspects and measure types. Lithuania did not report any measures under the fifth aspect, "other".

[32] 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).

(10% of the total measures) as zero. For the measures with zero costs reported, an explanatory note is provided that costs for the entire Lithuanian territory are reported under the UoM LT1100 (it is believed that these costs were aggregated at national level and reported as zero to avoid double counting).

The reported costs are investment costs (no operating expenses reported).

The majority of the reported costs (€60.7 m) are provided for the implementation of three protection measures (all three categorised as M34), as follows:

- €26 970 700 (M34) – preliminary investment costs for flood protection measures for 20 urbanised areas (in UoMs LT1100, LT2300 and LT3400)
- €32 444 300 (M34) – preliminary investment costs for flood protection measures for 35 urbanised areas (in UoMs LT1100 and LT3400)
- €1 239 400 (M34) – preliminary investment costs for flood protection measures for four urban wastewater treatment plants (in UoM LT1100)

Protection measures are mostly engineering measures and, according to the reported information[33], CBA includes investment, operational and maintenance costs, and land acquisition costs. However, LT has reported only investment costs.

Costs are also provided for one preparedness measure under type M43[34]: €49800 for preliminary costs for measures to increase publicity of flood hazard and risk maps, preparation of flyers, posters, video, public information (across all the national territory: UoMs LT1100, LT2300, LT3400, LT4500).

The costs of prevention measures (Lithuania has reported 20) are considered to be covered by the existing budgets of state institutions responsible for the flood management policy, and no costs are reported for these measures[35].

4.2 Funding of measures

The FRMP briefly mentions that the programme of measures will be implemented using state budget, municipal allocations, EU funds and other sources. In addition to the FRMP, Lithuania's Water Sector Development Programme 2017-2023[36] and its Action plan specify

[33] Reporting sheets "Summary of Cost/Benefit"
[34] Preparedness, Public Awareness and Preparedness, Measure to establish or enhance the public awareness or preparedness for flood events.
[35] Reporting sheets, Measure details: costs.
[36] The Water Sector Development Programme 2017-2023 was adopted by the Governmental Resolution in February 2017. It includes a summary of the FRMP.

that engineering measures (e.g. the construction of embankments) will be funded from the EU Cohesion fund[37].

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)	✓
Private investment	
EU funds (generic)	
EU Structural funds	
EU Solidarity Fund	
EU Cohesion funds	✓
EU CAP funds	
International funds	
Other	✓

Source: FRMP

4.3 Measurable and specific (including location) measures

The FRMP includes a clear and explicit presentation of most of the measures with regard to:

- What they are trying to achieve,
- Where they are to be achieved,
- How they are to be achieved, and
- By when they are expected to be achieved.

Specific details for some of the measures are provided in the Water Sector Development Programme 2017-2023:

- For engineering measures, details include: location, description, area to be protected (in ha), number of inhabitants to be protected, costs of the measures and anticipated flood damage reduction.
- For road segments where flood risk reduction measures involve their reconstruction, details include: municipality, road number, road category, length of the road segment and preliminary costs
- For road segments that are impassable in the event of flood and where diversion routes are planned, details include: municipality, road number, road category, length of the road segment flooded during the medium probability flood event.

[37] FRMP p. 37 Water Sector Development Programme 2017-2023, Action plan, pp. 24-28.

Descriptions for other measures are not specific. The Water Sector Development Programme 2017-2023 provides a time line and specifies the authorities responsible for implementation for all the measures.

Table 8 Location of measures

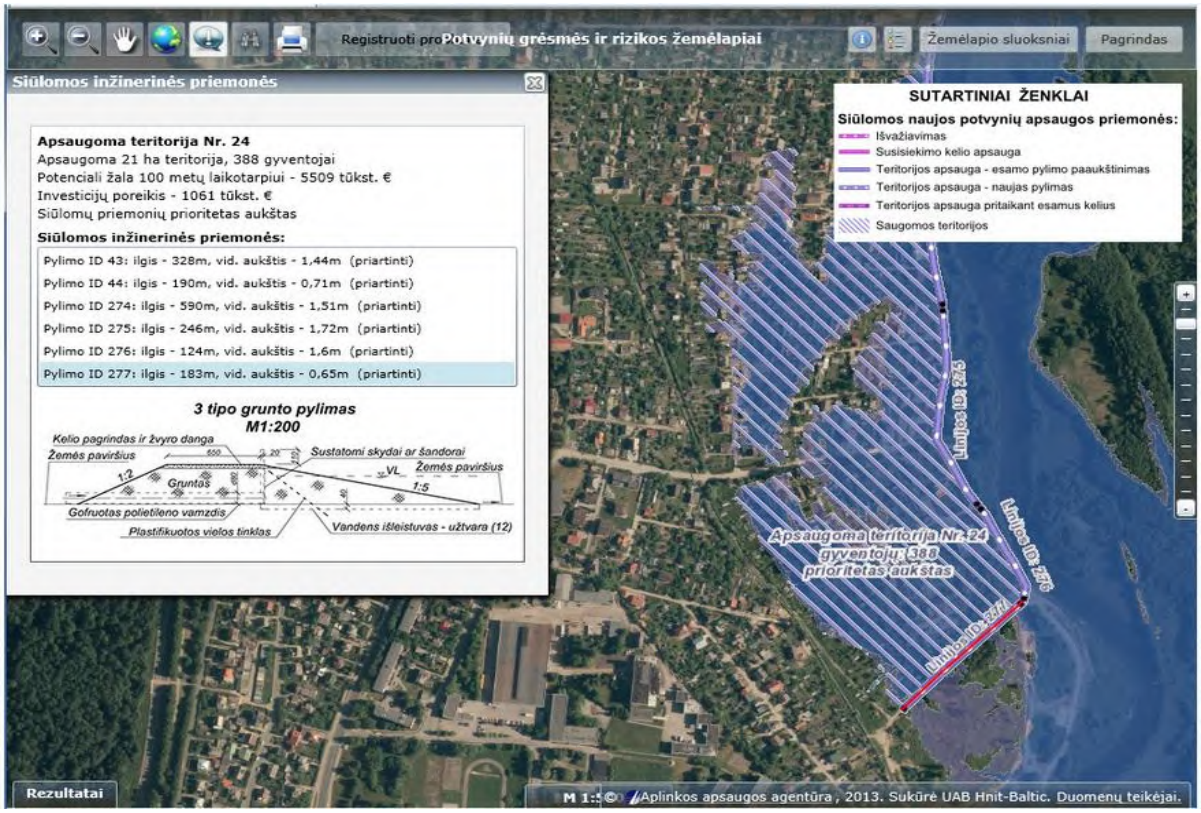
	All UoMs
International	
National	
RBD/UoM	✓
Sub-basin	
APSFR or other specific risk area	
Water body level	
Other	✓

Source: Water Sector Development Programme 2017-2023 (official legislation), EPA website dedicated to Flood Management.

Engineering measures (flood protection by dykes) and measures related to transportation are specific to an exact location (UoM, name of municipality, location name). Also, preliminary locations of the embankments and territories to be protected from flooding and a description of the measures is provided as a layer in the interactive Flood map[38].

[38] Water Sector Development Programme 2017-2023 (official legislation), EPA website dedicated to Flood Management.

Figure 2 ***Screenshot of the interactive FHRM with description of proposed structural measures (flood protection dykes) and territory protected by the measure (marked in hatching)***



Source: Description of the FMHM on the Environmental Protection Agency's website http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba (interactive map is not accessible)

4.4 Measures and objectives

It is not clear in the FRMP or the reporting sheets how measures will contribute to the achievement of objectives, and by how much they will contribute. It is not clear whether the objectives will be achieved when all measures are completed.

