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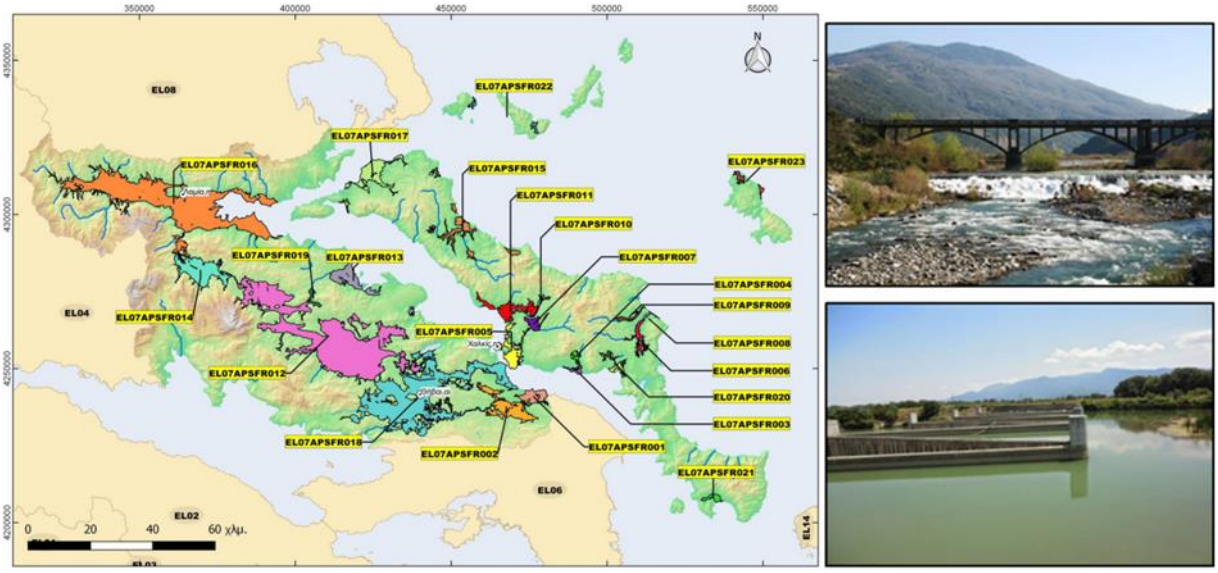

1st REVISION OF

FLOOD RISK MANAGEMENT PLAN

of the River Basin District

# of Eastern Central Greece (EL07)

Summary

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MINISTRY OF ENVIRONMENT AND ENERGY

GENERAL SECRETARIAT FOR NATURAL ENVIRONMENT AND WATER

GENERAL DIRECTORATE FOR WATER

1ST REVISION OF FLOOD RISK MANAGEMENT PLANS OF RIVER BASIN DISTRICTS OF EASTERN CENTRAL GREECE (EL07)

Summary

PROJECT: 1ST REVISION OF FLOOD RISK MANAGEMENT PLANS OF RIVER BASIN DISTRICTS OF ATTICA (EL06), EASTERN CENTRAL GREECE (EL07) AND AEGEAN ISLANDS (EL14)

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1 DIRECTIVE 2007/60/EC AND FLOOD RISK MANAGEMENT PLANS

1.1 INTRODUCTION

The European Commission, recognizing, among others, that:

- floods can cause death, displacement of populations and damage to the environment, seriously jeopardize economic development and undermine the economic activities of the Community
- floods are natural phenomena which cannot be prevented
- certain human activities (such as the increase in human settlements and assets in floodplains and the reduction of the natural capacity of the soil to retain water due to changes in land use) and climate change contribute in increasing the likelihood of flood events, with a corresponding increase in their negative impacts

has put into force Directive 2007/60/EC on the assessment and management of flood risks.

The Directive aims to establish a framework for the assessment and management of flood risks with the aim of reducing the negative consequences for human health, the environment, cultural heritage and economic activities.

According to Directive 2007/60/EC, Member States must take the following actions:

- Carry out a **Preliminary Flood Risk Assessment** (hereinafter referred to as **PFRA**) for each River Basin District (**RBD**)[1] or part of an international river basin district located on their territory. The PFRA identifies **areas** for which it is concluded that there are **Potential Significant risks of flooding or that flooding is likely to occur (PFRA)**.
- Preparation of **Flood Hazard Maps** and **Flood Risk Maps** at the level of the RBD for the above areas, in accordance with Article 6 of Directive 2007/60/EC. These maps shall indicate the potential negative consequences associated with different flood scenarios as well as information **on potential sources of environmental pollution** as a consequence of flooding.
- Preparation of **Flood Risk Management Plans (FRMP)** at the level of the RBD for the areas where there are **Potential Significant flood risks or flooding is likely to occur** in accordance with Article 7 of Directive 2007/60/EC. The FRMP should focus on prevention, protection and preparedness.

The purpose of the 1st Revision of the Flood Risk Management Plan for River Basin Districts of Attica, Eastern Central Greece and the Aegean Islands is the implementation of all actions provided for in articles 6, 7, 8, 9 and 10 of Directive 2007/60/EC [articles 5, 6, 7, 8 and 9 of Joint Ministerial Decision No. 31822/1542/E103/2010 (Government Gazette B' 1108/21.07.2010) as amended and in force]. In addition, the project includes the preparation of Strategic Environmental Impact Assessments required under the applicable legislation (Government Gazette B' 1225/05.09.2006, Directive 2001/42/EC) for the implementation of Flood Risk Management Plans.

The Flood Risk Management Plan (FRMP) is prepared at the Water District (River Basin District) level for areas where there are potentially serious flood risks or flooding is likely to occur in accordance with the provisions of Article 7 of Directive 2007/60/EC. The Flood Risk Management Plan sets out the

[1] As defined in Directive 2000/60/EC

objectives for flood risk management, focusing on reducing the potential negative consequences of floods on human health, the environment, cultural heritage and economic activity and also, where appropriate, on non-structural initiatives and/or reducing the likelihood of flooding.

Flood Risk Management Plans take into account the specific characteristics of the areas they cover and provide appropriate solutions, depending on the needs and priorities of these areas, while ensuring relevant coordination within river basin districts and promoting the achievement of the environmental objectives established by Directive 2000/60/EC on groundwater and surface water bodies.

The Flood Risk Management Plan (FRMP) is both the basic planning tool and the central reporting mechanism of the country to the EU.

This is the 1st Revision of the Flood Risk Management Plan and is the plan for the 2nd cycle of implementation of Directive 2007/60/EC in the River Basin District of Eastern Central Greece (EL07).

1.2 Differentiations from the 1st Cycle of Implementation of Directive 2007/60/EC

The 1st Revision of the Flood Risk Management Plan differs from the 1st cycle of the FRMP and is implemented taking into account the following:

- Preparation of new point rainfall curves at the locations of the available stations of the River Basin District. The preparation of new rainfall curves was deemed necessary in this revision in order to take into account the most recent hydrometeorological data as well as the data of the new stations (where available) by applying the most modern methodologies for estimating their parameters.
- Updating the runoff curve number CN and the relevant maps, due to the recent fires, in order to examine their influence on the flood regime of the catchment basins. The methodological approach followed leads to the increase of the runoff curve number CN, depending on the severity of the fire in the areas affected by fires from 2020 onwards.
- Updating/supplementing the hydrographic network and the catchment areas that were defined within the framework of the 1st cycle of the FRMP. Within the framework of this revision, the hydrographic network and the catchment areas were corrected, where deemed necessary, taking into account the new and more accurate DTM, as well as the available orthophoto maps. In addition, the expansion of existing and the addition of new Areas of Potential Significant Flood Risk Zones (APSFR) according to the 1st Revision of the Preliminary Flood Risk Assessment (1st PFRA Revision, 2019) resulted in the need to expand/complete watercourses and catchment areas.
- Production of a high-resolution and accurate digital terrain model in areas with gentle relief as well as in high and very high risk zones, as they resulted from the flood impact assessment maps of the 1st implementation cycle of Directive 2007/60/EC. The produced Digital Terrain Model is used to increase the accuracy of the results during the hydraulic analyses that will be carried out in the context of the 1st FRMP Revision.
- According to the 1st PFRA Revision, 2019, 4 new APSFR were added to the River Basin District of Eastern Central Greece, in which corresponding hydraulic analyses are being carried out.
- In the current implementation cycle of the Directive, the impacts of climate change on the return period of the floods examined are assessed. The corresponding risk maps are being prepared, indicating the new return periods.

2 BRIEF PRESENTATION OF THE RIVER BASIN DISTRICT OF EASTERN CENTRAL GREECE

The Eastern Central Greece RBD (EL07) includes the entire R.U. of Evia (and Skyros) and Boeotia, large parts of the R.U. of Phthiotis (83.1%) and Phocida (41.9%) and small parts of the Attica Region (7.2%) and the R.U. of Magnesia (11.83%), as well as the entire R.U. of Sporades (100%). Its population, based on the 2011 census, was 553,781 inhabitants. According to the 2021 census data, the permanent population amounts to 521,554 residents, showing a decrease of 5.8% compared to the 2011 census.

With the decision **706/16-7-2010** (Government Gazette 1383B/2-9-2010 & Government Gazette 1572B/28-9-2010), of the National Water Committee "on the determination of the country's River Basins and the designation of the competent Regions for their management and protection", and the approval decisions of the National Water Committee of the 1st RBMP, forty-five (45) River Basins were determined, which fall under fourteen (14) River Basin Districts (corresponding to the term Water Districts of Article 3 of Presidential Decree 51/2007). The Eastern Central Greece Watershed includes seven (7) watersheds.

The watershed codes and their area are presented in the table below:

Table 2-1: Watersheds of Eastern Central Greece RBD

River Basin (RB)	Area RB (km²)
Spercheios (EL0718)	2.315
Evia (EL0719)	3.681
NE Kallidromos Beach (EL0722)	919
Boeotian Kifissos (EL0723)	2.719
Amfissa (EL0724)	786
Asopos (EL0725)	1.362
Sporades (EL0735)	497
TOTAL area of RBD 07	**12.279**

3 1st REVISION OF PRELIMINARY FLOOD RISK ASSESSMENT

The Article 4 of Directive 2007/60/EC stipulates that each Member State shall undertake a Preliminary Flood Risk Assessment (PFRA) by 22nd December 2011. For the needs of the 2nd Revision of the PFRA, a special EU guideline was issued in November 2018, which states that flood events from 2012 to the end of 2018 are taken into account. The Preliminary Assessment should be based on available information and assess the adverse consequences of floods on human health, economic activity, cultural heritage and the environment from all potentially significant sources of floods. Article 5 further stipulates that on the basis of the preliminary flood risk assessment, Member States shall identify the areas for which they conclude that there are potential flood risks, while in the case of international river basin districts, Member States are required to coordinate. The Directive does not set out any specific requirements for the review of the Preliminary Flood Risk Assessment, except for the reference made in Article 14 of the Directive, which stipulates the six-yearly review of each stage of the Directive, during which the impact of climate change on the occurrence of floods must be taken into account.

The 1st Revision of the Preliminary Flood Risk Assessment has been completed for all 14 River Basin Districts of the country and the relevant data has been submitted to the EU.

3.1 Historic and Significant Floods

According to the 1st Preliminary Flood Risk Assessment Review (2019) in the River Basin District of Eastern Central Greece, forty-three (43) historical flood events have occurred, of which twenty-nine (29) were classified as significant flood events, i.e. 67.44%. The largest number of historical floods occurred in 2018 with seventeen (17) historical events (39.53% of the total) followed by 2015 with thirteen (13) historical events (30.23% of the total). In 2012, seven (7) historical events (16.28% of the total) were recorded, while in 2014, 2016 and 2017, two (2) flood events were recorded.

3.2 Identification of Areas of Potential Significant Flood Risk

Based on the above methodology developed in the 1st Revision of the Preliminary Flood Risk Assessment (MEE-GDW, 2019), the following Areas of Potential Significant Flood Risk were defined for the Eastern Central Greece 33River Basin District:

1. Lower Asopos, Skala Oropos area, Ag. Konstantinos (EL07APSFR001)
2. Lowland area of Avlona basin, Asopos (EL07APSFR002)
3. Plains of Sarantapotamos river, Amarynthos beach, Evia island (EL07APSFR003)
4. Middle Sarantapotamos river, Gymnon area, Evia island (EL07APSFR004)
5. Lower Lida, coastal area of Vasiliko, Chalkida, S. Artaki, Evia island (EL07APSFR005)
6. Lowland area of Chondros river, Evia island (EL07APSFR006)
7. Middle Leda, Amphithea-Pissona area, Evia island (EL07APSFR007)
8. Beach of the Stomio area, Evia island (downstream of the Chondros river) (EL07APSFR008)
9. Lowland basin of the Manikiati river, Evia island (EL07APSFR009)

10. Upper reaches of the Psachna river (EL07APSFR010)

11. Lowland basin of the Psachna river, Politikon beach, Evia island (EL07APSFR011).

12. Low-lying zone of the middle-lower reaches of the Boeotian Kifissos basin-Lake Yliki-Paralimni-low-lying zone of the Schiomatari-Dilesi area (EL07APSFR012)

13. Atalanti area of the Alargino river, and low-lying zones of the Opountia and Malesina streams (EL07APSFR013)

14. Low-lying zone of the upper reaches of the Boeotian Kifissos (EL07APSFR014)

15. Low-lying zones of the Kireus river basin of the island of Evia and other streams of northeastern Evia (EL07APSFR015)