The Water Sector Development Programme 2017-2023 defines four flood related criteria (indicators) for the assessment of the implementation of the Programme:

- Inhabitants (%) protected from potential floods (1% occurrence probability)
- Additional area protected from floods in hectares
- Number of municipal plans for extreme situation management that are revised taking into account flood risk and flood hazard maps
- Number of potentially hazardous installations that may cause pollution during the floods

No indicators for monitoring of objectives and measures are provided in the FRMP.

In general, however, the FRMP includes information on the measures which refers to their location (it can be the whole national territory or other more detailed locations), the time frame for implementation, the budget, and the responsible authority. The descriptions of the measures remain rather brief, for example: "Carry out public information in particular local communities"; or "Provide information to Hydro-meteorological Survey on ice jams and inundated areas".

In the Water Sector Development Programme 2017-2023[39], flood risk management measures are presented in a standard template table with key information such as the responsible institution, period of implementation (start, end), and budget. However, the Water Sector Development Programme 2017-2023 provides details only for protection measures, which cover two main types of activities:

1. Engineering measures, such as flood protection by dykes

2. Road segments where flood protection measures are needed.

4.5 Geographic coverage/scale of measures

In the reporting sheets, Lithuania indicated:

- the location of all measures as the respective UoM
- all measures as aggregated
- geographic coverage of 55 measures as 'national'. No information on geographic coverage is provided for six Protection measures (flood protection by dykes).

The specific location of the Protection measures (flood protection by dykes) and transportation related measures are provided in the Water Sector Development Programme 2017-2023. The proposed location of the embankments, territories to be protected, descriptions of the measures including draft drawings are provided as a layer in the interactive Flood map (as shown in Figure 2).

4.6 Prioritisation of measures

Lithuania has reported its measures as being of very high, high or low priority (consequently, no measures are of critical or moderate priority). Nearly all measures – 53 out of 61 (87%) are categorised as being of very high priority, with only three as high priority (5%) and five as low priority (8%). (See Tables A4 and A5 and Figures 3 and 4 in Annex A for further details.)

All Prevention, Preparedness and Recovery & Review measures are categorised as very high priority. Protection measures are distributed among very high (nine out of 17 Protection measures, 53%), high (three measures, 18%) and low priority (five measures, 29%).

[39] Water Sector Development Programme 2017-2023 (official legislation) Annexes 2, 3 and 4.

The four UoMs in Lithuania have a similar number of high priority measures: 14 in LT1100 Nemunas, and 13 each in the other three UoMs.

According to the information reported[40], the selection and prioritisation of measures was based on cost-effectiveness, cost-benefit and multicriteria analysis. Costs and benefits were assessed for all measures. The most detailed CBA was carried out for structural Prevention measures. Multicriteria analysis, used to prioritise the measures, included two variables with equal weight: 1) ratio of annual costs and annual benefits and 2) effect on public health (number of inhabitants likely to be protected), environment (number of IPPC[41] installations protected) and cultural heritage (number of cultural heritage sites)[42].

The timetable for the implementation of the measures is provided in the Water Sector Development Programme 2017-2023 and specifies the start and the end year:

- Four measures of the 61 (7%) were to be started in 2017 and completed in 2018;
- 16 of the 61 measures (26%) will be started and completed in 2018;
- 12 measures (20%) were to be started in 2017 and completed in 2019;
- One measure will be started and completed in 2019;
- Four measures were to be started in 2017 and completed in 2021;
- 20 measures (33%) were to be started in 2017 and completed in 2023;
- Four measures were to be started in 2017 and completed in 2023.

There does not seem to be a clear relationship between the timetable and the priorities. All prevention measures are scheduled early in the Programme implementation (for 2019 or earlier), while the implementation period planned for most of protection measures is longer, up to 2023. There are no significant differences in timetable among the UoMs. All measures are reported as aggregated and with 'national' geographic coverage[43].

4.7 Authorities responsible for implementation of measures

Authorities responsible for the implementation of the measures can be grouped in three levels of responsibility:

1. National – covering national ministries / agencies, services and departments subordinated to the ministries,
2. Municipal
3. Shared – covering both National and Municipal authorities.

[40] Reporting sheet, section Summary of Cost/Benefit
[41] Installations regulated under the former Directive on integrated pollution prevention and control, incorporated in Directive 2010/75/EU on industrial emissions.
[42] Reporting sheet section Summary of Cost/Benefit, FRMP pp. 8-10.
[43] Reporting sheets "Measure details: name & location"

Lithuania reports that national authorities are responsible for the implementation of 28 measures out of 61 (46%), and municipalities responsible for 10 measures (16%). Responsibilities are shared between national and municipal authorities for 23 measures (38%). Prevention, protection and preparedness measures fall into all three of these categories; review and recovery measures, however, are only a responsibility of national authorities. (See Tables A8 and A9 and Figures A7 and A8 in Annex A for further information.)

4.8 Progress of implementation of measures

For the majority of the measures (50 out of 61, 82%) Lithuania has reported the progress as not started. Progress ongoing is reported for remaining 11 measures (18%). "Not started" progress was reported for all four recovery and review measures and approximately 80% of measures for other types (preparedness, protection and prevention). (See Tables A10 and A11 and Figures A9 and A10 in Annex A for further information.)

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. Lithuania reported this information in the FRMP. However, only brief information is provided on ongoing measures that help to achieve objectives of the FRMP[44]:

- Following the requirements of the Water Framework Directive (2000/60/EC), River Basin District Management Plans are developed that aim to ensure good status of water bodies.
- Following the requirements of the EIA Directive (85/337/EEC is cited[45]), environmental impact assessment is carried out.
- Following the requirements of the SEA Directive (2001/42/EC), assessment of consequences to the environment is carried out before the adoption of plans and programmes.
- Following the requirements of Seveso Directive (95/82/EC is cited[46]), plans and prevention measures are developed for large accidents involving dangerous substances.

No information was found, however, on the specific measures taken under these Directives, nor how they support flood risk management.

Although the FRMP does not refer to the EU Civil Protection Mechanisms, the following ongoing civil protection measures are listed in the FRMP Annex 3 (these ongoing measures are not included in the measures Lithuania has reported)[47]:

[44] FRMP p. 21
[45] The consolidated version is 2011/92/EU
[46] The FRMP does not cite the more recent Seveso III Directive, 2012/18/EU.
[47] Lithuania has not reported ongoing measures in the reporting sheets.

1. Population alert and information system
2. Engineering flood protection measures (dykes, polders)
3. Flood forecasting
4. Measures to ensure safety of the hydrotechnical installations, such as dams, (inspection, removal of defects and deformations, organisation of repairs and reconstruction).

4.10 Specific groups of measures

Spatial planning/land use measures have been included in the FRMP. The FRMP emphasises the importance of prevention measures, in particular flood zoning system. One measure (reported under M21[48]) foresees drafting provisions on the regulation of new construction in flood prone areas to be incorporated in the Law on Special Conditions on Use of Land and Forest.

When considering the current framework of halting or controlling buildings/development in floodplains, it must be noted that up to now Lithuania has not had a clear policy on zoning in flood-prone areas and very limited regulation of development in these areas. This is recognised as an area for further development in the FRMP. A new Law on Special Conditions on Use of Land and Forest is under preparation. One of the FRMP preventive measures foresees drafting of provisions on regulation of new construction in flood prone areas to be incorporated in the Law. No details on the focus of the new regulation is yet available, although information in the FRMP and the Water Sector Development Programme 2017-2023 indicates that the new regulation should focus on both limiting development in flood prone areas and ensuring that such development is flood resilient[49].

Natural water retention measures (NWRMs) have been planned in the FRMP. The FRMP proposes a measure to plant new forests in specific sub-basins of two UoMs and the drainage divides of these sub-basins (LT2300 – Lielupe small tributaries sub-basin, LT1100 – Nevezis and Sesupe sub-basins).

Nature conservation issues. The FRMP measures do not specifically consider nature conservation. Nature conservation issues were taken into consideration during the process of selection of protection measures. The location and type of protective dykes was selected taking into account environmental requirements (taking into account location of the Natura 2000 sites, addressing the needs of animal migration and protection of valuable vegetation and soil) and

[48] Prevention, Avoidance, Measure to prevent the location of new or additional receptors in flood prone areas, such as land use planning policies or regulation.

[49] Water Sector Development Programme 2017-2023 (official legislation), p. 24. The FRMP p. 6 provides a half page description on the needs of flood zoning system and additional requirements for construction of flood resilient buildings.

paying attention at incorporation of the dykes to natural landscape[50]. No specific measures involving nature protection are included in the FRMP, however.

The FRMP measures do not consider **navigation and port infrastructure,** nor the dredging of rivers to increase the river channel capacity and its ability to convey water for flood alleviation purposes.

4.11 Recovery from and resilience to flooding

The role of insurance policies is discussed in the FRMP, with regard to the recovery from flooding, preparedness/resilience to flood, although currently Lithuania has no flood insurance policy[51]. The FRMP recognises that the conditions of flood insurance available on the market do not allow all inhabitants and companies to benefit from insurance for buildings located in flood prone areas. The FRMP states that a proposal for the improvement of flood insurance policy is needed, and it provides general principles: flood insurance should be widely available, costs of insurance should reflect the flood resilience of the buildings protected, the insurance model should encourage people to buy insurance, and where possible and feasible the insurance model should encourage investments in flood risk reduction including improvement in flood resilience. The FRMP includes a measure to revise national legislation on flood damage compensation mechanisms[52].

4.12 Monitoring progress in implementing the FRMP

The FRMP provides two dates for monitoring progress of the implementation of measures: the end of 2018 and the end of 2021. The FRMP provides no further information on monitoring. Notably, monitoring provisions do not indicate: indicators for assessment whether measures have been implemented; a baseline against which progress will be monitored and assessed; arrangements for reporting progress at each level; or the organisations identified as being responsible for overseeing progress monitoring[53].

Three indicators have been identified (set in the Water Sector Development programme 2017-2023) for monitoring progress in achieving flood risk management objectives:

1. Percent of inhabitants protected from potential 1% probability floods (0% in 2015, 17% in 2021 and 19% in 2023).
2. Area of additional territory protected from floods, ha (0 ha in 2015, 309 ha in 2021 and 309 ha in 2023).

---

[50] FRMP p. 8.

[51] Consequently, the FRMP provides no information on environmental liability insurance related to flooding for potentially polluting sites and installations, nor does it provide information on estimating restoration costs in cases where potentially polluting sites and installations may be flooded.

[52] The FRMP p. 13 provides two paragraphs on the need of flood insurance policy and main principles for such a policy. It is not possible to elaborate on "voluntary flood insurance".

[53] FRMP p. 15. Water Sector Development Programme 2017-2023 Action Plan (official legislation) pp. 24-28.

3. Potentially hazardous facilities that may cause pollution in case of flooding (six in 2015, 0 in 2021 and 0 in 2023).

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 of the WFD.

Table 9 Coordination of the development of the FRMP with the development of the second River Basin Management Plan of the WFD

	All UoMs
Integration of FRMP and RBMP in 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]	n/a
Planning of win-win and no-regret measures in the FRMP	
The RBMP PoM included win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and NWRMs [a]	n/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	✓
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	✓

Notes: [a] Lithuania had not yet reported under the WFD at the time of this assessment.

The Lithuanian Environmental Protection Agency is appointed as the Competent Authority to implement both the Water Framework Directive and the Floods Directive and aims to coordinate the planning and implementation of the two Directives. The same department in the Lithuanian EPA was responsible for the development of the RBMPs and the FRMP: this is expected to strengthen coordination between the plans, the FRMP does not address this point.

Measures from the Flood Risk Management Plan and the River Basin Management Plans were integrated into the Water Sector Development Programme 2017-2023. The Programme "aims to provide systematic approach to water protection issues and ensure more effective use of available resources"[54], thus implementation of the FD and WFD measures is regarded as coordinated[55]. However, the Programme includes only limited text from each plan. Moreover, the FRMP provided no specific references to any measures that are common with the WFD.

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

The following **good practices** were identified:

- For the Protection measures (flood protection by dykes and transportation) the FRMP provides detailed information on location, length of protective dykes and area protected, population to be protected, envisaged flood damage reduction.
- A layer with detailed information on the planned measures is integrated in the national Flood map.
- The FRMP's measures include promotion of sustainable land-use practices, such as improvements in water retention, structural and non-structural approaches to reducing the likelihood and consequences of flooding, drafting legal provisions on regulation of new construction in flood prone areas, revision of national legislation on flood damage compensation mechanisms.
- The FRMP's measures promote economic instruments for flood risk management, specifically actions to develop insurance.

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

- It is not clear how measures will contribute to the objectives, and by how much they contribute. It is also not clear whether the objectives will be achieved when all measures are implemented.
- While the Lithuania's FRMP and RBMP have been integrated into a single legal document, the Water Sector Development Programme 2017-2023, this document contains only limited information from each plan. It is not clear to what extent the two plans are effectively integrated in terms of implementation.

[54] Water Sector Development Programme 2017-2023.
[55] Water Sector Development Programme 2017-2023.

5. Consideration of climate change

It is briefly mentioned in the FRMP that measures were selected taking into consideration anticipated changes in climate and land use, with no further explanation. Separately, Lithuania's reporting sheets provide a summary on climate change[56], including an overview of potential effects on future floods.

Although not specifically mentioned in the context of climate change, the FRMP identifies several ongoing measures that are currently undertaken and in part address climate change, such as flood forecasting, public warning and an information system. The FRMP also identifies new measures that are intended to help address climate change effects. These include measures on public awareness raising, publicity of flood hazard and flood risk maps, and publications in media and internet portals are foreseen[57].

The National Climate Change Adaptation Strategy is not mentioned in the FRMP[58]. According to Lithuania's reporting sheets[59], climate change scenarios are based on 2021-2050 projections[60]. The reporting sheets refer to the A1B and B1 greenhouse gas emission scenarios of the IPCC[61] and the use of the COSMO Climate Limited-area Model[62] for the climate change projections. Climate change modelling results for 2021-2050 show temperature increases during the cold season. It is expected that precipitation will increase all over the country. As winters will become warmer, winters with thin and unsteady snow cover will become more frequent, less water will accumulate in snow cover and the magnitude of spring floods is projected to decrease as compared to last half century. A slight increase in river discharge at the end of winter and beginning of spring may be expected in western Lithuania. The extent and magnitude of high probability floods (10% probability) is expected to decrease, however no significant changes are foreseen for the medium (1%) and low probability flood events (0.1%). It is not anticipated that the main source of flooding will change due to the climate change[63].

---

56 Reporting sheets, section Summary of the Climate Change

57 Annex 3 of the FRMP

58 FRMP and reporting sheets. The national adaptation strategy is part of the National Strategy for Climate Change Management Policy 2013-2050. See: http://www.am.lt/VI/index.php#a/12869.

59 Reporting sheets, section Summary of the Climate Change. This information is not provided in FRMP.

60 Reporting sheets, section Summary of the Climate Change.

61 Intergovernmental Panel on Climate Change. The A1b scenario projects a world of rapid economic growth and a balance between fossil and non-fossil energy sources; the B1 scenario foresees a world in which economic structures shift to services and the information economy, reductions in materials intensity and clean technologies.
See: http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=154

62 https://www.clm-community.eu/

63 Reporting sheets, section Summary of the Climate Change.

5.1 Specific measures planned to address climate change

Although the FRMP notes that several measures address climate change in part, it does not provide information on measures specifically planned to address expected effects of climate change.