16. Low-lying coastal areas of Sperchios-low zone of streams of the coastal area of Stylida-Kamena Vourla (EL07APSFR016)

17. Oreioi, Istiaia, Kanatadika of the island of Evia and other low zones of streams of northern Evia (EL07APSFR017)

18. Lowland zone of the upper reaches of Asopos (EL07APSFR018)

19. Upper reaches of Alargino (EL07APSFR019)

20. Lowland zone of Kastalia Aliveri (EL07APSFR020)

21. Lowland zone of Karystos (EL07APSFR021)

22. Lowland zones of Sporades (EL07APSFR022)

23. Lowland zones of Skyros (EL07APSFR023)

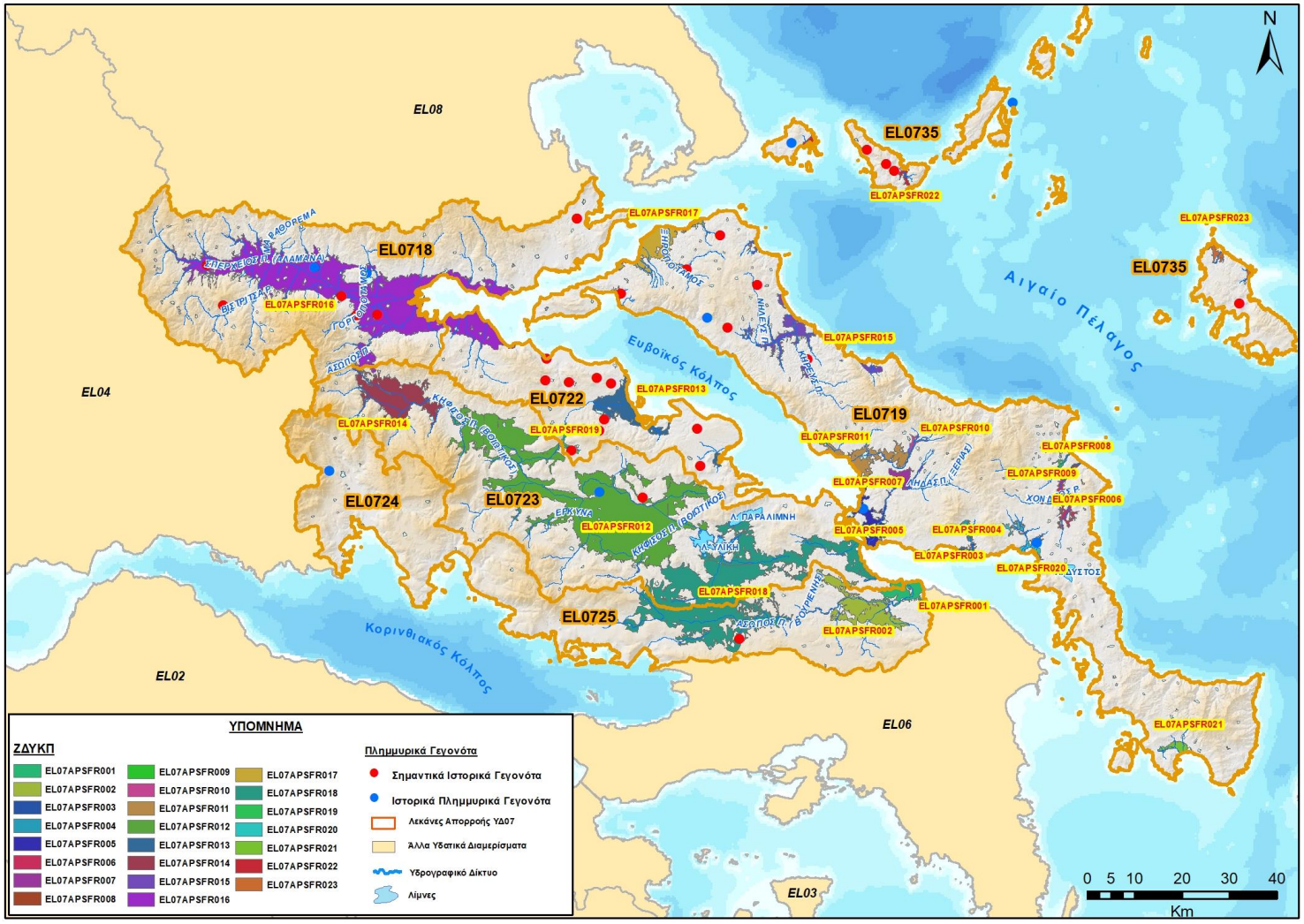

Figure 3-1: Areas of Potential Significant Flood Risk (APSFR) of the Eastern Central Greece Regional Authority

4 FLOOD HAZARD MAPS

4.1 Hydrological Scenarios

The Flood Hazard Maps concern the Areas of Potential Significant Flood Risk (APSFR), which belong to the River Basin District of Eastern Central Greece and were prepared for the following scenarios:

- floods with a high probability of exceedance with a 50-year return period,
- floods with a medium probability of exceedance with a 100-year return period,
- floods with a low probability of exceedance with a 1000-year return period.

4.2 Characteristics of Flood Hazard Maps

The Flood Hazard Maps in the APSFR, in accordance with article 6 of Directive 2007/60/EC and article 5 of JMD H.P.31822/1542/E103/21.7.2010 as amended and in force, depict the surrounding area of the flood events and their hydraulic characteristics (depths and water flow speeds), for the areas that could be flooded according to the scenarios examined.

The Flood Hazard Maps are presented at a scale of 1:25,000, for all return periods examined. The choice of this scale was made because the areas that are flooded in all the scenarios examined are overwhelmingly rural and natural areas, not urban areas. This scale provides sufficient accuracy in identifying such areas and offers a comprehensive view of the entire study area on fewer map sheets. In total, the Areas of Potential Significant Flood Risk of the Eastern Central Greece River Basin District are covered by thirty-five (35) maps/layouts.

The coding of the maps was based on the specifications of the HGRS 87 distribution and each map has a unique number. The coding of the maps is shown in the key in the middle of each map.

For each APSFR, **six (6) series of maps** were created concerning **Flood Hazard Maps from river flows** for each return period (T=50, 100, 1000 years) and for the 2 topics (Spatial distribution of maximum flood velocity and Spatial distribution of maximum flood depth) and **Flood Hazard Maps from lake overflow** for return periods T=50, 100 and 1000 years for the topic Spatial distribution of maximum flood depth.

A total of **two hundred and ten (210) Flood Hazard Maps from river flows/lakes** were prepared for the scenarios corresponding to return periods T=50, 100 and 1000 years, i.e. at high, medium and low probability of exceedance.

Figure 4-1: Flood areas and flow depths of the River Basin District of Eastern Central Greece (T=50 years)

Figure 4-2: Flood areas and flow depths of the River Basin District of Eastern Central Greece (T=100 years)

Figure 4-3: Flood areas and flow depths of the River Basin District of Eastern Central Greece (T=1000 years)

5 FLOOD RISK MAPS

5.1 Characteristics of Flood Risk Maps

Flood risk maps present the negative impacts on the population, economic activity, environment and cultural heritage within the flood areas, as they resulted from the hydraulic analysis for the considered return periods (T=50, 100, 1000) and are presented in the Flood Hazard Maps. More specifically, the maps present:

- **The impacts of the flood on the population**: the settlements and the population affected are depicted.
- **The impact of the flood on economic activities:** the settlements that are flooded (impacts on real estate), agricultural land, livestock units, industries, industrial zones, industrial areas and industrial parks, solid waste management projects, developing and developed tourist areas, the road and railway network, sewage treatment facilities, health and civil protection structures and education and sports facilities are depicted. Also, the areas of airports, groundwater abstraction works, cultural activities/archaeological sites/cultural heritage sites and PPC substations are depicted.
- **The impacts of the flood on the environment:** the categories of protected areas of the RB Management Plan of the Eastern Central Greece River Basin District are illustrated in accordance with Directive 2000/60/EC, which are the areas designated for the protection of habitats or species, (including Natura 2000 areas).

The Flood Risk Maps are presented at a scale of 1:25,000, for all return periods considered. In total, the flooded areas within the APSFRs of the Eastern Central Greece River Basin District are covered by thirty-five (35) maps.

The coding of the maps was based on the specifications of the HGRS 87 distribution and each sign has a unique number. The coding of the maps is shown in the key in the middle of each map.

For each APSFR, **three (3) series of maps were created**, one for each return period (T=50, 100, 1000 years) based on the area of inundation by river flows/lakes. The maps that were created fully cover the inundated surfaces within the APSFRs of the Eastern Central Greece RBD. A total of **one hundred and five (105) Flood Risk Maps** by river flows/lakes were prepared.

The following figures present the Flood Risk Maps at the RBD level, for a return period of T= 50, 100 and 1000 years.

Figure 5-1: Potentially affected land uses, economic activities and infrastructures of Eastern Central Greece (T=50 years)

Figure 5-2: Potentially affected land uses, economic activities and infrastructures of Eastern Central Greece (T=100 years)

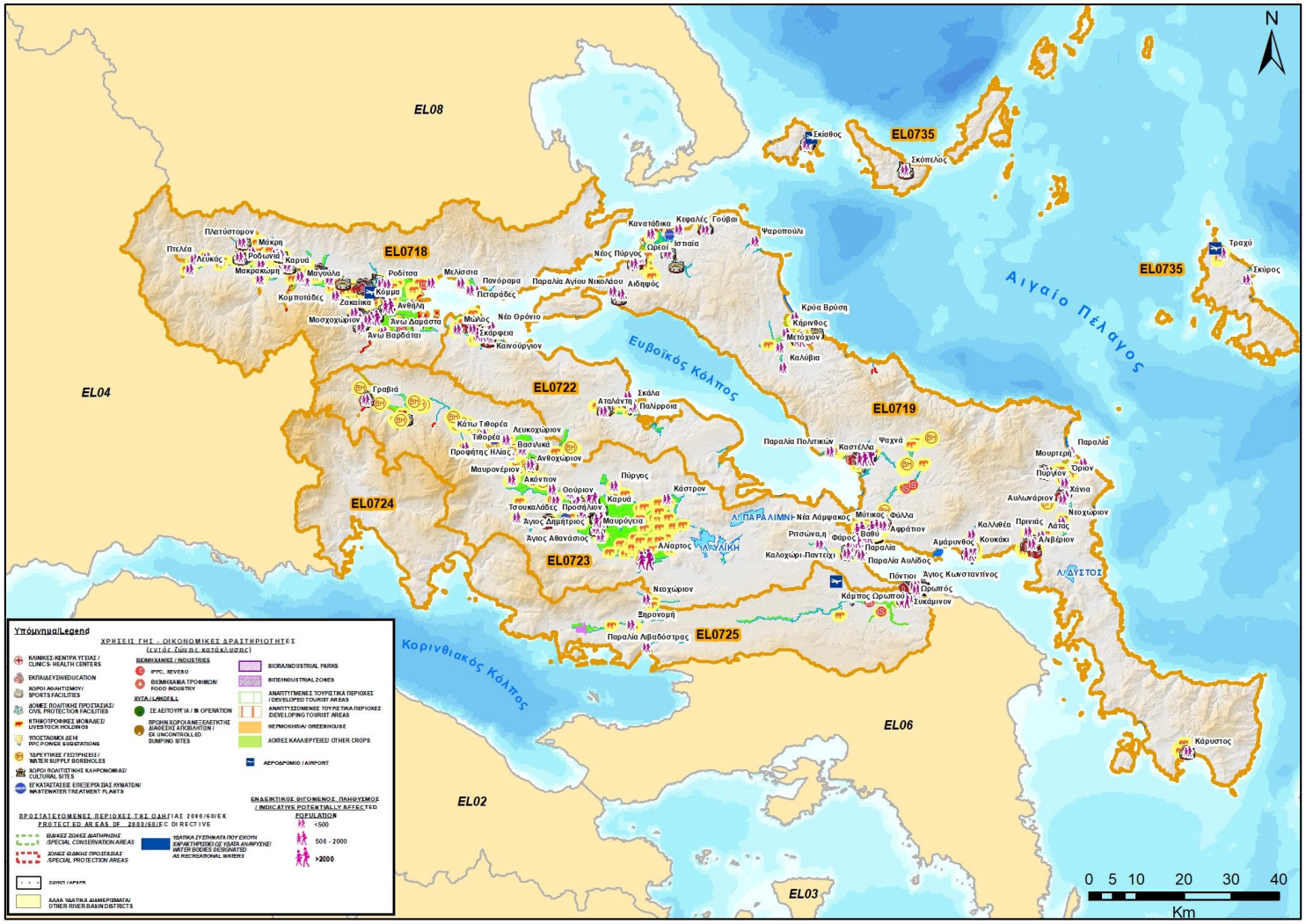

Figure 5-3: Potentially affected land uses, economic activities and infrastructures of Eastern Central Greece (T=1000 years)

5.2 Flood Risk Assessment

A Flood Risk Assessment was carried out, taking into account the requirements of Directive 2007/60/EC and EU guidelines.

The approach followed is based on the assumption that Flood Risk is fully determined by two independent variables, Flood Vulnerability and Flood Hazard. Flood Vulnerability is an indicator of the exposure and vulnerability of people, infrastructure, economic activities, the environment and cultural heritage within the flood zone. It therefore depends on the land uses within the flood zone. Flood Hazard is an indicator of the destructiveness of a specific flood event. Flow velocity and depth were adopted as determinants of destructiveness. Flood Risk is the product of the above Vulnerability and Hazard indicators.

The objective of the analysis is to assess the flood risk within the floodplains resulting from the hydraulic analysis for the considered return periods (T50, T100 and T1000), taking into account the characteristics of the flood (depth, flow velocity) with the aim of designing mitigation measures and evaluating the effectiveness of these measures.

The impact assessment and vulnerability assessment were carried out for the maximum flood extent corresponding to a return period flood of T=1000 years (for rivers and lakes) and T=100 years for floods due to rising sea level.

Subsequently, the flood hazard assessment and flood risk assessment were carried out for T= 50, 100 and 1000 years (for rivers and lakes) taking into account the hydraulic characteristics of the flood (depths, flow velocities and their combination for river flows and depths for lakes).

The following figures present the results of the assessment at the RBD level, for a return period of T= 50, 100 and 1000 years.

Figure 5-4: Flood risk graduation map of Eastern Central Greece (T=50 έτη)

Figure 5-5: Flood risk graduation map of Eastern Central Greece (T=100 έτη)

Figure 5-6: Flood risk graduation map of Eastern Central Greece (T=1000 έτη)

6 FLOOD RISK MANAGEMENT OBJECTIVES

The main issues of Flood Risk Management in the RBD of Eastern Central Greece (EL07) are summarized as follows:

- High flood flows and the **inability of the watercourse bed** to **drain the flood peaks**.
- **The morphology** and **narrowing of the watercourse bed** in individual sections, due to water-loving vegetation, the accumulation of sediment and the cross-sections of some transversal technical works.
- The **unclear watercourse bed** without a defined cross-section.
- The restriction or even **the covering of the watercourse bed** to serve various **anthropogenic uses.**
- The fragmented flood protection

Based on the flood hazard and risk analyses in the context of this 2nd FRMP for the RBD of Eastern Central Greece, the following emerged:

- The area inundated by a flood of river flows, for a return period **T=50 years**, amounts to 636.22 km^2. In the inundation area, 37.58% is characterized by very low risk, 47.94% by low, 8.73% by medium, 4.76% by high and 0.99% by very high risk. 85.52% of the inundated area is characterized by low and very low risk.

  The size of the area inundated by a flood of a return period T=50 years, within the APSFR EL07APSFR001, amounts to 7.13 km^2. In the inundation area, 48.50% of it is characterized by high and 5.94% by very high risk and is mainly due to the urban and peri-urban areas located within the inundation zone.

  The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR002, amounts to 7.18km^2. In the flood area, 35.02% of it is characterized by high and 13.29% by very high risk. The high and very high risk are located respectively in the eastern part of the flooded surface and are due to the combination of high vulnerability and very high risk.

  The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR003, amounts to 2.11km^2. As observed in the flood area, 3.09% of it is characterized by high. The low and very low flood risk are located at the entrance of the Sarantapotamos River to the Zone, upstream of the settlement of Koukaki. The moderate and high risk are located in the section of the Sarantapotamos that flows parallel to the settlement of Koukaki but also at the mouth of the stream.

  The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR004, amounts to 0.37km^2. As observed in the flood area, 6.51% of it is characterized by high risk. Within the flood area, no areas with very high flood risk are identified. The high risk is identified near the settlement of Kallithea.

  The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR005, amounts to 7.88km^2. As observed in the flood area, 51.25% of it is characterized by very low risk, 2.94% by low, 12.65 by moderate, 10.81% by high and 1.34% by very high.

  The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR006, amounts to 8.40km^2. As observed in the flood area, 4.60% of it is characterized by high and 1.72% by very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR007, amounts to 2.94km^2. As observed in the flood area, 2.39% of it is characterized by high and 8.55% by very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR008, amounts to 1.59km^2. Within the floodplain, there are no areas with high and very high flood risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR009, amounts to 3.53km^2. As observed in the floodplain, 18.61% of it is characterized by high risk and 4.30% by very high risk. Low and very low flood risk are found in almost the entire flooded area, with the exception of a section upstream of the settlement of Paralia where the risk is moderate and a section near the settlement of Monodryo where the risk is characterized by high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR010, amounts to 3.23km^2. As observed in the flood area, 5.68% of it is characterized by high and 0.40% by very high risk. The high risk is due to high vulnerability, where in combination with high risk, the risk is high.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR011, amounts to 20.32km^2. As observed in the flood area, 5.50% of it is characterized by high and finally 4.89% by very high risk. The very high risk is due to the combination of very high vulnerability with very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR012, amounts to 277.83km^2. As observed in the flood area, 1.80% of it is characterized by high and 0.23% by very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR013, amounts to 13.14km^2. As observed in the flood area, 3.14% of it is characterized by high risk. The high risk is located in the eastern main part of the flooded area along the Alarginos stream and is due to the combination of high vulnerability and very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR014, amounts to 12.84km^2. As observed in the flood area, 7.36% of it is characterized by high and 3.13% by very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR015, amounts to 21.19km^2. As observed in the flood area, 2.73% of it is characterized by high and 0.94% by very high risk. The high risk is located along the Nilea River in its sections near the settlements of Metochi and Kirinthos, along the Kira River in its sections upstream and downstream of the settlement of Mantoudi and along the stream located at the eastern end of the Zone. Finally, the very high risk is located in the section of the flooded area near the settlement of Mantoudi, due to the very high vulnerability where even in combination with the low hazard the risk remains very high.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR016, amounts to 207.86km^2. As observed in the flood area, 6.21% of it is characterized by high and 0.94% by very high risk. The high and very high risk are mainly located in the downstream part of Sperchios and more specifically at the confluence of the Lamia Tafros with the Xeria River.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR017, amounts to 12.84km^2. As observed in the flood area, 3.36% of it is characterized

by high and 0.02% by very high risk. There are no areas with very high flood risk identified within the flood area. Low and very low flood risk are found in almost the entire floodplain, with the exception of a small section downstream of the settlement of Neochori where the risk is high and a section near the settlement of Gouves where the risk is moderate and high.

The size of the area flooded by a flood of a return period of T=50 years, within the APSFR EL07APSFR018, amounts to 19.21km^2. As observed in the floodplain, 3.79% of it is characterized by high and 0.10% by very high risk.

The size of the area flooded by a flood of a return period of T=50 years, within the APSFR EL07APSFR019, amounts to 2.47km^2. No areas of high and very high flood risk are found within the floodplain.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR020, amounts to 4.11km^2. As observed in the flood area, 2.72% of it is characterized by high and 4.08% by very high risk.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR021, amounts to 2.08km^2. There are no high and very high flood risk areas identified within the flood area.

The size of the area flooded by a flood with a return period of T=50 years, within APSFR EL07APSFR022, amounts to 0.74km^2. As observed in the flood area, 11.82% of it is characterized by high risk.

The size of the area inundated by a flood with a return period of T=50 years, within APSFR EL07APSFR023, amounts to 0.51km^2. As can be seen in the inundation area, 1.82% of it is characterized by high and 0.21% by very high risk.

- The area inundated by river flow flooding, for a return period **T=100 years**, amounts to 678.07 km^2. In the inundation area, 33.6% is characterized by very low risk, 50.41% by low, 9.78% by medium, 5.18% by high and 1.02% by very high risk. 84.01% of the inundated area is characterized by low and very low risk.

  The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR001, amounts to 7.64km^2. As observed in the flood area, 53.36% of it is characterized by high and 6.02% by very high risk. The largest percentage is characterized by moderate and high risk and is mainly due to the urban and peri-urban areas located within the flood zone.

  The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR002, amounts to 7.86km^2. As observed in the flood area, 34.53% of it is characterized by high and 12.76% by very high risk.

  The size of the area inundated by a flood with a return period of T=100 years, within APSFR EL07APSFR003, amounts to 2.31km^2. As observed in the inundation area, 3.05% of it is characterized by high risk. Within the inundation area, no areas with very high flood risk are identified. The high risk is identified in the section of Sarantapotamos that flows parallel to the settlement of Koukaki but also in a small section upstream of the stream's mouth.

  The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR004, amounts to 0.54km^2. As observed in the flood area, the high risk is located near the settlement of Kallithea.

  The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR005, amounts to 9.11km^2. As observed in the flood area, 10.87% of it is characterized by high and 1.39% by very high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR006, amounts to 8.81km^2. As observed in the flood area, 4.51% of it is characterized by high and 1.81% by very high risk.

The size of the area flooded by a flood of a return period of T=100 years, within APSFR EL07APSFR007, amounts to 3.16km^2. As observed in the flood area, 11.17% of it is characterized as very high.

The size of the area flooded by a flood of a return period of T=100 years, within APSFR EL07APSFR008, amounts to 1.67km^2. Within the flood area, there are no areas with high and very high flood risk. Low and very low flood risk are found throughout the flooded area, with the exception of a section upstream of the settlement of Mourteri and a section on the floodplain that affects the settlement, where the risk is moderate.

The size of the area inundated by a flood with a return period of T=100 years, within APSFR EL07APSFR009, amounts to 3.80km^2. As can be seen in the inundation area, 19.04% of it is characterized by high and 4.42% by very high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR010, amounts to 3.42km^2. As observed in the flood area, 5.60% of it is characterized by high and finally 0.48% by very high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR011, amounts to 21.54km^2. As observed in the flood area, 5.30% of it is characterized by high and finally 4.70% by very high risk. Low and very low flood risk are found in almost the entire flooded area. Exceptions are the section upstream of the settlement of Psachna where the risk is moderate, a section of the flooded area affecting the settlement of Psachna where the risk is very high and a section affecting the settlement of Kastella where the risk is high. The very high risk is due to the combination of very high vulnerability with very high hazard.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR012, amounts to 290.44km^2. As observed in the flood area, 2.43% of it is characterized by high and 0.26% by very high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR013, amounts to 16.12km^2. As observed in the flood area, 3.51% of it is characterized by high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR014, amounts to 14.63km^2. As observed in the flood area, 5.40% of it is characterized by high and 2.93% by very high risk.

The size of the area inundated by a flood of a return period of T=100 years, within APSFR EL07APSFR015, amounts to 21.92km^2. As observed in the inundation area, 2.79% of it is characterized by high and finally 0.99% by very high risk. Low and very low flood risk are found in most parts of the inundated area. Moderate and high risk are found along the Nilea River in its sections near the settlements of Metochi and Kirinthos, along the Kireas River in its sections upstream and downstream of the settlement of Mantoudi and along the stream located at the eastern end of the Zone. Finally, the very high risk is located in the part of the flooded area near the settlement of Mantoudi, due to the very high vulnerability where even in combination with the low hazard, the risk remains very high.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR016, amounts to 221.43km^2. As observed in the flood area, 6.42% of it is characterized by high and 0.93% by very high risk. The largest percentage is characterized by

very low and low risk and these areas are located scattered within the flooded area. The moderate, high and very high risk are located mainly in the downstream part of Sperchios and more specifically at the confluence of the Lamia Tafros with the Xeria River.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR017, amounts to 14.86km^2. As observed in the floodplain, 2.36% of it is characterized by high and 3.91% by very high risk. Low and very low flood risk are found in almost the entire floodplain, with the exception of a small section downstream of the settlement of Neochori where the risk is high and a section near the settlement of Gouves where the risk is moderate and high.

The size of the area flooded by a flood of a return period of T=100 years, within the APSFR EL07APSFR018, amounts to 21.43km^2. As observed in the floodplain, 4.63% of it is characterized by high and 0.71% by very high risk.

The size of the area flooded by a flood of a return period of T=100 years, within the APSFR EL07APSFR019, amounts to 2.74km^2. Within the flood zone, there are no areas with high or very high flood risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR020, amounts to 4.44km^2. As can be seen in the flood area, 3.17% of it is characterized by high and 4.07% by very high risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR021, amounts to 2.23km^2. Within the flood area, there are no areas with high and very high flood risk.

The size of the area flooded by a flood with a return period of T=100 years, within APSFR EL07APSFR022, amounts to 0.81km^2. As observed in the flood area, 10.43% of it is characterized by high and 0.91% by very high risk.

The size of the area flooded by a flood of a return period of T=100 years, within APSFR EL07APSFR023, amounts to 0.64km^2. As observed in the flood area, 2.07% of it is characterized by high and 0.20% by very high risk.

- The area inundated by river flow flooding, for a return period **T=1000** years, amounts to 842.01 km^2. In the inundation area, 22.76% is characterized by very low risk, 53.6% by low, 14.61% by medium, 7.55% by high and 1.48% by very high risk. 76.36% of the inundated area is characterized by low and very low risk.

  For a return period T=1000 years the flooded area of APSFR EL07APSFR001 is 9.82km^2. As observed in the flood area, 51.37% of it is characterized by high and 24.04% by very high risk. The largest percentage is characterized by high and very high risk and is mainly due to the urban and peri-urban areas located within the flood zone.

  For a return period T=1000 years the flooded area of APSFR EL07APSFR002 is 11.03km^2. As observed in the flood area, 39.93% of it is characterized by high and 12.05% by very high risk.

  For a return period of T=1000 years, the flooded area of APSFR EL07APSFR003 is 2.79km^2. As observed in the flood area, 17.72% of it is characterized by high risk. Within the flood area, no areas with very high flood risk are identified. Moderate and high risk are identified in the section of Sarantapotamos that flows parallel to the settlement of Amarynthos, and in its estuary.

  For a return period of T=1000 years, the flooded area of APSFR EL07APSFR004 is 0.84km^2. As observed in the flood area, 8.63% of it is characterized by high risk.

  For a return period of T=1000 years, the flooded area of APSFR EL07APSFR005 is 17.61km^2. As observed in the flood area, 15.82% of it is characterized by high and 1.87% by very high risk.

For a return period of T=1000 years, the flooded area of APSFR EL07APSFR006 is 10.41km^2. As observed in the flood area, 6.67% of it is characterized by high and 3.70% by very high risk.

For a return period T=1000 years the flooded area of APSFR EL07APSFR007 is 3.98km^2. As observed in the flood area, 11.29% of it is characterized by very high risk.

For a return period T=1000 years the flooded area of APSFR EL07APSFR008 is 2.00km^2. Within the flood area, no areas with high and very high flood risk are identified.

For a return period T=1000 years the flooded area of APSFR EL07APSFR009 is 4.75km^2. As observed in the flood area, 23.00% of it is characterized by high risk and 4.61% by very high risk.

For a return period of T=1000 years the flooded area of APSFR EL07APSFR010 is 4.32km^2. As can be seen in the flood area, 2.49% of it is characterized by high and 3.66% by very high risk.

For a return period of T=1000 years, the flooded area of APSFR EL07APSFR011 is 26.31km^2. As can be seen in the flood area, 5.82% of it is characterized by high and finally 6.25% by very high risk. Low and very low flood risk are found in almost the entire flooded area. Exceptions are the upstream section of the settlement of Psachna where the risk is moderate, a section of the flooded area affecting the settlement of Psachna where the risk is high and a section affecting the settlement of Kastella where the risk is very high. The very high risk is due to the combination of very high vulnerability with moderate hazard.

For a return period T=1000 years the flooded area of APSFR EL07APSFR012 is 338.30km^2. As observed in the flood area, 4.52% of it is characterized by high and 0.43% by very high risk. The largest percentage is characterized by very low and low risk (85.88%) and these areas are located mainly in the eastern part of the flooded area. The moderate high and very high risk are located respectively in the western main part of the flooded area along the Boeotian Kifissos from its confluence with the Kousvorema to the Erkyna stream and are due to the combination of high vulnerability and hazard.

For a return period T=1000 years the flooded area of APSFR EL07APSFR013 is 20.58km^2. As observed in the flood area, 4.46% of it is characterized by high risk.

For a return period of T=1000 years the flooded area of APSFR EL07APSFR014 is 20.45km^2. As observed in the flood area, 10.79% of it is characterized by high and 2.62% by very high risk.

For a return period of T=1000 years the flooded area of APSFR EL07APSFR015 is 24.13km^2. As observed in the flood area, 9.25% of it is characterized by high and finally 1.24% by very high risk. Low and very low flood risk are found in most parts of the flooded area. The moderate and high risk are located along the Nilea River in its sections near the settlements of Metochi and Kirinthos, along the Kira River in its sections upstream and downstream of the settlement of Mantoudi and along the stream located at the eastern end of the Zone. Finally, the very high risk is located in the section of the flooded area near the settlement of Mantoudi, due to the very high vulnerability where in combination with the very high hazard the risk arises as very high..

For a return period T=1000 years the flooded area of APSFR EL07APSFR016 is 277.18km^2. As observed in the flood area, 8.63% of it is characterized by high and 0.99% by very high risk. The largest percentage is characterized by very low and low risk and these areas are located scattered within the flooded area. The moderate, high and very high risk are located mainly in the downstream part of Sperchios and more specifically at the confluence of the Lamia Tafros with the Xeria River.

For a return period T=1000 years the flooded area of APSFR EL07APSFR017 is 28.66km^2. As observed in the flood area, 1.10% of it is characterized by high and 0.46% by very high risk.

For a return period T=1000 years the flooded area of APSFR EL07APSFR018 is 29.32km^2. As can be seen in the flood area, 6.75% of it is characterized by high and 0.92% by very high.

For a return period T=1000 years the flooded area of APSFR EL07APSFR019 is 3.58km^2. Within the flood area, no areas with high and very high flood risk are identified.

The size of the area flooded by a flood with a return period of T=1000 years, within APSFR EL07APSFR020, amounts to 5.56km^2. As observed in the flood area, 6.85% of it is characterized by high and 5.46% by very high risk.

The size of the area flooded by a flood with a return period of T=1000 years, within APSFR EL07APSFR021, amounts to 2.81km^2. As observed in the flood area, 1.85% of it is characterized by high risk.

The size of the area flooded by a flood with a return period of T=1000 years, within APSFR EL07APSFR022, amounts to 1.05km^2. As observed in the flood area, 14.66% is high and 10.44% is very high.