The FRMP provides a description of four non-structural measures that are currently implemented in Lithuania and that could potentially be considered as no-regret measures: afforestation, restoration of hydrological regime of wetlands, agri-environmental measures (such as extensive management of wetlands, erosion protection measures, tree strips in agricultural fields) and the establishment of ponds for collection of surface water runoff in urban territories. A new measure is planned on afforestation of public land in specific sub-basins[64]. These measures can be considered as no-regret measures in the context of climate change.

5.2 Good practices and areas for further development concerning climate change

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

- The FRMP does not provide reference to the National Climate Change Adaptation Strategy and, more generally, climate change aspects are missing in the FRMP.

[64] FRMP p. 10, Action plan on Implementation of the Water Sector Development Programme 2017-2023, p. 25.

6. Cost-benefit analysis

The selection and prioritisation of measures was based on CBA and multicriteria analysis, according to Lithuania's reporting sheets. Costs and benefits were assessed for all measures (i.e. across the four aspects, protection, preventive, preparation, recovery and review measures).

The most detailed CBA was carried out for protection measures (structural/grey infrastructure). The cost assessment of engineering measures covered investment costs (e.g. construction of new dykes, rising of existing dykes, protection of roads), land purchase costs, reconstruction and major repair costs, operation and maintenance costs. Benefits of the structural measures were envisaged as avoided damage. Discounting was used to calculate annualised costs and benefits. No information is provided whether CBA was used to assess the transboundary effects of the measures.

CBA and multicriteria analysis was applied to prioritise the measures[65] at national level, with an explanation of what is included in the calculation of costs.

A method to consider multi-benefits of measures was also applied, for example to consider environmental objectives, cultural heritage and public health. It is not clear, however, whether other multi-benefits, such as contribution towards achievement of objectives of the WFD or other relevant policies, were considered[66].

A simpler approach was applied for the CBA of preparation and recovery measures. Costs of these measures were compared against the benefits (avoided damage). According to the reporting sheets, it was assumed that preparation and recovery measures reduce economic damage of floods by 20%.

A CBA was not carried out for protection measures that do not involve grey infrastructure (e.g. afforestation, wetland restoration) due to methodological difficulties, i.e. a lack of information on effectiveness of the measures, combination with other measures, spatial extent, and lack of good examples of quantified benefits of the measures. No information is provided in the FRMP as to whether transboundary effects have been considered.

It should be noted that this information comes from Lithuania's reporting sheets and was not found in the FRMP.

[65] FRMP, reporting sheets.
[66] FRMP, reporting sheets, Summary of Cost/Benefit.

6.1 Good practices and areas for further development

The following **good practices** were identified:

- The use of CBA in the prioritisation of measures at national level with an explanation of what is included in the calculation of costs.
- A method to consider the multi-benefits of measures applied, i.e. additional benefits to the environment, cultural heritage and public health are considered.

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

- The FRMP itself does not provide information on CBA, though Lithuania's reporting sheets do.
- CBA was not carried out for non-structural measures;
- No information is provided whether CBA was used to assess the transboundary effects of the measures.

7. Governance including administrative arrangements, public information and consultation

7.1 Competent authorities

Based on Lithuania's FRMP and its reporting sheets, the Competent Authorities and the Units of Management identified for the Floods Directive have not changed. The list was submitted to the European Commission in 2010 and no further updates have been made since. Lithuania uses a centralized approach for flood risk management, and one central authority (the Environmental Protection Agency, EPA) is responsible for management of all four UoMs.

7.2 Public information and consultation

According to the EPA web site dedicated to flood risk management[67], the first draft of the FRMP (version 1.0) was presented to the public in August 2014. After a round of written comments, a revised Plan (version 1.5) was presented at public seminars in March 2015. Written comments could be provided on this version. The FRMP was then updated in July 2015 to take into consideration the recommendations of the SEA (version 1.6). This version of the FRMP is 69 pages long. Based on the information on the EPA website, this should be regarded as the FRMP version after the public consultation.

The FRMP was incorporated into the Water Sector Development Programme 2017-2023, which was adopted by a Governmental Resolution in May 2017. The final version of the FRMP was cut from 69 to 21 pages with no explanation for this provided. This version of the FRMP was reported to the Commission.

The table below shows how the public and interested parties were **informed** of the FRMP, concerning the draft FRMPs. Information on 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 FRMP

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

[67] http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

	All UoMs
Meetings	✓

Source: FRMP

The public and interested parties were informed of flood risk management activities via internet and two public seminars.

In 2011, the EPA established a web page dedicated to flood management[68] and since then has periodically updated information at occasional intervals (e.g. when a new document or report is published). The EPA flood management webpage provides information on national level, and information is not differentiated by UoM. The flood management web page provides brief and general introduction to the preliminary flood risk assessment, the flood hazard and flood risk maps, and the FRMP. The EPA has also updated the interactive Flood map, accessible through their page, and included additional map layers displaying information about the proposed measures such as spatial coverage, population affected, costs of the measures. However, the interactive Flood map is not accessible via recent versions of internet browsers as it uses outdated technology[69]. The EPA web site, dedicated to flood management, provides information to the public about the consultation of the FRMP.

The FRMP and reporting sheets[70] state that news on activities related to flood risk assessment and flood risk management was also published on the webpages of the Ministry of Environment and the Hydro-meteorological Survey[71].

Two public seminars were organised to present the FRMP. The seminars were held in Jurbarkas and Kaunas (both in March 2015). No information on the number of participants and their organisations was found in the FRMP or the reporting sheets[72].

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	✓

[68] http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

[69] The interactive Flood map requires installation of Microsoft Silverlight plugin. Microsoft Silverlight is not supported in Google Chrome since September 2015 and in Firefox since March 2017. There is no Silverlight plugin available for Microsoft Edge as well.

[70] Reporting sheets "Summary of the Consultation"; FRMP p. 14

[71] Reporting sheets "Summary of the Consultation"; FRMP p. 14

[72] Reporting sheets "Summary of the Consultation"; FRMP, p. 14

Telephone surveys	
Direct involvement in drafting FRMP	
Postal written comments	

Source: FRMP

The public consultation on the FRMP was carried out following the two mechanisms indicated above: via internet and via the two public seminars organised in March 2015.

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.)	
Paper copies at the main office of the competent authority	

Source: FRMP

Documents for public consultation were available for download from the EPA website dedicated to flood management. There is no indication in the FRMP that other means were used to provide the documents for consultation.

7.3 Active involvement of Stakeholders

Neither the FRMP nor the Lithuania's reporting sheets provide any information on which groups of stakeholders were involved in the development of the flood risk management plan[73]. In addition, neither source provides any information on the mechanisms that were used to ensure the active involvement of stakeholders, other than the two public meetings mentioned above[74].

7.4 Effects of consultation

The FRMP indicates that it was amended to take into account comments and recommendations from institutions, including those that have to be consulted according to the Law on Strategic Environmental Assessment: the Ministry of Environment, the State Protected Areas Service, the Ministry of Culture and the Ministry of Health.

[73] Reporting sheets "Summary of the Consultation"; FRMP p. 14, EPA website dedicated to flood management: http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

[74] Reporting sheet "Summary of the Consultation"; FRMP p. 14, EPA website dedicated to flood management: http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

The final version of the FRMP does not specify which comments and recommendations were taken into account in the plan. A table with a list of comments and answers to the comments is provided in the draft FRMP (versions 1.5 and 1.6, both available on the EPA webpage), and it indicates that the public consultation led to amendments to the plan[75].

7.5 Strategic Environmental Assessment

The FRMP underwent an SEA procedure. Potential effects of the proposed measures on environmental components, wildlife, protected areas and cultural heritage were described. According to Lithuania's reporting sheets, the FRMP was amended to minimise adverse environmental effects, taking into account remarks from key government bodies involved in the procedure: the Ministry of Environment, the State Protected Areas Service, the Ministry of Culture and the Ministry of Health[76].

The Water Sector Development Programme 2017-2023 also underwent an SEA procedure and a public consultation procedure was formally implemented, under the SEA requirements.

7.6 Good practices and areas for further development regarding governance

The following **good practice** was identified:

- The national web site dedicated to flood management presents the PFRA, Flood Hazard and Risk mapping and Flood Risk Management Plan and was used for the public consultation.

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

- The interactive Flood map is not accessible via modern internet browsers due to outdated technology.
- Efforts for public participation and stakeholder engagement were limited, focusing on only two public meetings: insufficient efforts were made to ensure active involvement of stakeholders.
- It is stated in the preamble of the FRMP that the FRMP is a supporting document for the Water Sector Development Programme 2017-2023 and the Action Plan of the Water Sector Development Programme 2017-2023. However, the FRMP is neither included as an annex nor referenced in these two legal acts. Few provisions of the FRMP are included in the Water Sector Development Programme 2017-2023.
- The SEA report of the FRMP is not available on the EPA site dedicated to flood risk management.

[75] Reporting sheets "Summary of the Consultation"; FRMP p. 14, EPA website dedicated to flood management: http://vanduo.gamta.lt/cms/index?rubricId=6d87deab-3ecc-412a-9b66-7fd6361f26ba

[76] Reporting sheets "Summary of the Flood Extent".

Annex A: Supplementary tables and charts on measures

This Annex gives an overview of the data on measures provided by Lithuania in the reporting sheets. These tables and charts were used for the preparation of section 4 on measures.

Background & method

This document was produced as part of the assessment of the Flood Risk Management Plans (FRMPs). The 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 State 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)[77], not all fields are mandatory, and, as such, not all Memebr 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.
- If a manageable number of answers are given, obvious categories are identified, and raw data sorted.

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

- 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 on the name of the Responsible Authority, above), are categorised as "no information".

Types of measures used in reporting

The following table[78] 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'.

Table A1 Types of measures used in reporting

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

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

List of Annex A tables and figures

Measures overview

Table A2 Number of measures reported in the reporting sheets

Number of individual measures	0
Number of individual measures including measures which have been allocated to more than one measure type	0
Number of aggregated measures	61
Number of aggregated measures including measures which have been allocated to more than one measure type	61
Total number of measures	61
Total number of measures including measures which have been allocated to more than one measure type	61
Range of number of measures between UoMs including measures which have been allocated to more than one measure type (Min-Max)	13-17
Average number of measures across UoMs including measures which have been allocated to more than one measure type	15

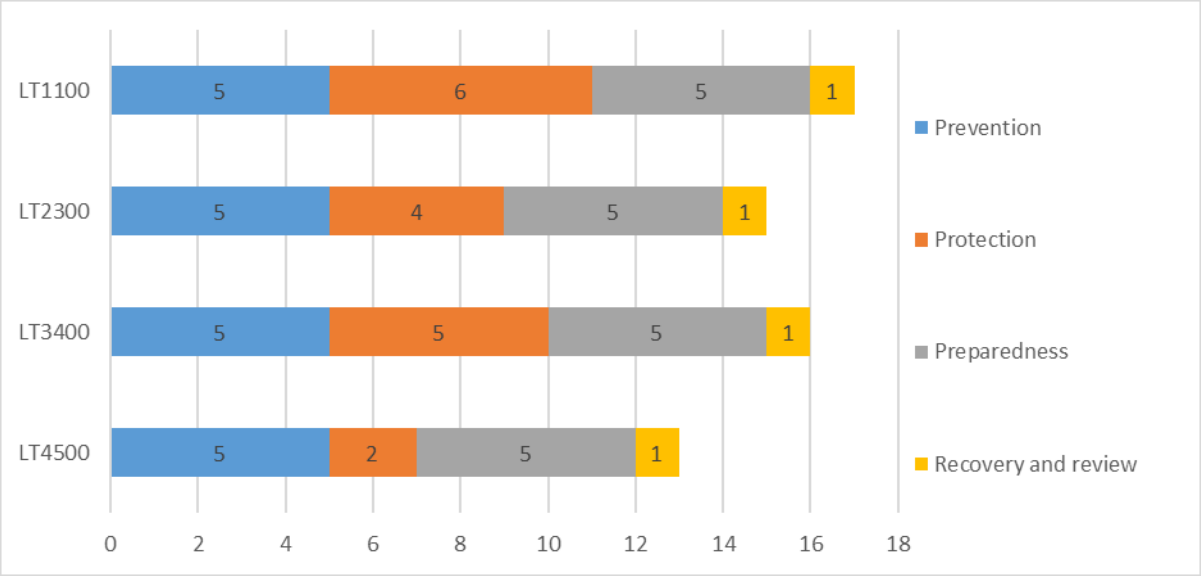
Table A3 Total number of measures (aggregated and individual) per measure type and UoM, including duplicates

	Preparedness			Total	Prevention			Total	Protection		Total	Recovery and review	Other	Grand Total
	M41	M42	M43		M21	M23	M24		M31	M34		M53		
LT1100	2	2	1	5	1	2	2	5	1	5	6	1		17
LT2300	2	2	1	5	1	2	2	5	1	3	4	1		15
LT3400	2	2	1	5	1	2	2	5	1	4	5	1		16
LT4500	2	2	1	5	1	2	2	5		2	2	1		13
Grand Total	**8**	**8**	**4**	**20**	**4**	**8**	**8**	**20**	**3**	**14**	**17**	**4**	**0**	**61**
Average per UoM	**2**	**2**	**1**	**5**	**1**	**2**	**2**	**5**	**1**	**4**	**4**	**1**	**0**	**15**

Note: All measures are aggregated as Lithuania did not report any individual measures. Lithuania did not report any “other” measures.

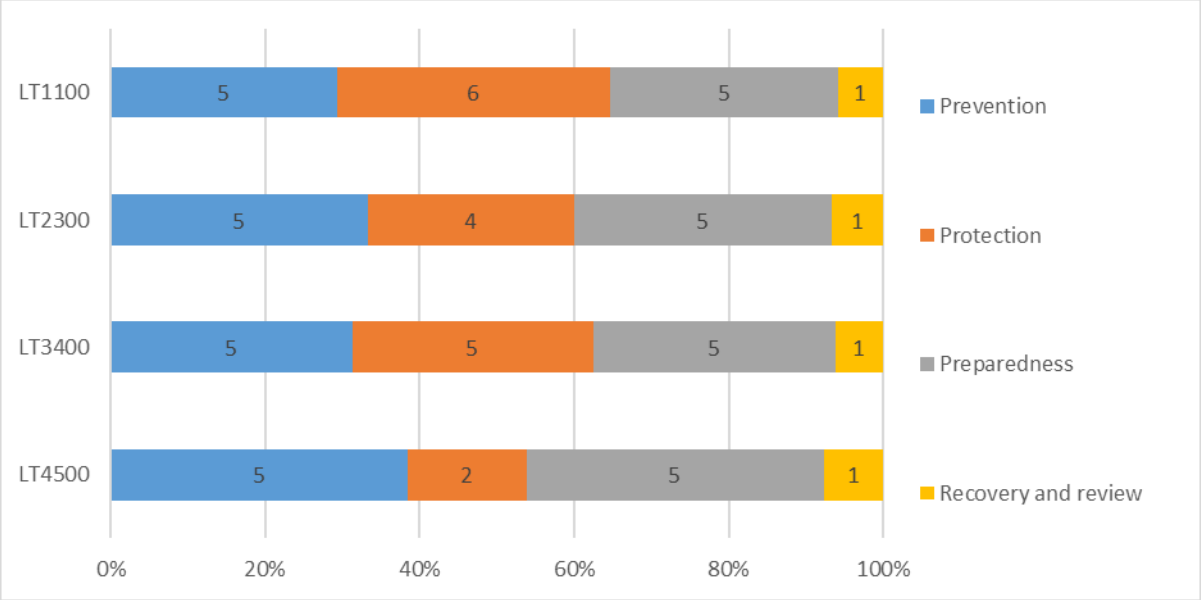
The information in Table A3 is visualised in Figures A1 and A2 below:

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



Note: All measures are aggregated as Lithuania did not report any individual measures. Lithuania did not report any "other" measures.