The size of the area flooded by a flood of a return period of T=1000 years, within the APSFR EL07APSFR023, amounts to 1.13km^2. As observed in the flood area, 0.23% of it is characterized by high risk.

Based on the conclusions of the analysis, it is appropriate to emphasize short-term and medium-term measures and actions that will constitute a well-balanced mix of structural and non-structural measures, taking into account the available financial resources. Such measures and actions may include:

- Measures to reduce peak flow and the management of the flood zone and upstream catchments by impounding them in reservoirs but also by promoting solutions for natural retention of water and sediments.
- Inspection and maintenance of existing flood protection works.
- Interventions at points in the hydrographic network where it has been established that there are obstacles to the flow.
- Land Use planning - urban planning measures that prevent the establishment of new uses in areas of high flood risk or propose the relocation of activities and the protection of important infrastructure.
- Installation of early warning systems.
- Management of reservoirs in such a way that, if necessary, they can be used (also) to intercept flood flows.
- Installation of warning signs at Irish crossings.
- Awareness and information of the public about flood risk.

6.1 General Objectives

According to Directive 2007/60/EC, Member States shall set objectives that focus on:

- reducing the potential negative consequences of floods on:

  - human health,

  - the environment

  - cultural heritage, and

  - economic activities, and/or

- reducing the likelihood of flooding (through structural or non-structural projects)

The Directive does not specify the objectives of FRMP nor does it provide a specific timetable for their achievement. It is up to Member States to decide on the flood risk management objectives they will set and the measures they will include in the FRMP.

According to the Directive and the Guidance Documents, objectives:

- May be general at national level or specific and related to the specific RBD. A practice applied in other countries is for the general directions of the objectives to be uniform at the national level while at the local level the quantification and the method of implementation of the objectives (e.g. the degree of protection against flooding) are specified.
- May refer to processes (e.g. enhancing the awareness of residents on flood risk issues) or to specific recipients (e.g. protection of specific sensitive uses).
- May be quantified (if data are available, approaches to quantification, prioritization and preparation of a timetable for the implementation of the objectives can be adopted) or simply defined qualitatively.
- Must take into account both the state of the water bodies and the objectives and measures that have been defined for each water body in the framework of the River Basin Management Plans. In addition to reducing flood risk, they may also contribute to achieving good status of water bodies (win-win objectives), but may also lead to exceptions to the objectives of the Water Framework Directive 2000/60/EC.
- Are finalized after information and consultation with interested and involved stakeholders,
- Take into account the results of the Flood Hazard and Risk Maps as well as all the parameters that influence the assessment of flood risk (social, economic parameters, development and environmental protection priorities in each APSFR).

Taking into account the provisions of Directive 2007/60/EC and the Guidance Documents, the following **General Objectives** were established:

- Mitigation of flood exposure (Management Objective O1)
- Reduction of the probability of flooding (Management Objective O2)
- Strengthening flood preparedness (Management Objective O3)
- Improving recovery mechanisms in affected areas (Management Objective O4)

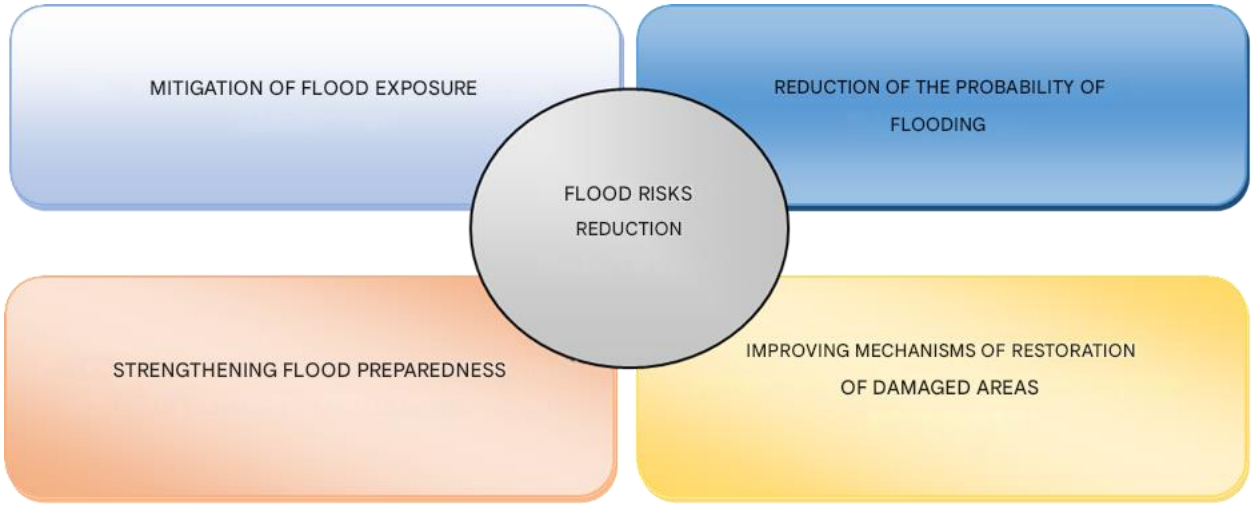

Figure 6-1: Flood Risk Management Objectives

The above General Objectives of the 1st FRMP correspond to the four axes of actions of Flood Risk Management (Prevention, Protection, Preparedness, Rehabilitation) and are of a strategic nature with the aim of establishing a common understanding and policy on issues related to the management of flood risks. Some measures may serve more than one Objective.

6.2 Specific Objectives

In this **2nd FRMP cycle**, the above General Objectives are maintained, in accordance with the provisions of Directive 2007/60/EC and the Guidance Documents, and are further specified in Specific Objectives which are described below.

In order to achieve the **General Objective O1 to mitigate** the exposure of human health, environment, cultural heritage and economic activities to flooding, the following **specific individual objectives** are defined:

O1.1: implementation of actions and measures to acquire, supplement, **organize and improve available information**, such as the creation of flood event registers and technical data of Flood Protection Works and watercourse delineation , for the optimal monitoring of the FRMP Program of Measures.

O1.2: implementation of actions and measures to train/inform, modernize and organize a network of meteorological and hydrometric data, **to improve the level of knowledge of flood prevention**.

O1.3: implementation of actions and measures to **adopt appropriate conditions and restrictions, which will be put in agreement with the FRMP,** for spatial and urban planning, the relocation of activities and the protection of critical infrastructure, through appropriate legislative/administrative regulations.

In order to achieve the **General Objective O2 to reduce the probability of flooding** and by extension increase the level of protection of human health, environment, cultural heritage and economic activities, the following specific individual objectives are defined:

O2.1: implementation of actions and measures of an environmental nature for the containment, shaping and management of the flood zone of the mountain riverbed, as well as for the **reduction of flood risk through Nature Based Water retention in lowland areas**.

O2.2: implementation of actions and measures for the exploitation of storage projects, modernization, rehabilitation and construction of drainage networks, rainwater management and Flood Protection Works, to **reduce flood risk by other means**.

O2.3: implementation of actions and measures **to strengthen flood risk management practices at the protection stage,** by promoting the strategic planning of flood protection and stormwater projects and at the same time promoting natural containment or controlled flooding solutions to improve runoff management through appropriate legislative/administrative regulations.

In order to achieve **General Objective O3 to enhance flood preparedness and limit the impacts of flooding** on human health, the environment, cultural heritage and economic activities, the following specific objectives are defined:

O3.1: implementation of actions and measures to develop early warning tools for floods and the organization and licensing of embankment restoration/maintenance actions, to **increase the level of flood preparedness.**

O3.2: implementation of non-structural interventions, actions and measures to educate/inform and raise awareness of the public and stakeholders, actions to determine in advance the alert limits and to mark/warn areas at risk during flooding, to **improve the level of flood preparedness knowledge**.

O3.3: implementation of actions and measures to prepare action plans and regulations for the organization and **strengthening of flood risk management practices at the preparedness stage**, through appropriate non-structural interventions and legislative/administrative regulations..

In order to achieve **General Objective O4 to improve the mechanisms for the restoration of affected areas** (people, environment, cultural heritage and economic activities), the following specific objectives are defined:

O4.1: implementation of actions and measures of an economic and legislative/administrative nature to regulate actions and responsibilities for recording damage, to **improve the mechanism for evaluation and compensation** after a flood.

O4.2: implementation of actions and measures of an environmental nature to determine methods and emergency restoration actions after flood events, to improve **the preparation for the execution of restoration works**.

O4.3: implementation of actions and measures of an economic and legislative/administrative nature to support those affected after flood events, **to improve the mechanism for the restoration after a flood**.

7 FLOOD RISK MANAGEMENT MEASURES PROGRAM 1ST FRMP REVISION

7.1 Introduction

The objective of each Flood Risk Management Plan is to draw up a Programme of Measures that will cover all aspects of flood risk management and assessment. The Measures based on the specifications of Directive 2007/60/EC and the guidance documents are divided into four main groups: **Prevention, Protection, Preparedness and Recovery**. Within the above framework , the Measures may include actions to promote sustainable land use practices, improve the interception of flood runoff as well as the controlled flooding of certain areas in the event of a flood.

According to the Guidance Documents for the implementation of Directive 2007/60/EC within the framework of the Common Strategy for the implementation of the Water Framework Directive 2000/60/EC (Guidance Document No. 29 A compilation of reporting sheets adopted by Water Directors Common Implementation Strategy for the Water Framework Directive (2000/60/EC)), four Action Lines for Flood Risk Management are identified as shown in the Table below.

Table 7.1: Flood Risk Management Types of measures

Aspects of FRM	Description
No Action	No measure is proposed to reduce the flood risk
Prevention	Preventing flood damage by: • avoiding the construction of houses and industries in flood zones • adjusting flood risk tolerances and incorporating flood risk into future development plans • promoting appropriate land uses • integrating the Directive into other state policies and strategies (mainly spatial planning)
Protection	Taking measures, both structural and non-structural, to reduce the likelihood of flooding in specific areas.
Preparedness	Informing the public about the risks and how to react to flood events; emergency response plans and measures in the event of a flood.
Recovery	Returning to normal conditions as quickly as possible and mitigating social and economic impacts on the affected population.

Source: CIS for the WFD. Guidance Document No. 29

Flood Risk Management Measures are distinguished according to the Flood Risk Management Action Aspects **(Prevention, Protection, Preparedness, Recovery)** to which they refer, as presented in the following Table.

Table 7.2: Types of Measures per Aspects and Type of Flood Risk Management Action

Aspects of FRM	Types of Measures/ Coding	Description of Measure
Prevention	**Avoidance (M21)**	Measure to prevent the location of new or additional receptors in flood prone areas, such as land use planning policies or regulation
	Relocation (M22)	Measure to remove receptors from flood prone areas
	Reduction (M23)	Measure to adapt receptors to reduce the adverse consequences in the event of a flood actions (on buildings, public networks, etc...)
	Other prevention (M24)	Other measure to enhance flood risk prevention (may include, flood risk modelling and assessment, flood vulnerability assessment, maintenance programmes or policies etc...) Integrating the Directive into other state policies and strategies (mainly spatial planning).
Protection	**Natural flood management / runoff and catchment management (M31)**	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.
	Water flow regulation (M32)	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.
	Channel, Coastal and Floodplain Works (M33)	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.
	Surface Water Management (M34)	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).
	Other Protection (M35)	Other measure to enhance protection against flooding, which may include flood defence asset maintenance programmes or policies of flood

Aspects of FRM	Types of Measures/ Coding	Description of Measure
		protection infrastructure and/or protection of private structures (e.g. isolation of property entrances).
Preparedness	**Flood Forecasting and Warning (M41)**	Measure to establish or enhance a flood forecasting or warning system.
	Emergency Event Response Planning (M42)	Measure to establish or enhance flood event institutional emergency response planning
	Public Awareness and Preparedness (M43)	Measure to establish or enhance the public awareness or preparedness for flood events (e.g. supporting volunteer groups involved in flood conditions)
	Other preparedness (M44)	Other measure to establish or enhance preparedness for flood events to reduce adverse consequences (e.g. stream cleaning).
Recovery and Review (Planning for the recovery and review phase is in principle part of preparedness)	**Individual and societal recovery (M51)**	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
	Environmental recovery (M52)	Clean-up and restoration activities (with several sub-topics as mould protection, well-water safety and securing hazardous materials containers)
	Other Recovery and review (M53)	Lessons learnt from flood events Insurance policies, etc.

Source: CIS for the WFD. Guidance Document No. 29

7.2 Preliminary Assessment of FRMP 1st Revision

In order to achieve the Flood Risk Management objectives, as revised in the 1st Revision of the Flood Risk Management Plan (FRMP), a superset, "pool", of Measures was prepared, common to all RBDs in the country.

In summary, it is reported that 40 measures of the pool of flood risk management measures were examined, of which 11 were prevention measures, 14 protection measures, 10 preparedness measures and 5 recovery measures.

7.3 Flood Risk Management Measures FRMP 1st Revision

Finally, the program of measures of this 1st Revision of the Flood Risk Management Plan of the River Basin District of Eastern Central Greece (EL07), after taking into account the results of the consultation of the Draft Flood Risk Management Plan and the EIA, includes 30 measures, of which 9 belong to the prevention aspect, 11 to the protection, 8 to the preparedness, and 2 to the recovery aspect.

Table 7.3: Measures of the Flood Risk Management Plan in the River Basin District of Eastern Central Greece

Aspect	Name of Measure	Correlation with measure of the 1st FRMP Plan	Measure Code
Prevention	Restructuring and modernization of the meteorological and hydrometric data collection network	On going from the 1st Plan EL_07_24_04	EL_07_24_01
Prevention	Harmonization of the first-level urban planning plans with the FRMP	New measure	EL_07_21_01
Prevention	Prevention and protection actions of Rural Development within the APSFR	New measure	EL_07_21_04
Prevention	Collection and digitization of watercourse delineation data and flood protection works data	On going from the 1st Plan EL_07_24_05	EL_07_24_02
Prevention	Building regulations within the 100-year flood zone	Modification by EL_07_23_03 from the 1st Plan	EL_07_21_02
Prevention	Adaptation of the first-level urban planning plans in the areas of controlled flooding to contain floods (retention basins)	New measure	EL_07_21_03
Prevention	Development of a Monitoring System for the Program of Measures of the Flood Risk Management Plan	On going from the 1st Plan EL_07_61_01	EL_07_61_01
Prevention	Taking measures for the flood protection of water service providers' groundwater abstraction works	Modification by EL_07_23_03 from the 1st Plan	EL_07_23_01
Prevention	Creation of a national Flood Events Registry (FER) and development of a relevant interactive platform on the internet	On going from the 1st Plan EL_07_24_07	EL_07_24_03
Protection	Implementation of a forestry system for mountain flow regulation works	Modification by EL_07_31_08 from the 1st Plan	EL_07_31_01
Protection	Use of existing reservoirs for flood retention	Modification by EL_07_32_10 from the 1st Plan	EL_07_32_02
Protection	Modernization and rehabilitation of drainage networks	Modification by EL_07_33_11 from the 1st Plan	EL_07_33_01
Protection	Flood Protection Works	Modification by EL_07_33_12 from the 1st Plan	EL_07_33_02

Aspect	Name of Measure	Correlation with measure of the 1st FRMP Plan	Measure Code
Protection	Modernization/replacement, maintenance and completion of existing urban drainage networks	Modification by EL_07_34_13 from the 1st Plan	EL_07_34_01
Protection	Flood Control Master Plan and Construction of the Proposed Works	On going from the 1st Plan EL_07_35_15	EL_07_35_02
Protection	Evaluation and Maintenance of Existing Mountain flow regulation works	On going from the 1st Plan EL_07_35_16	EL_07_35_03
Protection	Land Use Management Measures in Torrent Basins	On going from the 1st Plan EL_07_35_17	EL_07_35_04
Protection	Nature Based Water Retention Projects in Lowlands	New measure	EL_07_31_02
Protection	Implementation of Nature Based Water retention measures (NBWRM)/SUDs practices when designing projects and activities of subcategory A1 and A2 of Law 4014/2014, as in force	New measure	EL_07_31_03
Protection	Maintenance and rehabilitation of existing floodprotection works	New measure	EL_07_35_05
Preparedness	Development and operation of an early warning system for floods	On going from the 1st Plan EL_07_41_18	EL_07_41_01
Preparedness	Revision of Emergency Plans, and codification of emergency flood response actions/Preparation of a Memorandum of Actions at local level	On going from the 1st Plan EL_07_42_19	EL_07_42_01
Preparedness	Plan for controlled flooding of lowland areas for the protection of settlements and critical infrastructure	New measure	EL_07_42_05
Preparedness	Awareness activities of the public, local authorities and communities against flood risk	On going from the 1st Plan EL_07_43_21	EL_07_43_01
Preparedness	Information system to avoid crossing Irish crossings during flood events	On going from the 1st Plan EL_07_43_22	EL_07_43_02
Preparedness	Preparation of a regulation of required actions for restoring the drainage capacity of streams , maintenance and management of riparian vegetation	On going from the 1st Plan EL_07_44_23	EL_07_44_01
Preparedness	Identification of locations of borrow pits for excavating materials for restoration/maintenance of embankments in cases of emergency	On going from the 1st Plan EL_07_53_27	EL_07_42_03
Preparedness	Determination of alert limits in critical watercourses of the RBD based on the provisions of laws 4662/2020 and 5075/2023	New measure	EL_07_42_04
Recovery	Identification of Open Storage Areas (temporary or permanent) for the deposition of sediment	New measure	EL_07_52_01

Aspect	Name of Measure	Correlation with measure of the 1st FRMP Plan	Measure Code
Recovery	Rehabilitation of infrastructure following recent flood phenomena	New measure	EL_07_51_01

The diagram below matches the measures included in the Program of Measures of the 1st FRMP Revision of the RBD of Eastern Central Greece (EL07) with the General and Specific Objectives they serve.

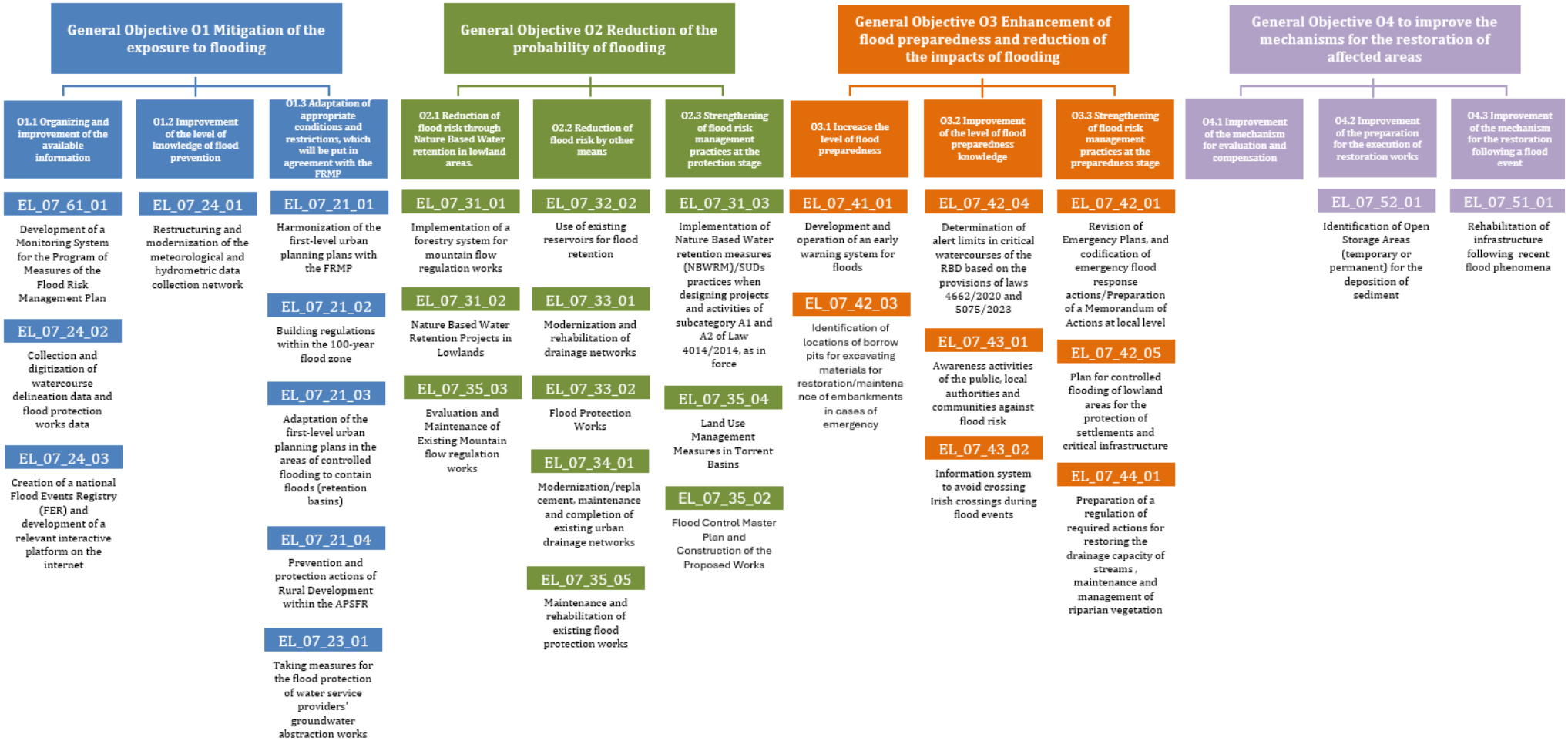

Figure 7-1: Diagram of measures matching General and Specific Objectives

For each measure, the information noted in the following Table is completed.

Table 7.4: Special form describing the Measures

MEASURE NAME	Includes the name of the measure
MEASURE CODE	The **measures** are coded as follows: EL_XX (RBD code)_XX (Measure Type according to WISE) _XX (measure serial number)
CORRELATION WITH 1ST CYCLE MEASURE	On going from the 1st Plan or New Measure
ASPECT	Prevention, Protection, Preparedness, Recovery
GENERAL OBJECTIVE	The RMP Specific Objective to which the measure relates is given M1, : Mitigation of flood exposure M2, : Reduction of flood probability M3, : Strengthening flood preparedness M4: Improving recovery mechanisms in affected areas
RMP MEASURE TYPE	The RMP type code of the measure and its description are given M11, M21, M22, M23, M24, M31, M32, M33, M34, M35, M41, M42, M43, M44, M51, M52, M53, M61
TYPE OF NATURE BASED WATER RETENTION MEASURE	The code of the type of Nature Based Water Retention measure and its description are given
SPECIFIC OBJECTIVE	The RMP Specific Objective to which the measure refers is given (S1.1, S1.2, S1.3, S2.1, S2.2, S2.3, S3.1, S3.2, S3.3, S4.1, S4.2, S4.3)
TYPE OF MEASURE	• Legislative/Administrative regulations • Economic measures • Education/information measures • Non-structural interventions • Acquisition, completion and improvement of information • Environmental measures (Green infrastructure) • Technical Flood Protection Measures
MEASURE DESCRIPTION	Includes a detailed description of the measure
IMPLEMENTING BODIES	Reference to the Competent Authority responsible for the implementation, application and coordination of the proposed measure at national, regional, local level as well as to the other bodies involved in its implementation
AREA OF APPLICATION OF THE MEASURE	River Basin District, APSFR, Watershed, Water Body , toponym, etc.
MONITORING INDICATORS OF IMPLEMENTATION OF THE MEASURE	Varies depending on the measure
TARGET VALUE	Varies depending on the measure
AREA OF IMPACT OF THE MEASURE	River Basin District, APSFR, Watershed, Water Body, toponym, etc.

MONITORING INDICATORS OF IMPACT OF THE MEASURE	Varies depending on the measure
TARGET VALUE	Varies depending on the measure
RESILIENCE TO CLIMATE CHANGE[2]	The resilience of the Measure to climate change conditions is given. The performance is assessed as: Very high, High, Moderate or Low
RELATIONSHIP WITH CLIMATE CHANGE OBJECTIVES AND MEASURES	The correlation of the Measure with the objectives and actions of the National Strategy for Adaptation to Climate Change (ESPKA 2016), the Regional Strategy for Adaptation to Climate Change (PeSPKA), the Climate Law and EU specifications is given.
RELATIONSHIP WITH RBMP OBJECTIVES AND MEASURES	Commentary on the synergy of the measure with the objectives and measures of the RBMP
IMPLEMENTATION STAGE	• Maturity • No public procurement required • To be implemented • In tender or contract process • Implementation
IMPLEMENTATION DURATION	Short term: 0 – 2 years Medium term: 2 – 6 years Long term: > 6 years
PROPOSED IMPLEMENTATION SCHEDULE (MILESTONES)	• Preparation and issuance of a regulatory decision (for legislative regulations): 6 to 12 months • Design and implementation of educational actions: 12 to 24 months • Preparation of Tender Documents, the Terms of Reference, technical sheets and application in a financial instrument - securing financing: 12 months • Tendering procedure for awarding a contract: 12 months • Preparation of studies, implementation of procurement, development of registers/systems and other plans: Varies depending on the measure • Licensing (if required): 12 to 24 months • Preparation of the Terms of Reference, technical sheets and application in a financial instrument - securing financing for construction projects: 12 months • Tendering procedure for awarding a construction contract: 12 months • Implementation of construction project: Varies depending on the measure

[2] *Climate resilience is defined as "The ability of interconnected social, economic and ecological systems to cope with a hazardous event or trend or disturbance, through their response or reorganization in ways that maintain their main function, identity and structure" [INTERIM FRAMEWORK FOR THE ASSESSMENT OF THE CLIMATE RESILIENCE OF INFRASTRUCTURE PROJECTS SUBMITTED FOR CO-FUNDING IN THE NSRF PROGRAMMES 2021 – 2027, National Coordinating Authority, General Secretariat for Public Investments & NSRF, Ministry of Development & Investments, December 2022*

PRIORITY ORDER	The ranking order of the measure is given based on the results of the assessment of the economic effectiveness of the measure.
ESTIMATE COST	The estimated cost of the measure is given
INDICATIVE FINANCIAL INSTRUMENT	The bodies/programs that may constitute sources of financing for the measure are given

Below is the Table of Measures with basic information.

Table 7.5: Measure Table with basic information

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_24_01	Restructuring and modernization of the meteorological and hydrometric data collection network	Prevention	√		Ministry of Environment and Energy (General Directorate of Waters)
EL_07_24_02	Collection and digitization of watercourse delineation data and flood protection works data	Prevention	√		Ministry of Environment and Energy (Technical Chamber of Greece) and Ministry of Infrastructure and Transport
EL_07_21_02	Building and Construction regulations within the 100-year flood zone	Prevention		EL07APSFR001 EL07APSFR002 EL07APSFR003 EL07APSFR004 EL07APSFR005 EL07APSFR006 EL07APSFR007 EL07APSFR008 EL07APSFR009 EL07APSFR010 EL07APSFR011 EL07APSFR012 EL07APSFR013 EL07APSFR014 EL07APSFR015 EL07APSFR016 EL07APSFR017 EL07APSFR018 EL07APSFR019 EL07APSFR020 EL07APSFR021 EL07APSFR022 EL07APSFR023	Ministry of Environment and Energy (General Secretariat of Spatial Planning and Urban Environment)
EL_07_21_03	Adaptation of the first-level urban planning plans in the flood-controlled areas to contain floods (retention basins)	Prevention	√		Ministry of Environment and Energy (General Secretariat of Spatial Planning and Urban Environment)

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_61_01	Development of a Monitoring System for the Program of Measures of the Flood Risk Management Plan	Prevention	√		DECENTRALIZED ADMINISTRATION OF THESSALIA – CENTRAL GREECE (Water Directorates of CENTRAL GREECE and Thessalia)
EL_07_23_01	Taking measures for the flood protection of the groundwater abstraction works of water service providers	Prevention	√		(1) Water service providers (2) DECENTRALIZED ADMINISTRATION OF THESSALIA – CENTRAL GREECE (Water Directorates of CENTRAL GREECE and Thessalia)
EL_07_24_03	Creation of a National Flood Events Registry (NFER) and development of a relevant interactive platform on the internet	Prevention	√		Ministry of Environment and Energy (General Directorate of Waters)
EL_07_21_01	Harmonization of the first-level urban planning plans with the FRMP	Prevention	√		Ministry of Environment and Energy (General Secretariat of Spatial Planning and Urban Environment)
EL_07_21_04	Prevention and protection actions for Rural Development within the APSFR	Prevention		EL07APSFR001 EL07APSFR002 EL07APSFR012 EL07APSFR016 EL07APSFR017 EL07APSFR018	YPAAT
EL_07_31_01	Implementation of a forestry system for mountain flow regulation works	Protection		EL07APSFR001 EL07APSFR006 EL07APSFR009 EL07APSFR011 EL07APSFR012 EL07APSFR015 EL07APSFR016 EL07APSFR017 EL07APSFR020	Ministry of Environment and Energy (Forest Directorates), Forestry Offices
EL_07_32_02	Use of existing reservoirs for flood retention	Protection		EL07APSFR009 EL07APSFR023	Reservoir Management Bodies