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



Note: All measures are aggregated as Lithuania did not report any individual measures. Lithuania did not report any "other" measures.

Measure details: cost

Member States were requested to report information on:

- Cost (optional field);
- Cost explanation (optional field).

The reported information on costs in the reporting sheets is descriptive. Lithuania provided information about the cost and an accompanying cost explanation only for 10 measures. For six of these measures the cost was reported as zero. For the other four measures the reported costs vary from nearly €50k to over €32 m. Given the small number of measures for which costs were provided it was not meaningful to aggregate the information.

Measure details: name & location

Member States were requested to report information 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, Lithuania reported the location of all measures as the respective UoM.

Geographic coverage

Similarly, Lithuania reported in the reporting sheets the geographic coverage for 55 measures as 'whole national'. For the remaining six measures no information was provided.

Measure details: objectives

Member States were requested to report information 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

Lithuania did not report objectives for any measures in the reporting sheets.

Category of priority

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

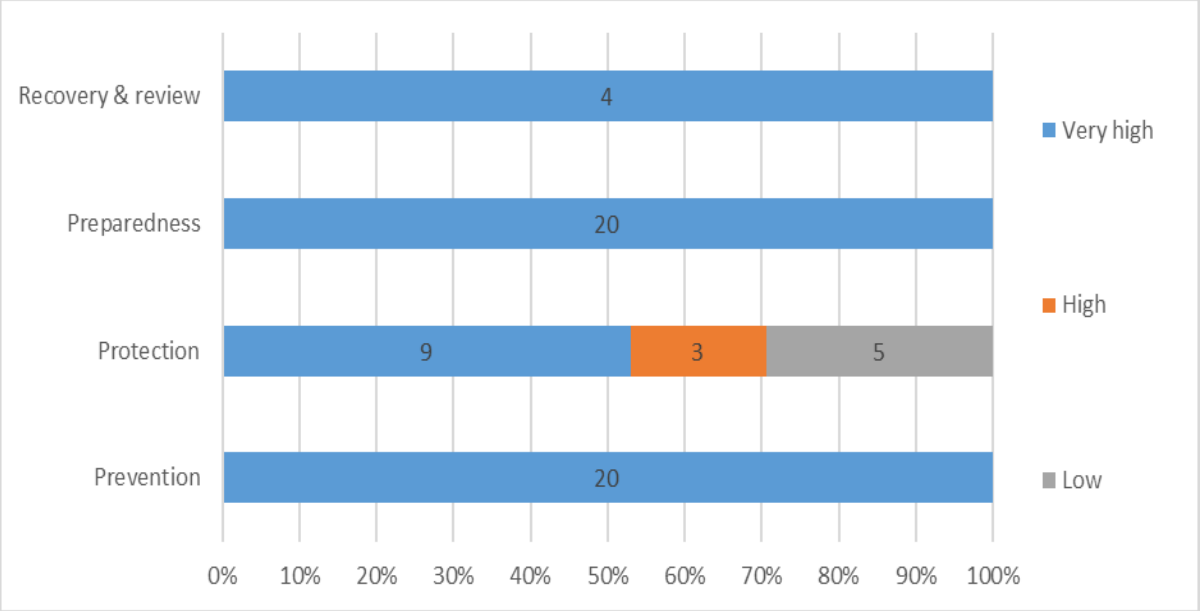
- Critical;
- Very high;
- High;
- Moderate;
- Low.

Table A4 Category of priority by measure aspect

	Very high	High	Low	Grand Total
Prevention	20			20
Protection	9	3	5	17
Preparedness	20			20
Recovery & review	4			4
Grand Total	**53**	**3**	**5**	**61**

Note: No measures were categorised as critical or moderate priority.

Figure A3 Visualisation of Table A4: Category of priority by measure aspect



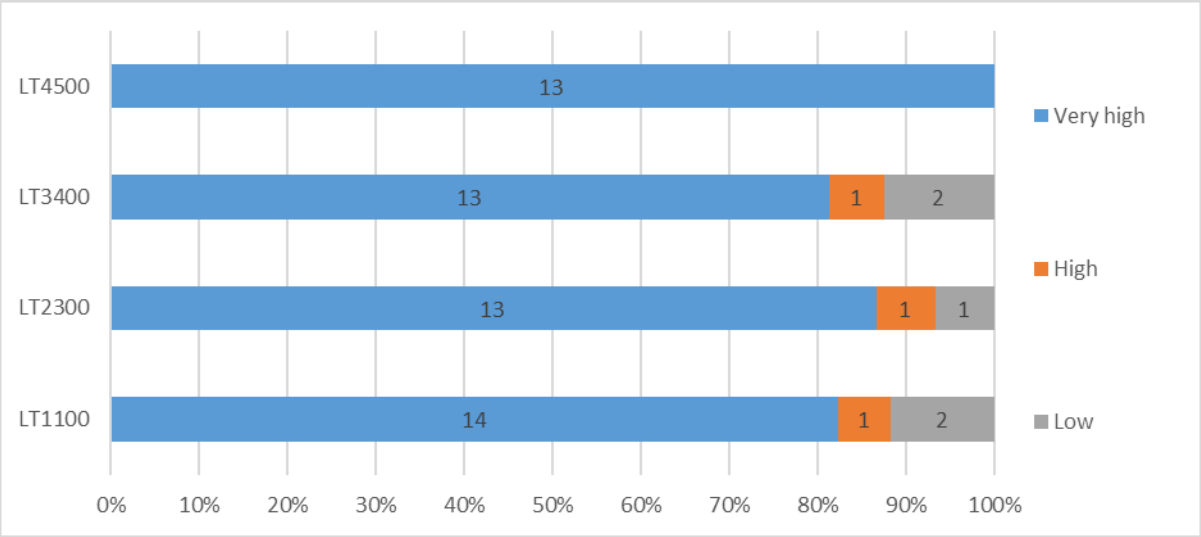
Note: No measures were categorised as critical or moderate priority.

Table A5 Category of priority by UoM

	Very high	High	Low	Grand Total
LT1100	14	1	2	17
LT2300	13	1	1	15
LT3400	13	1	2	16
LT4500	13			13
Grand Total	**53**	**3**	**5**	**61**
Average per UoM	**13**	**1**	**1**	**15**

Note: No measures were categorised as critical or moderate priority.

Figure A4 Visualisation of Table A5: Category of priority by UoM



Note: No measures were categorised as critical or moderate priority.

Timetable

Lithuania reported information about the timetable of all measures in the reporting sheets.