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_33_01	Modernization and rehabilitation of drainage networks	Protection		EL07APSFR012 EL07APSFR016	Ministry of Infrastructure and Transport (Directorate of Flood Control and Land Reclamation Projects D19), REGION OF CENTRAL GREECE (Directorate of Technical Works / Sub-Directorates of Technical Works of the Region), OEB
EL_07_33_02	Flood Protection Works	Protection	√		Ministry of Infrastructure and Transport (Directorate of Flood Control and Land Reclamation Projects D19), REGIONS OF CENTRAL GREECE AND THESSALIA (Directorate of Technical Works / Sub-Directorates of Technical Works of the Region), MUNICIPALITIES
EL_07_34_01	Modernization/replacement, maintenance and completion of existing urban drainage networks	Protection		EL07APSFR001 EL07APSFR003 EL07APSFR004 EL07APSFR005 EL07APSFR006 EL07APSFR008 EL07APSFR009 EL07APSFR011 EL07APSFR012 EL07APSFR013 EL07APSFR014 EL07APSFR015 EL07APSFR016 EL07APSFR017 EL07APSFR018 EL07APSFR020 EL07APSFR022 EL07APSFR023	ATTICA REGION (Directorate of Technical Works / Sub-Directorates of Technical Works of the Ministry of Environment), MUNICIPALITIES, EYDAP, DEYA, Road network maintenance bodies
EL_07_35_02	Flood Control Master Plan and Construction of the Proposed Works	Protection	√		Action [A]: YKKPP (Technical Chamber of Greece) Action [B] & Action [C]: To be determined by the Masterplan

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_35_03	Evaluation and maintenance of existing Mountain flow regulation works	Protection		EL07APSFR015 EL07APSFR017	Ministry of Environment and Energy (Forest Directorates), Forestry Offices
EL_07_35_04	Land use management measures in torrent basins.	Protection	√		REGIONS OF CENTRAL GREECE AND THESSALIA
EL_07_31_02	Nature Based Water retention projects in the lowlands	Protection	√		Ministry of Infrastructure and Transport (Directorate of Flood Control and Land Improvement Works D19), REGIONS OF THESSALIA AND CENTRAL GREECE (Directorate of Technical Works / Sub-Directorates of Technical Works RU), MUNICIPALITIES
EL_07_31_03	Implementation of Nature Based Water retention measures (NBWRM)/SUDs practices when designing projects and activities of subcategory A1 and A2 of Law 4014/2014, as in force	Protection	√		IMPLEMENTING BODY FOR EACH PROJECT
EL_07_35_05	Maintenance and rehabilitation of existing Flood Protection Works	Protection	√		REGIONS OF CENTRAL GREECE AND THESSALIA (Directorate of Technical Works / Sub-Directorates of Technical Works RU)
EL_07_42_05	Plan for controlled flooding of lowland areas for the protection of settlements and critical infrastructure	Preparedness		EL07APSFR016	Ministry of Infrastructure and Transport (Directorate of Flood Control and Land Improvement Works D19), REGION OF CENTRAL GREECE (Directorate of Technical Works / Sub-Directorates of Technical Works RU), YKEPP (Directorate of Civil Protection)
EL_07_41_01	Development and operation of an operational early warning system for floods	Preparedness		EL07APSFR012 EL07APSFR016	Development Body: Ministry of Environment and Energy Operating Body: YKKPP (General Secretariat of Civil Protection) or REGION OF CENTRAL GREECE (Directorate of Civil Protection)

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_42_01	Revision of Emergency Plans, and codification of emergency flood response actions/Preparation of a Memorandum of Actions at the local level	Preparedness	√		REGIONS OF CENTRAL GREECE AND THESSALIA (Directorate of Civil Protection), MUNICIPALITIES (Civil Protection Offices), DECENTRALIZED ADMINISTRATION OF THESSALIA – CENTRAL GREECE (Directorate of Civil Protection)
EL_07_43_01	Public, local authority and community awareness actions against flood risk	Preparedness	√		YKKPP, Ministry of Education, Ministry of Environment and Energy, DECENTRALIZED ADMINISTRATION OF THESSALIA – CENTRAL GREEC (Directorate of Civil Protection), THESSALIA – CENTRAL GREECE REGIONS (Directorate of Civil Protection), MUNICIPALITIES in collaboration with the administration of the school units
EL_07_43_02	Information system to avoid crossing Irish crossings during flood events	Preparedness		EL07APSFR001 EL07APSFR003 EL07APSFR007 EL07APSFR009 EL07APSFR011 EL07APSFR012 EL07APSFR015 EL07APSFR016 EL07APSFR018 EL07APSFR022 EL07APSFR023	Road network operator
EL_07_44_01	Preparation of regulations for required actions to restore the drainage capacity of streams, maintenance and management of riparian vegetation	Preparedness	√		Ministry of Environment and Energy in collaboration with co-responsible bodies
EL_07_42_03	Identification of locations for borrow pits for excavating materials for the restoration/maintenance of embankments in cases of emergency	Preparedness		EL07APSFR012 EL07APSFR014 EL07APSFR016	REGION OF CENTRAL GREECE (Technical Works Department / Sub-Directorates of Technical Works of RU, Directorate of Civil Protection)

MEASURE CODE	MEASURE NAME	ASPECT	TOTAL RBD	SPECIFIC APSFR	IMPLEMENTING AGENCY
EL_07_42_04	Determination of alert limits in critical watercourses of the RBD based on the provisions of laws 4662/2020 and 5075/2023	Preparedness		EL07APSFR001 EL07APSFR005 EL07APSFR011 EL07APSFR013 EL07APSFR014 EL07APSFR015	REGION OF CENTRAL GREECE (Technical Works Department / Sub-Directorates of Technical Works of RU, Directorate of Civil Protection)
EL_07_52_01	Identification of Open Storage Areas (temporary or permanent) for the deposition of sediment	Recovery	√		REGIONS OF CENTRAL GREECE AND THESSALIA (Technical Works Department / Sub-Directorates of Technical Works of RU, Directorate of Civil Protection)
EL_07_51_01	Rehabilitation of infrastructure following recent flood phenomena	Recovery	√		Competent bodies, depending on the type of infrastructure, for recording, preparing studies and remediation/compensation, in accordance with applicable legislation

EL_07_24_01: Restructuring and modernization of the meteorological and hydrometric data collection network
The measure concerns the upgrade and modernization of the existing analog hydrometeorological station network of the Ministry of Environment and Energy. The implementation of the measure includes the following actions: a) the replacement of analog hydrometeorological stations with digital telemetric ones throughout the country, and expansion of the network where required b) the creation of a digital platform for recording and teletransmission of hydrometric and meteorological information. The measure will be implemented in cooperation with the Water Directorates of the relevant Decentralized Administrations.

EL_07_24_02: Collection and digitization of watercourse delineation data and flood protection works data
The measure concerns the creation and maintenance of a database with the collection and digitization of information at the APSFR level, regarding: •data from existing and new watercourse delineation files per RBD and other useful data for the preparation of watercourse delineation studies •Already delineated watercourses (geospatial data of boundary lines, etc.). •Technical data of flood control works that affect the flow of water, including topographic mapping of existing works that have been carried out within the framework of the FRMP and other studies as well as other available information on technical projects from studies and archives of other bodies The measure will be applied to the watercourses of the RBD and at least to all watercourses within the APSFR and with the necessary extensions to areas outside the APSFRs and up to the outlet to the sea/lake. For the implementation of the measure, the available information for recording and digitizing existing watercourse delineation from the project under tender "Information System for the Delineation of Watercourses" of the Ministry of Environment and Energy will be used.

EL_07_21_02: Building and Construction regulations within the 100-year flood zone
Formulation of special provisions in the Building and Construction Regulation to reduce the vulnerability of structural works/installations and constructions within the 100-Year Flood Zone, due to their exposure to flood risk, with the aim of reducing the risk of disaster.

EL_07_21_03: Adaptation of the first-level urban planning plans in the flood-controlled areas to contain floods (retention basins)
The measure concerns the appropriate adaptation of the first-level urban planning plans (L.U.P.-S.U.P.) in flood-controlled areas, so as to propose permitted uses and prohibitions in them.

EL_07_61_01: Development of a Monitoring System for the Program of Measures of the Flood Risk Management Plan
The project concerns: (1) development of a database and interactive platform for the collection and monitoring of the required information from all stakeholders involved in the implementation of the Programme of Measures and, (2) obtaining consulting services for this purpose from specialized personnel. The provision of advisory services will, for example, concern: (a) monitoring the implementation of the FRMP measures of the Water Department, (b) drafting studies and regulatory decisions, (c) coordination of the services involved in the implementation of the measures, (d) recording and analyzing data related to FRMP measures/actions, (e) drafting methodological documents and technical specifications for the implementation of FRMP measures, (f)

actions for the collection/updating of basic information and data used in the preparation of the FRMP, (g) support in matters of revision of the Flood Risk Management Plan and participation in working groups that will be established within the framework of the needs of the Water Directorate.
Within the framework of this project, evaluation reports will be prepared on the progress of the implementation of the Program of Measures, guidelines will be given for the actions required to complete their implementation and the measures will be evaluated in terms of their effectiveness.

EL_07_23_01: Taking measures for the flood protection of the groundwater abstraction works of water service providers

The measure includes:
(1) The adoption by the Water Service Providers of appropriate measures for the flood protection of their groundwater abstraction works , which are located within the T=100 year flood zone. Such measures may be either e.g. the elevation of the electromechanical systems, the piping and the water well shed/house of each drilling, or the construction of a protective perimeter embankment of an appropriate height from appropriate materials, etc.
(2) The incorporation by the Water Directorates of a condition of obligation to take flood protection measures in the water use permits provided for in accordance with Joint Ministerial Decision 146896/27.10.2014 (Government Gazette B' 2878 and B' 3142) "Categories of permits for the use and execution of water development projects. Procedure and conditions for issuing permits, content and duration of their validity and other relevant provisions", as amended and in force.
By taking appropriate flood protection measures, the risks inherent in a hydraulic well are avoided, and in addition to damage to its above-ground electromechanical equipment, the incursion of flood waters into the underground aquifer can be prevented.

EL_07_24_03: Creation of a National Flood Events Registry (NFER) and development of a relevant interactive platform on the internet

This involves the design and development of a National Flood Event Registration Registry, as well as a relevant interactive platform on the internet through the development of an appropriate spatial data system.
The NFR will include, at a minimum, registrations of flood events and their data by competent services and involved bodies, in accordance with the General Plan for Emergency Response and Immediate/Short-Term Management of the Consequences of the Flood Phenomenon Event "DARDANOS", as applicable each time, based on guidelines to be issued by the competent Ministry of Environment and Energy.
In this way, the availability and utilization of uniformly structured data for assessing damage and impacts from extreme flood events by each involved body is sought, supporting management plans and assessments regarding flood risk.

EL_07_21_01: Harmonization of the first-level urban planning plans with the FRMP

The measure concerns the issuance of a Circular for the indication of data that should be drawn from the FRMPs during the Analysis Stage/Diagnosis Unit of the studies of the first-level urban planning plans (Local Urban Plans / Special Urban Plans), for the formulation of documented proposals for disaster risk reduction, in accordance with the qualitative guidelines for urban planning through the new Urban Planning Standards (M.D. Ministry of Environment and Energy /ΔΝΕΠ/32892/1414/2024, Δ'200).

EL_07_21_04: Prevention and protection actions for Rural Development within the APSFR

The measure concerns actions such as, indicatively and not exclusively, listed below:
a. Identification of crops and locations that are actually subject to systematic damage from floods. This is mainly related to the season and duration of flooding. It is known that flooding in cases of short duration of flooding and in winter or spring periods can even be beneficial for some crops. In these cases there are no

compensations from ELGA, so special attention should be paid to the collection of data from the various bodies (in addition to ELGA)
b. Identification and recording of specific, local or generalized issues in artificial or natural drainage networks and their electrical equipment that exacerbate flood damage and whose improvement/recovery will reduce the damage, so that restoration projects can be proposed in implementation of the measure "Modernization and rehabilitation of drainage networks".
c. Recording of the locations of livestock/poultry farming units that are subject to systematic flood damage (with IACS finalization data). Facilities with temporary accommodation (Law 4056/2012 as in force) should be recorded separately from permanent stable facilities
d. Highlighting of crops and livestock facilities that require, as a priority and not exclusively, protection from floods.
e. Investigation of alternative crops and/or varieties, which are effective, direct and can yield in the future the same level of agricultural income as the existing crops, taking into account the suitability of soil and climatic conditions, the knowledge of local producers and the available mechanical and building equipment of agricultural farms. In addition, investigation of the possibility of irrigating these (as they will obviously be water-intensive) through the existence/construction of land improvement projects for the retention and supply of irrigation and/or flood waters, irrigation boreholes, irrigation networks, etc., especially in periods of water scarcity and/or drought.
f. Proposals for the use of alternative agricultural practices (sowing season, fertilization, harvest, grazing positions, etc.), taking into account the seasonality of flood events and identification of the potential economic and other impacts of modifying agricultural practices
g. proposals for economic and other incentives for changing crops and/or relocating livestock units.

EL_07_31_01: Implementation of a forestry system for mountain flow regulation works

The measure concerns Nature Based Water retention projects in the mountains.
(A) The Forestry System for Mountain Water Management, which includes a triptych of projects and measures that are organically linked and interdependent:
1. Horticultural projects for the creation of normal hydrogeological forests and shrubs, resistant to climate change, which contribute to the prevention of surface erosion, the increase in water retention and infiltration in the soil, the conversion of surface runoff into subsoil and the deceleration of runoff.
2. Geotechnical projects (grading, slope scraping, drainage, ditches, dry stone structures, branch trellises, log dams, etc.) with the aim of reducing sources of sediment production or the temporary retention of rainwater.
3. Hydraulic engineering works that include a variety of technical structures such as:
a) low dams constructed in the beds of the main and smaller branches and have as their main purpose the stabilization of the beds, the retention or sorting of alluvial materials, the prevention of landslides, the retention of flood peaks, the abstraction or storage of water, etc.
b) works arranged parallel to the flow of water (embankments, linings, etc.) with the aim of protecting the banks of streams and preventing slope erosion, limiting the flow within a defined bed for the protection of riparian zones or even widening the bed with the aim of its natural formation.
(B) Open-type dam structures and basins for the temporary retention of alluvial materials in mountainous catchment basins with intense torrential flow.
Indicatively, it will include open screening dams and temporary retention of sediments with the aim of intercepting mass solid transport (debris flows & Mud flows), intercepting flood waves (backwater effect), temporarily retaining sediments in basins, controlling the movement of sediments by screening.
(C) Construction of dry detention ponds to intercept flooding in mountainous catchments with mild torrentiality
Construction of dry detention ponds in mountainous stream beds with the aim of intercepting flooding. The action is applied only to catchments with mild torrentiality or catchments whose torrentiality has been largely reduced and exhibit normal solid transport.
Mountain hydrology projects will be implemented in priority from upstream to downstream and furthermore from the branches of lower order to the branches of higher order according to Strahler. Methods and materials compatible with the natural environment will be used for their construction.

EL_07_32_02: Use of existing reservoirs for flood retention
The measure includes actions to optimize the management of existing reservoirs so that, on the one hand, they cover in the best possible way the needs of the uses they serve, and on the other hand, they offer the maximum possible flood protection downstream. The reservoirs implementing the measure will be selected based on the results of the Flood Hazard and Risk Maps and in particular the results of the flood risk assessment in the context of the current FRMP revision, downstream of existing or to be construcrtucted Dams.

EL_07_33_01: Modernization and rehabilitation of drainage networks
The measure includes the following actions: • Identification of problematic lowland cultivated areas in terms of drainage - assessment of the current situation. • Checking the adequacy of drainage networks and E/M equipment in these areas. • Formulation of proposals and implementation of rehabilitation/upgrade projects for drainage projects that may include work on: - cleaning of existing ditches from vegetation and debris, - maintenance/replacement of technical works at road crossings and flow control projects (gates, storm drains) - modernization of existing E/M equipment (installation of an automatic regulation system and remote management of existing regulation equipment for flow control projects). • Prioritization, scheduling • Implementation of interventions

EL_07_33_02: Flood Protection Works
The measure includes the construction of new flood control works and/or the completion/reinforcement of existing flood control works in the lowland riverbeds, with priority given to 100-year flood zones within the APSFR and in locations with high and very high risk (see Flood Impact Assessment Map).

EL_07_34_01: Modernization/replacement, maintenance and completion of existing urban drainage networks
The measure includes projects to replace, strengthen and complete urban drainage works (collecting, transporting and disposing of urban drainage to available recipients), with priority given to areas of high residential needs and requirements within the Areas of Potential Significant Flood Risk. The measure is implemented in the following phases: 1. In the first phase, the existing urban drainage networks are recorded 2. The adequacy of the existing infrastructure is assessed by the competent bodies, with the aim of determining the type of interventions required, as the case may be (such as: maintenance, strengthening, replacement, expansion), 3. The corresponding projects are launched and implemented during the current or the next management period. It is noted that the preparation of the necessary studies is considered an integral part of the implementation of the projects, which ensure their maturity.

EL_07_35_02: Flood Control Master Plan and Construction of the Proposed Works
A) Implementation of Flood Control Master Plan for the entire River Basin District, specializing in selected areas, with the aim of identifying and prioritizing the required Projects, in order of priority: • within the APSFR and the upstream catchment areas to mitigate the consequences in the areas included in the Hazard and Risk Maps of this Plan with T=100. • in the remaining part of the area where a Masterplan is required. (B) Preparation of the required maturity studies (C) Construction of proposed projects The Masterplan must be in accordance with the provisions of the Management Plans of Directive 2000/60/EC (HS status, exceptions, etc.) and for this purpose it must have the consent of the competent Water Directorate.

It is noted that the reference to T=100 refers to the area of application of the measure and is not related to the design size of the flood control projects, which is defined based on the currently applicable regulations and the technical specifications of the studies of the projects in question.

EL_07_35_03: Evaluation and maintenance of existing Mountain flow regulation works
The measure includes the assessment of the condition of existing Mountain flow regulation works in stream and river basins and their maintenance to mitigate the consequences in areas included in flood zones for T=100. The works will be studied and planned by the Forest Directorates and Forestry Offices responsible for the maintenance of the projects in their area of responsibility.

EL_07_35_04: Land use management measures in torrent basins
Pasture management plans, in accordance with the requirements of Law 4351/2015 (A' 164) and Joint Ministerial Decision 1058/71977/2017 (Government Gazette B 2331/ 7-7-2017) and in areas located upstream of APSFR and not excluded from grazing lands (not classified as protective), should take into account the provisions of the FRMP and RBMP and apply hydronomic criteria in determining grazing intensity (grazing capacity).

EL_07_31_02: Nature Based Water retention projects in the lowlands
The measure concerns Nature Based Water retention projects at the limits of the lowland riverbeds of watercourses, as determined together with the mountain riverbed limits by the decisions of the former Prefectures of the country and in accordance with the applicable legislation, and as a priority in the 100-year flood zones within the APSFR (or upstream thereof) and/or in locations with high and very high risk (see Flood Impact Assessment Map). The formulation of the construction proposals for NBWRM projects will be carried out in accordance with specifications, within the framework of the preparation of flood protection works studies with the specific special requirements and/or the preparation of Flood Protection Plans (Master Plans), where these have been prepared or are being prepared. The measure includes: • floodplain restoration and management projects (N03) – "make room to river" – by removing artificial embankments to increase storage capacity and accelerate recovery after flooding events. • projects to restore stream beds to their natural state (N05). • meander reshaping projects (N04) to increase storage capacity and buffer capacity. • construction of dry (offline dry detention basin) and active (online pond) basins and retention lakes (N01) in stream beds to intercept flooding and to provide lateral relief/storage of flood flows. • wetland restoration and management (N02) through riparian vegetation to increase storage capacity and slow down flow. • restoration and reconnection of seasonal streams (N06) to increase storage and flow capacity. • Physical stabilization of banks (N10) using bioengineering materials to increase flow capacity and retention of sediment.

EL_07_31_03: Implementation of Nature Based Water retention measures (NBWRM)/SUDs practices when designing projects and activities of subcategory A1 and A2 of Law 4014/2014, as in force
When planning projects and activities of subcategory A1 and A2 according to Law 4014/2011, as in force, the implementation of Nature Based Water Retention Measures (NBWRM) / SUDs practices should be considered as a priority, when flood control projects are required, to limit surface runoff and contain flood runoff.

EL_07_35_05: Maintenance and rehabilitation of existing Flood Protection Works

The measure includes the following actions that should be carried out on an annual basis:
- Conducting inspections and recording problems after the end of the wet (winter) season (indicatively: April)
- Identifying critical locations and works that require maintenance/restoration and setting priorities
- Drawing up an annual maintenance/restoration work program by the competent technical services of the Region, which will include:
  - Cleaning of debris and removing alluvial deposits from the riverbed of watercourses that hinder the free flow of watercourse waters
  - Repairs of slope support/lining works
  - Repairs of riverbed protection/lining works
  - Repairs of embankments
  - Repairs of works (terraces, culverts, crossings, etc.)
- Securing funding
- Construction of works

EL_07_42_05: Plan for controlled flooding of lowland areas for the protection of settlements and critical infrastructure

The measure concerns the design of controlled flooding of lowland areas that will be selected as a priority within areas of the T100 flood zones or upstream thereof and with the aim of protecting areas within the T100 flood zones or reducing flood risk as a priority in areas that present high and very high flood risk (as identified in the relevant Flood Risk Assessment Maps), within the framework of a special study for the design of controlled flooding of areas, either during the preparation of masterplan studies for flood control projects or other relevant study.

Controlled flooding areas are an internationally recognized flood protection practice that is constantly emerging as a method of adaptation to climate change. Such areas, usually of low land value, contribute to the flood protection of downstream areas by controlling the passage of part of the flood volume during the occurrence of flood phenomena through appropriate manipulations (opening of flood gates or artificial breaking of embankments, etc.) to riverside areas.

Once the boundaries of the mountain and lowland riverbeds of the watercourses are defined (because in some areas the mountain bed is already defined) based on applicable legislation, and the boundaries of the settlements and the critical infrastructures to be protected are determined, the hydraulic operation of the watercourses for various flood flows is examined in order to identify potential locations for channeling flood volumes for the protection of settlements and/or critical infrastructures, hydraulically checking each proposal. In addition, proposals must be formulated and locations determined where controlled breaking of existing embankments will take place, and finally, a mechanism must be established to evaluate the effectiveness of the options (if they actually contributed to addressing the risk) after each flood event and update/adjustment of the plan.

For the purposes of this measure, critical infrastructures are understood to be units related to human health, the natural environment, transport networks, public infrastructure (irrigation, drainage, flood control, etc.) and cultural heritage sites, and as otherwise defined following the harmonization of Greek legislation with Directive 2022/2557/EC.

EL_07_41_01: Development and operation of an operational early warning system for floods

Development of an Operational Early Warning System for Floods (OEWSF) with priority in selected T100 flood zones. The system will include:

(a) Design and development of an early warning system for floods, utilizing the hydrometeorological data of the updated network specified in measure EL_07_24_01, other data/models and appropriate software, based on the specifications of the OEWSF implemented by the Ministry of Environment and Energy in the Evros and Axios rivers and with the possibility of interconnection with their operating platform (OEWSF development agency: Ministry of Environment and Energy /GDW).

(b) Design and development of a communication protocol between the OEWSF operating body and the competent body for timely information of the public and activation of the competent bodies (information

procedure, warning bulletins, mechanisms/tools for transmitting information, e.g. SMS), based on the OEWSF data (OEWSF operating body: Autonomous Civil Protection Directorate of the relevant Region or GSCP).

EL_07_42_01: Revision of Emergency Plans, and codification of emergency flood response actions/Preparation of a Memorandum of Actions at the local level
In accordance with the provisions of the General Civil Protection Plan "Xenokrates", in 2019 the Directorate of Planning and Emergency Response of the General Secretariat of Civil Protection Agency, in collaboration with all the bodies involved, issued the General Plan for Emergency Response and Immediate/Short-Term Management of the Consequences of the Flood Phenomenon, which was sent to all the bodies involved with the 8794/06-12-2019 GSCP document, for its implementation in the part that concerns them and that they are involved in ("DARDANOS 1"). In 2023, the Emergency Planning Department of the GSCP, taking into account that since the 1st edition of the plan, administrative and organizational changes have occurred, which mainly concerned central administration bodies, and proceeded to issue the 2nd General Plan for Emergency Response and Immediate/Short-Term Management of the Consequences of the Flood Phenomenon, named "DARDANOS 2". When fulfilling the obligations regarding the preparation or updating of Emergency Plans, Action Plans-Memorandum of Actions by the competent bodies, in accordance with the current institutional framework, the results of the risk analysis of this 2nd FRMP should also be taken into account.

EL_07_43_01: Public, local authority and community awareness actions against flood risk
The measure includes the implementation of information and awareness-raising actions for citizens and institutions regarding the flood risk in their area and the precautions they should take in case of a flood risk. Such actions may include: programs via television, radio and the internet, the organization of events, educational workshops, presentations in schools, etc. The above will be implemented by the Ministry of Climate Crisis and Civil Protection, the Ministry of Education, the Ministry of Environment and Energy, the Civil Protection Directorate of the relevant Decentralized Administrations, the Autonomous Civil Protection Directorate of the relevant Regions and the Municipalities in cooperation with the administration of the school units. The actions may concern issues such as: • information on the Areas of Potential Significant Flood Risk (APSFR) of their area • information on the forecasts of the relevant FRMP and its programme of measures • importance of maintaining clean and accessible urban drainage systems and watercourses • possibility and need to take private/community protection measures • information on Emergency Response Plans and the importance of their compliance by the competent authorities • on the existing Irish crossings, their risk and the actions that must be followed to avoid accidents • protection of economic activities (agriculture, livestock farming, etc.)

EL_07_43_02: Information system to avoid crossing Irish crossings during flood events
The purpose of the measure is to enhance the preparedness of citizens and the bodies involved in order to limit accidents during the transverse passage of vehicles through streams and rivers through Irish Crossings. The purpose of the measure is to install a system that will consist of, at a minimum, warning signs and depth indicators at Irish Crossings within the River Basin District, so that there is clear information and to support the prevention of vehicle crossing during flood phenomena. The locations of application of the measure are defined as, on the one hand, all Irish Crossings within flood areas for T=100 years as derived from the calculations of this FRMP, and on the other hand, any other Irish Crossings documented by studies or by the data of the Competent Bodies as requiring immediate marking.

The specifications of the warning system will be set by the Technical Services and the Civil Protection Directorates before the tendering of the planned projects. The specifications will concern the content and dimensions of the signs, the colors and marking of the warning stage, the determination or not of an alternative route on the signs to be placed, the installation or not of bars to prevent passage through critical crossings, any required telemetry or other devices for operating the bars, etc.

EL_07_44_01: Preparation of regulations for required actions to restore the drainage capacity of streams , maintenance and management of riparian vegetation

The measure includes the preparation of regulations/specifications for the periodic interventions in watercourses, maintenance and management of riparian vegetation. The regulations/specifications are formulated taking into account the specific characteristics of the watercourses in question (geomorphological and hydraulic characteristics, type of watercourse, ecological elements, etc.) as well as the protection status of the area in which it extends.
The regulation/specifications will concern at least:
- the responsible body , based on the applicable legislation as appropriate (in Natura areas, forests etc.)
- the method of implementing the restoration
- the time and frequency
- the location or locations where the interventions will take place
- the determination of storage areas for the removed materials or their exploitation
- the procedure to be followed such as environmental permits and/or notification of authorities
- detailed instructions for the appropriate handling of riparian vegetation in the various sections of the hydrographic network (small mountain streams, tributaries, large rivers in floodplains) and the use of means that will cause no harm to the river ecosystem.
- the methodology for keeping a record of the interventions carried out

In any case, the restoration of the drainage capacity of watercourses should be carried out where it is absolutely necessary, in a way that does not conflict with the objectives of the River Basin Management Plans of Directive 2000/60/EC.

EL_07_42_03: Identification of locations for borrow pits for excavating materials for the restoration/maintenance of embankments in cases of emergency

In the T1000 year flood zone where flood defense embankments have been constructed or are to be constructed, the following actions are being taken:
1) Study of selection and delimitation of borrow pits for direct extraction of materials for embankment restoration,
2) Environmental Impact Study and compliance with the licensing procedure provided for by the applicable provisions. The activity is included in Group 5 Mining and Related Activities of the Joint Ministerial Decree as amended and in force, no. 5 Borrow pits for aggregates and earth or other soil materials exclusively for the needs of infrastructure projects.
In the event of a declaration of an emergency in the area, the Technical Control Directorate may proceed to issue a decision on the right to grant material directly, provided that steps 1 and 2 have been completed. It is clarified that the GSCP is one of the advisory authorities during the consultation of these EIAs, and will therefore be informed of developments.

EL_07_42_04: Determination of alert limits in critical watercourses of the RBD based on the provisions of laws 4662/2020 and 5075/2023

According to article 6 of law 4662/2020 “Graduation of State of Readiness” and in accordance with law 5075/2023, the National Mechanism is activated in an escalating manner depending on the state of readiness. The measure includes the following actions, with the aim of determining the alert limits corresponding to the four levels of mobilization defined by the legislation:

• Hydraulic control of watercourses and determination of their discharge capacity (maximum flow that they can safely discharge - with the required free margin according to the specifications)
• Determination of critical positions on the watercourses where it is possible to monitor and record the flow of the river (bridge positions, positions with accesses, straight positions suitable for water measurements)
• Determination of critical positions in relation to the evolution of the flood wave path and the position/distance of the adjacent affected uses and mainly of the settlements and road access infrastructure.
• Determination of level and flow at the above positions for the four (4) levels of preparedness provided for by the legislation.
• Determination at critical selected locations of the level - absolute elevations - and the water supply corresponding to all the above levels of readiness.