Table A6 Timetable of implementation by measure aspect

	2017-2018	2018	2017-2019	2019	2017-2021	2017-2023	2018-2021	Grand Total
Preparedness		8			4	8		20
Prevention	4	4	12					20
Protection		4		1		12		17
Recovery & review							4	4
Grand Total	**4**	**16**	**12**	**1**	**4**	**20**	**4**	**61**

Figure A5 Visualisation of Table A6: Timetable of implementation by measure aspect

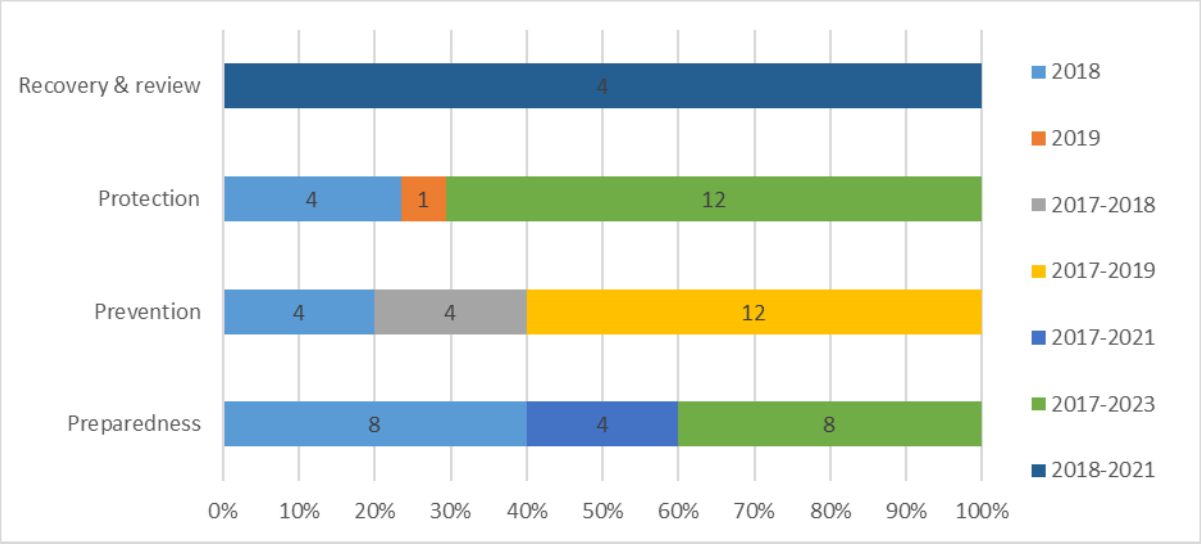
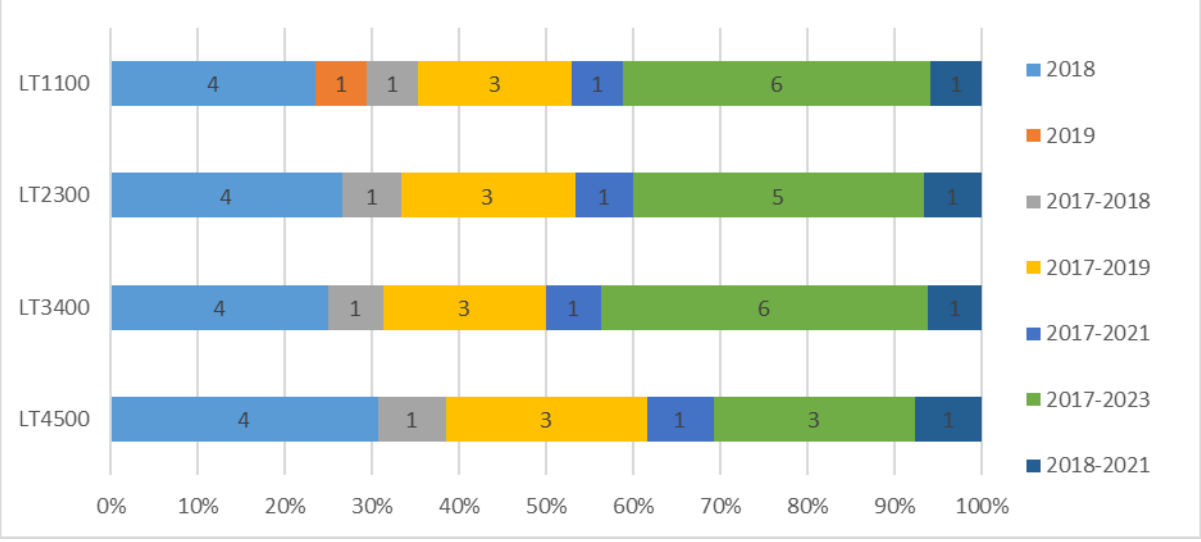


Table A7 Timetable of implementation by UoM

	2018	2019	2017-2018	2017-2019	2017-2021	2017-2023	2018-2021	Grand Total
LT1100	4	1	1	3	1	6	1	17
LT2300	4		1	3	1	5	1	15
LT3400	4		1	3	1	6	1	16
LT4500	4		1	3	1	3	1	13
Grand Total	**16**	**1**	**4**	**12**	**4**	**20**	**4**	**61**
Average per UoM	**4**	**0**	**1**	**3**	**1**	**5**	**1**	**15**

Figure A6 Visualisation of Table A7: Timetable of implementation by UoM



Measure details: authorities

Member States were requested to report information 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).

Lithuania reported the responsible authorities for all measures in the reporting sheets. However, as this was an open question, the responses varied greatly. In addition, Lithuania did not report the level of responsibility for the measures. However, after examining the names of the responsible authorities, it appeared that the authorities can be grouped in three levels of responsibility:

- National – covering national ministries or departments and services within ministries.
- Municipal – covering municipalities.
- Both – covering national ministries/services within ministries and municipalities.

Table A8 Level of responsibility by measure aspect

	National	Municipal	Both	Grand Total
Prevention	4	4	12	20
Protection	8	2	7	17
Preparedness	12	4	4	20
Recovery & review	4			4
Grand Total	**28**	**10**	**23**	**61**

Figure A7 Visualisation of Table A8: Level of responsibility by measure aspect

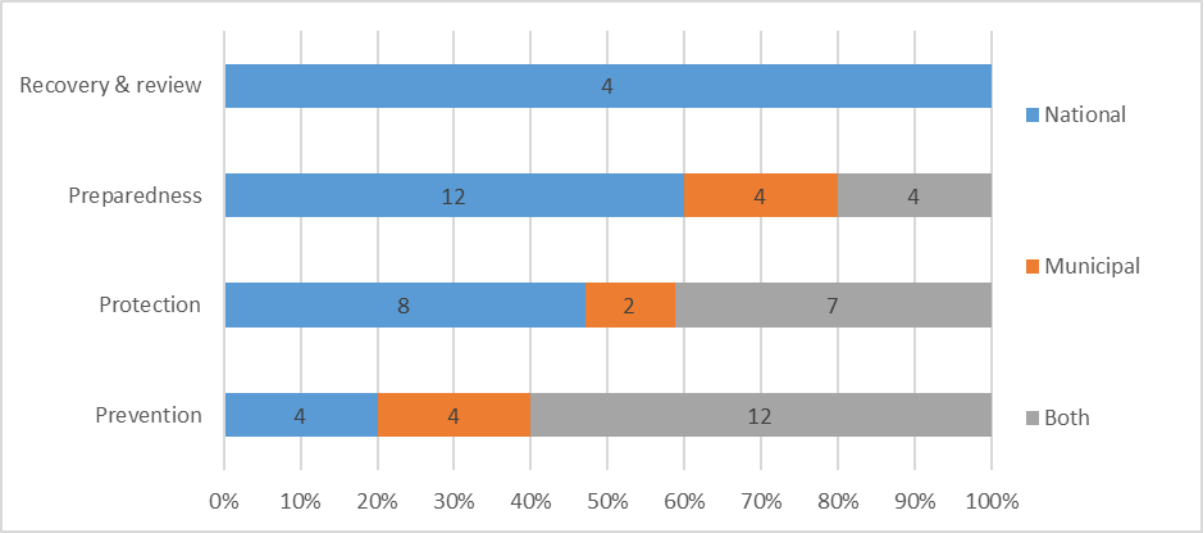
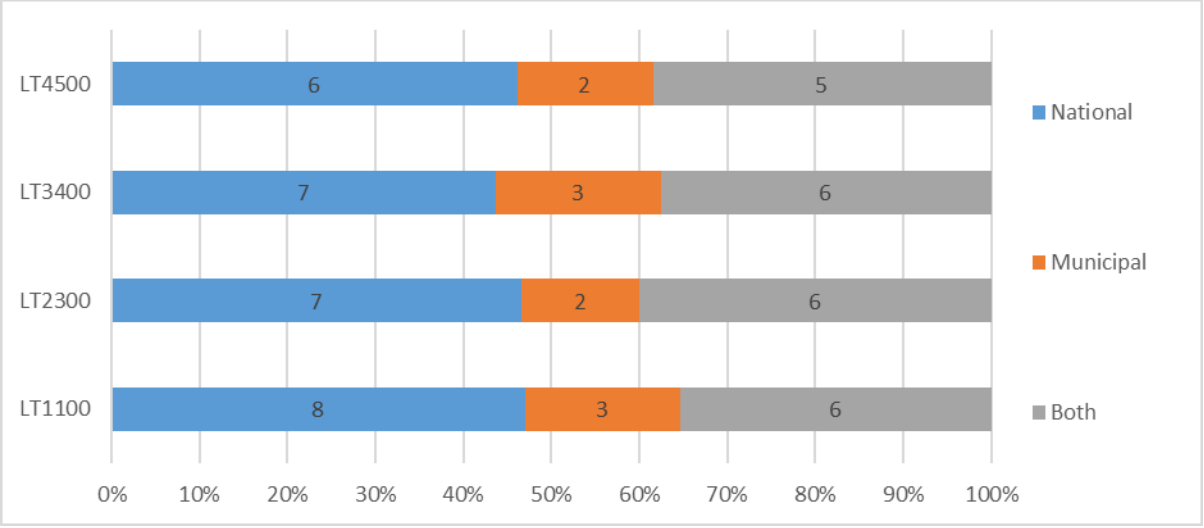