EL_07_52_01: Identification of Open Storage Areas (temporary or permanent) for the deposition of sediment

The purpose of the measure is to determine the procedure through which the optimal management process for the sediment will be selected after each flood event. The following cases are distinguished:

- Case 1st: the sediment do not include pollutants hazardous to public health. Through the measure in question, areas are determined that can be used as temporary or permanent open storage areas for sediment . Indicatively and not restrictively: disposal as soil covering material in a landfill or in a quarry for restoration. At a later time, the possibility of utilizing these materials through sorting and processing is investigated.
- Case 2nd: the sediment have been contaminated by pollutants hazardous to public health (indicatively and not restrictively: sewage, petroleum products, etc.). In this case, a study of the management of the sediment is required, defining the separation, transport and disposal process (indicatively and not limited to: disposal in landfills, hazardous waste landfills, etc.). Cooperation with the Landfill Management Association or the MEA (Municipality or FODSA) is required.

To complete the measure, the flood inundation areas as they arise from the Hazard and Risk Maps as well as the soil erosion maps that have been compiled in this FRMP will be taken into account, in combination with the lists of diffuse and point sources of pollution that have been compiled during the 2nd Revision of the RBD RBMP (whose spatial distribution is available in shape files) in order to estimate in advance the locations of the sediment and the locations of open storage areas , for the different flood return periods that are being examined.
It is clarified that the GSCP of the Hellenic Republic's Public Health Service and the independent Public Health Directorates of the Regions will be informed of the results of the study.

EL_07_51_01: Rehabilitation of infrastructure following recent flood phenomena

The measure aims to repair damage to infrastructure due to severe flooding that has occurred. The infrastructures include, for example: Road and Railway Network, Irrigation and Drainage , Flood Protection Works (Embankments, Bridges etc.), Cultural Heritage sites , Health Units, etc.
The measure concerns:
(a) recording of damage,
(b) drafting of relevant studies depending on the type of infrastructure, which will include, among others:
1. Re-dimensioning of the projects according to the updated flood magnitudes
2. Analysis of flood mechanisms that led to the failure of the infrastructure during the flood phenomenon so that they can be taken into account during redesign
3. Formulation of proposals for alternative interventions based on milder interventions.
And, (c) the restoration of damaged infrastructure

8 PRIORITY OF MEASURES OF THE 1ST FRMP REVISION

The Measures were prioritized through the assessment of their economic effectiveness (cost-effectiveness evaluation). Through the economic effectiveness index, the measures that achieve greater flood damage reduction (benefit) at lower cost were identified, however, because all the Measures are complementary to each other, the cost-effectiveness analysis is meaningful mainly as an indication of the time priority for the implementation of the Measures, taking into account the scarcity of financial resources.

The methodology applied is a modification of the methodology of the 1st cycle of implementation of the Floods Directive and includes the following steps:

1. Classification of the proposed measures into two categories: measures that indirectly contribute to the prevention of damage (Category 1) and measures that directly contribute to the prevention/treatment of damage (Category 2)
2. Estimation of the expected benefit of each measure in the two categories
3. Evaluation of the nature/axis of the measure (Prevention, protection, preparedness, recovery)
4. Correlation with other policies (climate change, RBMP)
5. Multi-criteria analysis of the overall benefit index of the measure
6. Estimation of the overall cost of each measure (investment cost, operating cost)
7. Calculation of the effectiveness index - cost of the measure and prioritization of measures

The expected benefit from each measure (step 2) constitutes the indicator Δ0 (Measure importance) for Category 1 measures or Δ6 for Category 2 measures (combination of indicators Δ1-Δ5, through which the value of the potential damage, the assessment of the contribution to addressing the damage, the applicability and the time of effect of the measure are taken into account). The expected benefit is combined with indicators Δ7-Δ10 (axis weight, climate change resilience, correlation with climate change objectives and measures and RBMP) and through multi-criteria analysis the overall benefit indicator of the measure (Δ11) is obtained. The investment cost and the operating cost of the measure are then taken into account and the indicator Δ16 (total annualized cost) is obtained.

The measures are ranked separately on two scales, on the one hand, the total benefit index Δ11 and, on the other hand, the total annualized cost index Δ16, and their ordinal values, RΔ11 and RΔ16, are calculated for each measure, where RΔ11=1, for the measure with the greatest benefit, RΔ11=2, for the measure with the second greatest benefit, and so on, and respectively RΔ16=1, for the measure with the greatest cost, RΔ16=2, for the measure with the second greatest cost, and so on. The $\frac{R\Delta 11}{R\Delta 16}$ ratio is then calculated for each measure. Potentially, the measure with the best cost-effectiveness index is the one with the minimum possible value of the ratio. The mean (avg) and standard deviation (s.d.) of the values of the $\frac{R\Delta 11}{R\Delta 16}$ ratio of all measures are calculated and the measures are categorized **into three time priority groups** as follows:

$\frac{R\Delta 11}{R\Delta 16}$ < avg **Priority Group 1**: Includes measures related to

avg < $\frac{R\Delta 11}{R\Delta 16}$ < (avg + ½ s.d.) **Priority Group 2:** Includes measures related to

$\frac{R\Delta 11}{R\Delta 16}$ > (avg + ½ s.d.) **Priority Group 3:** Includes measures related to

Table 8.1: Prioritization of Measures of the 1st revision of FRMP EL07 by priority group for Category 1 (indirect contribution to flood risk)

Measure Code	Measure Name	Absolute Value		Regular Value		Grouping based on regular price ratio	
		Index Δ11	Index Δ16	RΔ11	RΔ16	RΔ11/ RΔ16	Priority Group
EL_07_35_02	Flood Control Master Plan and Construction of the Proposed Works (Part (A))	**97,0**	**1.089.300**	1	1	1	1
EL_07_61_01	Development of a Monitoring System for the Program of Measures of the Flood Risk Management Plan	**95,0**	**108.930**	2	5	0,40	1
EL_07_21_04	Prevention and protection actions for Rural Development within the APSFR	**95,0**	**67.173**	2	6	0,33	1
EL_07_23_01	Taking measures for the flood protection of the groundwater abstraction works of water service providers	**95,0**	**37.310**	2	10	0,20	1
EL_07_31_03	Implementation of Nature Based Water retention measures (NBWRM)/SUDs practices when designing projects and activities of subcategory A1 and A2 of Law 4014/2014, as in force	**78,5**	**0**	6	14	0,43	1
EL_07_21_03	Adaptation of the first-level urban planning plans in the flood-controlled areas to contain floods (retention basins)	**77,7**	**0**	7	14	0,50	1
EL_07_21_01	Harmonization of the first-level urban planning plans with the FRMP	**70,8**	**0**	9	14	0,64	1
EL_07_21_02	Building and Construction regulations within the 100-year flood zone	**70,8**	**0**	9	14	0,64	1
EL_07_42_01	Revision of Emergency Plans, and codification of emergency flood response actions/Preparation of a Memorandum of Actions at the local level	**70,5**	**10.893**	11	12	0,92	1
EL_07_43_01	Public, local authority and community awareness actions against flood risk	**70,5**	**18.155**	11	11	1,00	1
EL_07_44_01	Preparation of regulations for required actions to restore the drainage capacity of streams , maintenance and management of riparian vegetation	**69,2**	**10.893**	13	12	1,08	1

Measure Code	Measure Name	Absolute Value		Regular Value		Grouping based on regular price ratio	
		Index Δ11	Index Δ16	RΔ11	RΔ16	RΔ11/ RΔ16	Priority Group
EL_07_24_03	Creation of a National Flood Events Registry (NFER) and development of a relevant interactive platform on the internet	**50,5**	**56.310**	16	9	1,78	2
EL_07_24_01	Restructuring and modernization of the meteorological and hydrometric data collection network	**92,5**	**185.823**	5	2	2,50	3
EL_07_24_02	Collection and digitization of watercourse delineation data and flood protection works data	**71,5**	**168.930**	8	4	2,00	3
EL_07_42_04	Determination of alert limits in critical watercourses of the RBD based on the provisions of laws 4662/2020 and 5075/2023	**69,2**	**181.550**	13	3	4,33	3
EL_07_42_03	Identification of locations for borrow pits for excavating materials for the restoration/maintenance of embankments in cases of emergency	**51,0**	**61.727**	15	7	2,14	3
EL_07_52_01	Identification of Open Storage Areas (temporary or permanent) for the deposition of sediment	**49,2**	**61.727**	17	7	2,43	3
					avg	**1,31**	
					s.d.	**1,06**	

Table 8.2: Prioritization of Measures of the 1st revision of FRMP EL07 by priority group for Category 2 (indirect contribution to flood risk)

Measure Code	Measure Name	Absolute Value		Regular Value		Grouping based on regular price ratio	
		Index Δ11	Index Δ16	RΔ11	RΔ16	RΔ11/ RΔ16	Index Δ11
EL_07_35_05	Maintenance and rehabilitation of existing Flood Protection Works	**91,0**	**724.645**	1	2	0,50	1
EL_07_35_04	Land use management measures in torrent basins.	**51,0**	**17.629**	3	8	0,38	1
EL_07_43_02	Information system to avoid crossing Irish crossings during flood events	**48,5**	**359.725**	4	4	1,00	1
EL_07_33_01	Modernization and rehabilitation of drainage networks	**45,0**	**60.387**	5	6	0,83	1
EL_07_42_05	Plan for controlled flooding of lowland areas for the protection of settlements and critical infrastructure	**35,0**	**35.258**	6	7	0,86	1
EL_07_35_03	Evaluation and maintenance of existing Mountain flow regulation works	**10,9**	**8.857**	9	9	1,00	1
EL_07_32_02	Use of existing reservoirs for flood retention	**13,6**	**80.516**	8	5	1,60	3
EL_07_41_01	Development and operation of an operational early warning system for floods	**24,5**	**361.533**	7	3	2,33	3
					avg	**1,17**	
					s.d.	**0,63**	

9 PUBLIC INFORMATION AND CONSULTATION

In order to inform the public and the involved Bodies and Institutions, a sufficient number of meetings were organized where the Flood Risk Management Drafts were made public for consultation.

The consultations took place both at the local/regional level and at the central level and aimed, on the one hand, at the active participation of the members involved either through monitoring the events or through submitting their proposals on the issues to be consulted.

The list of social partners of the Water Department of Eastern Central Greece who were informed about the consultation of the 1st Revision of the Flood Risk Management Plan includes 642 bodies. The registration was made at the National, Regional and Local levels. Of the total number of bodies identified, 462 belong to the category of Decision-making Bodies, 77 to the category of Experts / Specialists and 103 to the category of SMEs.

In the context of the consultation process, in accordance with article 7 par.4.1 and 4.2 of the Joint Ministerial Decree No. YPEHODE/EYPE/oik.107017/06 (B' 1225), as amended and in force with the Joint Ministerial Decree No. 40238/17 (B' 3759), as in force, the file of the Strategic Environmental Impact Study (SEIS) of Flood Risks in River Basin District EL07 was posted on the electronic address of the Ministry of Environment and Energy:. Consultation – Strategic Environmental Impact Studies (1st Revision) – RBD of Eastern Central Greece (EL07) – Flood Risk Management Plans.

The competent services were invited to express, within the framework of their responsibilities, their opinion and any observations by sending them to the DIPA's email address

sec.dipa@prv.ypeka.gr.

During the consultation of the 1st Revision of the FRMP and the corresponding SEIS, interventions were made that were either developed orally at the Workshop, and/or submitted in writing to the GDW, and to the DIPA and/or on the website. Indicatively, the following issues that were developed are mentioned:

- The necessity of supplementing the information related to the assessment of flood risk (background, hydrometeorological data, data on historical flood events, technical data registers of Flood Protection Works, flood inflow data in storage projects).
- The further utilization of the knowledge and experience that exists at the local level by various bodies and services for the assessment and treatment of the impacts of flood events.
- The necessity of further specialization of some measures of the Flood Risk Management Plan, for their implementation at the local level.
- The possibility of financing actions and projects in areas outside Areas of Potential Significant Flood Risk.
- The imperative of immediately initiating/promoting the measures of the Flood Risk Management Plan, with priority given to actions concerning a) legislative/administrative regulations, b) acquisition/improvement/supplementation of available data and c) preparedness.
- The necessity of comprehensive planning of Flood Protection Works at the catchment level, taking into account the results of the flood hazard and risk analysis of the Flood Risk Management Plan, Directive 2000/60/EC, modern Environmental, Spatial Planning and Urban Planning legislation and all alternative options for flood runoff management.
- The complex legislation and the division of responsibilities of state bodies, which does not facilitate the easy and quick resolution of the issues that arise

- The need to use River Basin Management Plans and Flood Risk Management Plans as essential tools for planning interventions that will ensure the quality and adequacy of water resources.

The most important issues, as they emerged during the consultation process on the SEIS for the River Basin District of Eastern Central Greece (EL07), are presented below:

- Increased protection and preparedness measures should be observed during the execution of any projects/actions, so as not to endanger the biodiversity of Natura 2000 areas and generally to prevent any case of burdening them, while care should be taken to avoid pollution of the marine environment
- The unified character of the streams, the protection of their natural entity and their utilization as a natural element within settlements/cities should be taken into account when designing flood control projects.
- Any damage, direct or indirect, to declared or undesignated monuments or archaeological sites should be avoided, by applying specific conditions in the EIS as proposed
- The implementation of the Plan under study is expected to bring positive results in relation to the protected areas of the Natura 2000 network, as the proposed measures were assessed to have overall positive effects on biodiversity and consequently, on the protected object of the network. The impact of the plan will be positive on the ecosystems and biodiversity of the study area. The most important positive impacts of the implementation of the proposed plan concern the reduction of quantitative impacts on water systems and the improvement of the quantitative status of water resources, the coverage of water supply needs in the long term, the mitigation of the phenomenon of nitrate pollution and sustainable water management.
- Rivers, streams, mountain streams, river delta and the vegetation found in them constitute elements of important habitat types and species of fauna and bird fauna protected by Community and national legislation. Due to the technical nature of these projects, it is considered necessary to carry out an appropriate assessment of their impacts on watercourses and lakes within the protected areas or related to them.
- It is noted that water-rich vegetation is a necessary and healthy element of a riparian or river ecosystem that performs its own functions (e.g. providing nesting sites, shelters, feeding grounds, etc.) and for these reasons requires careful management. Also, interference with the natural transport and deposition of sediments carried by watercourses can have impacts on the marine ecosystem where they flow as well as on marine habitats.

The main conclusions arising from the consultation process are the following:

- Satisfactory participation of Public Administration bodies
- Adequate participation of citizens and NGOs, mainly via the internet
- The consultation process is considered successful since it highlighted all those points/problems/shortcomings that arose during the implementation of the 1st Management Plan and contributed to the final formulation of the 1st Revision of the Flood Risk Management Plan of the River Basin of the Water District of Eastern Central Greece (EL07).

In summary, the changes / additions included in the 1st Revision of the Flood Risk Management Plan as a result of the consultation concern the following:

- Updating of data based on the information provided and/or comments taken into account during the consultation.

The Reform of the final Program of Measures includes:

- maintaining the measures that apply to the Eastern Central Greece River Basin District (EL07)
- reformulating measures regarding the specification of restrictions and actions defined in them.
- correcting the bodies implementing the measures

- and/or the available financial tools