Table A9 Level of responsibility by UoM

	National	Municipal	Both	Grand Total
LT1100	8	3	6	17
LT2300	7	2	6	15
LT3400	7	3	6	16
LT4500	6	2	5	13
Grand Total	**28**	**10**	**23**	**61**
Average per UoM	**7**	**3**	**6**	**15**

Figure A8 Visualisation of Table A9: Level of responsibility by UoM



Measure details: progress

Member States were requested to report information 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 Memebr States reported and whose answers are not analysed here.

Lithuania reported information about the progress of implementation of the measures in the reporting sheets. The Progress of implementation was reported as[79]:

- 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.

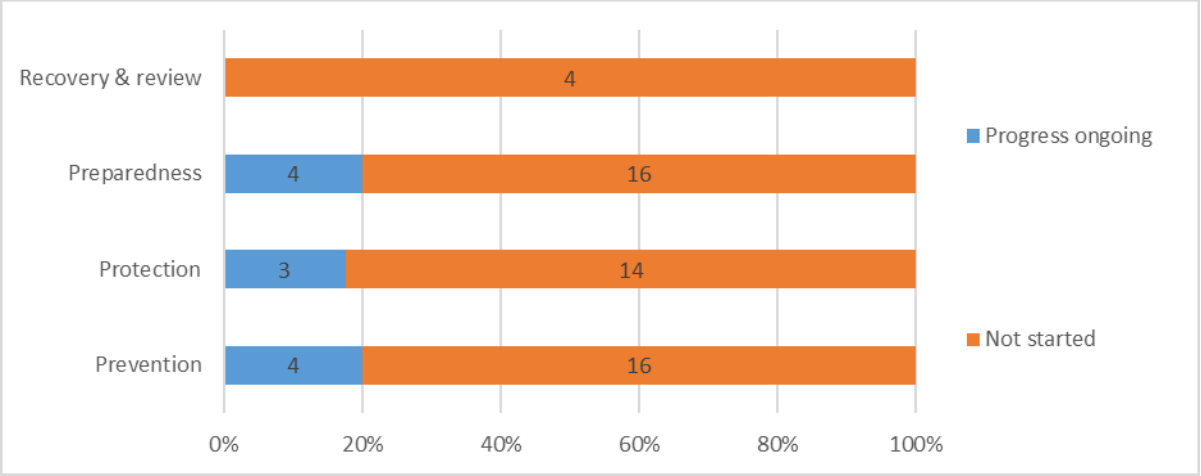
Table A10 Progress of implementation by measure aspect

	Progress ongoing	Not started	Grand Total
Prevention	4	16	20
Protection	3	14	17
Preparedness	4	16	20
Recovery & review		4	4
Grand Total	**11**	**50**	**61**

Note: Lithuania did not report any measures as being Completed or with Construction Ongoing

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

Figure A9 Visualisation of Table A10: Progress of implementation by measure aspect



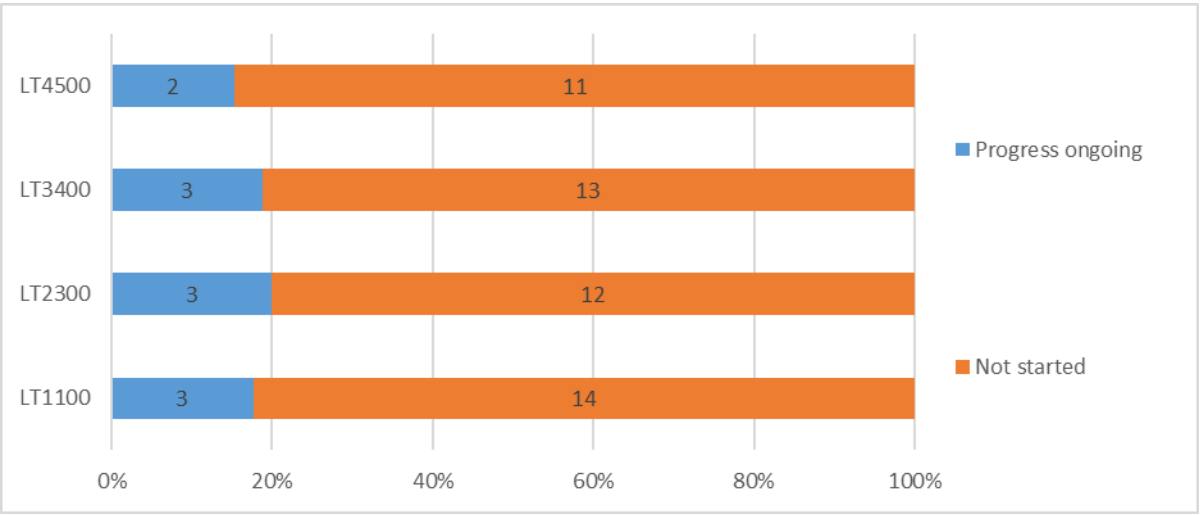
Note: Lithuania did not report any measures as being Completed or with Construction Ongoing

Table A11 Progress of implementation by UoM

	Progress ongoing	Not started	Grand Total
LT1100	3	14	17
LT2300	3	12	15
LT3400	3	13	16
LT4500	2	11	13
Grand Total	**11**	**50**	**61**
Average per UoM	**3**	**13**	**15**

Note: Lithuania did not report any measures as being Completed or with Construction Ongoing

Figure A10 Visualisation of Table A11: Progress of implementation by UoM



Note: Lithuania did not report any measures as being Completed or with Construction Ongoing

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 information on:

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

Lithuania did not report any information in the reporting sheets for these fields.

Annex B: Definitions of measure types

Table B1 Types of flood risk management measures[80]

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
Recovery & Review	

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

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)

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, and other measures, or similar measures called by a different name, that 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 NWRMs

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
A07 Low till agriculture	F07 'Water sensitive' driving	N07 Reconnection of oxbow lakes and similar	U07 Soakaways

Agriculture	Forest	Hydro Morphology	Urban
		features	
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