



LIFE 14 CCA/GR/00389 - AgroClimaWater

DEVELOPING FLOOD ACTION PLANS ON THE ADMINISTRATIVE LEVEL OF FARMERS' ORGANIZATION

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Protection and Restoration of the Environment

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Introduction



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Agriculture is fully exposed and impacted from natural disasters.

According to Food and Agriculture Organization (**FAO**):

- ✓ **26% of total damage and losses** related to **climate-induced disasters** are absorbed by **the agriculture sector**.
- ✓ The **economic loss** in **crop** and **livestock** production resulted from **natural disasters** in **developing countries** for the period 2005-2015 was estimated at **USD 96 billion**.
- ✓ **65% of all damage and loss to crops** for the period **2006 to 2016** was caused by **floods**.
- ✓ The **impact** is **not only economic but also social!**

!!! 12,000 ha of cultivated land flooded in Kavala (northeastern Greece) area at 28/6/2018.

!!! Similar disaster in agricultural areas of Ileia located at south Greece at 7/5/2018.





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Introduction



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Why a Farmers' Organization (F.OR) should develop a flood action plan?

- ✓ It can **increase** the **degree of preparedness** to respond before, during and after the flood since organizing a small amount of people is easier than a large one.
- ✓ It can **increase** the **degree of response effectiveness** in floods since it is a tailor-made to the specific and local needs solution.
- ✓ It contributes to the **Water Framework Directive objectives** which induces the **involvement of stakeholders** in water resources management issues.
- ✓ It satisfies the **demand of water management certification schemes**, such as the **European Water Stewardship Standard**, according to which management of such disasters is of major importance.



4.5.5

Major



Management of incidents:

- 1) Procedures are established, implemented and monitored to respond to accidents, security incidents, emergency situations, disasters and the like.
- 2) The impacts of such an occurrence to the environments, employees, the regional population and communities are described or estimated.



Flood Action Plans: Methodology



Directions

The methodology have to:

- ✓ be **as simple as possible** in order to be **understood** and **applied** by scientists that are not highly skilled.
- ✓ **take advantage of existing studies** and especially **reports** and **data** developed in the context of **Floods Directive** (2007/60)
- ✓ **result in measures** and **actions tailor-made** and applicable for the environmental conditions and crops prevailing in the area of the F.OR.

Steps

- ✓ Flood risk **assessment**: identify the areas characterized by high flood risk
- ✓ Flood risk **management**: compile a flood management strategy by identifying actions, measures and practices that will lead to reduction of agricultural activity contribution to surface runoff and mitigation of the corresponding floods' impact.

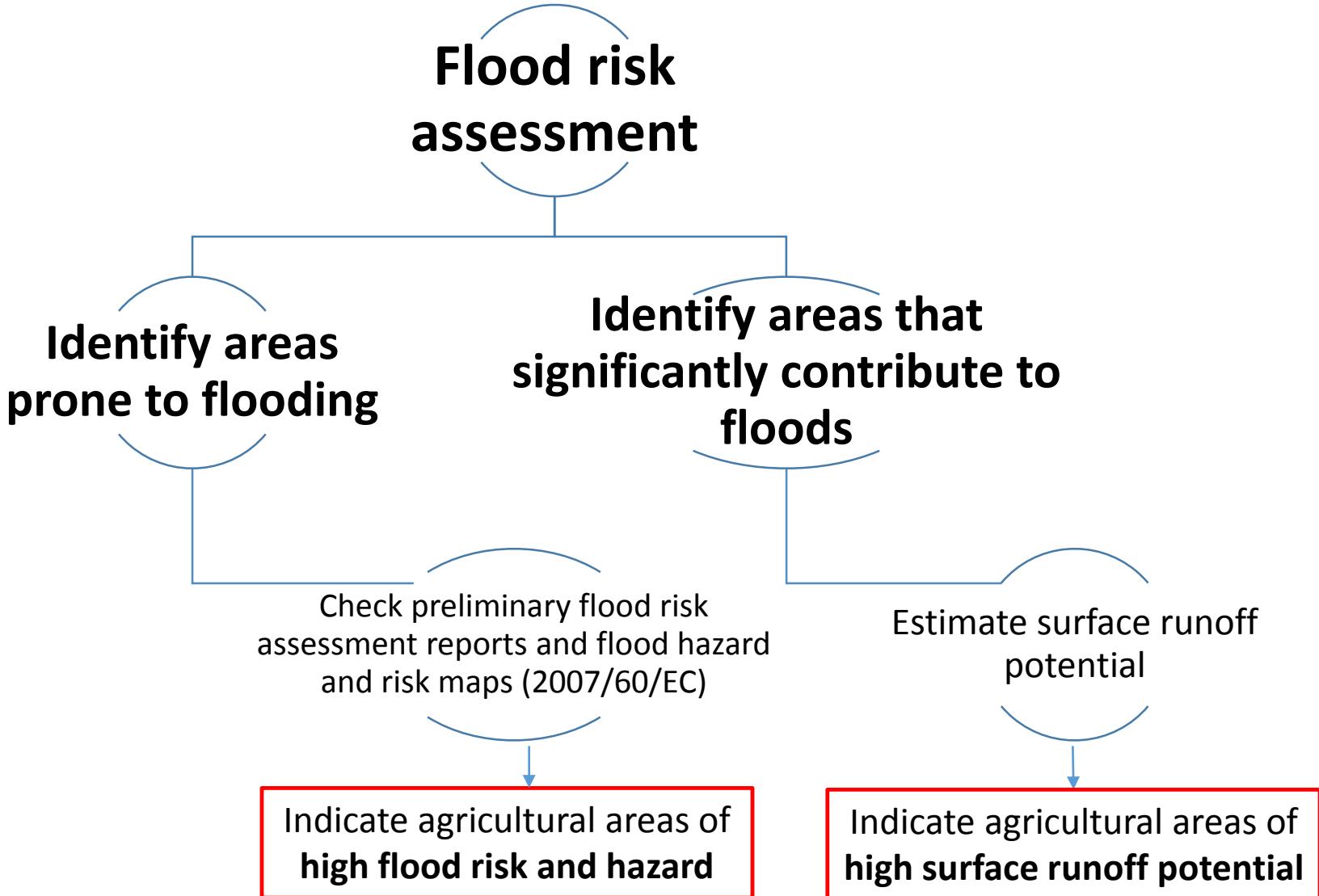


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Flood Risk Assessment: Methodology



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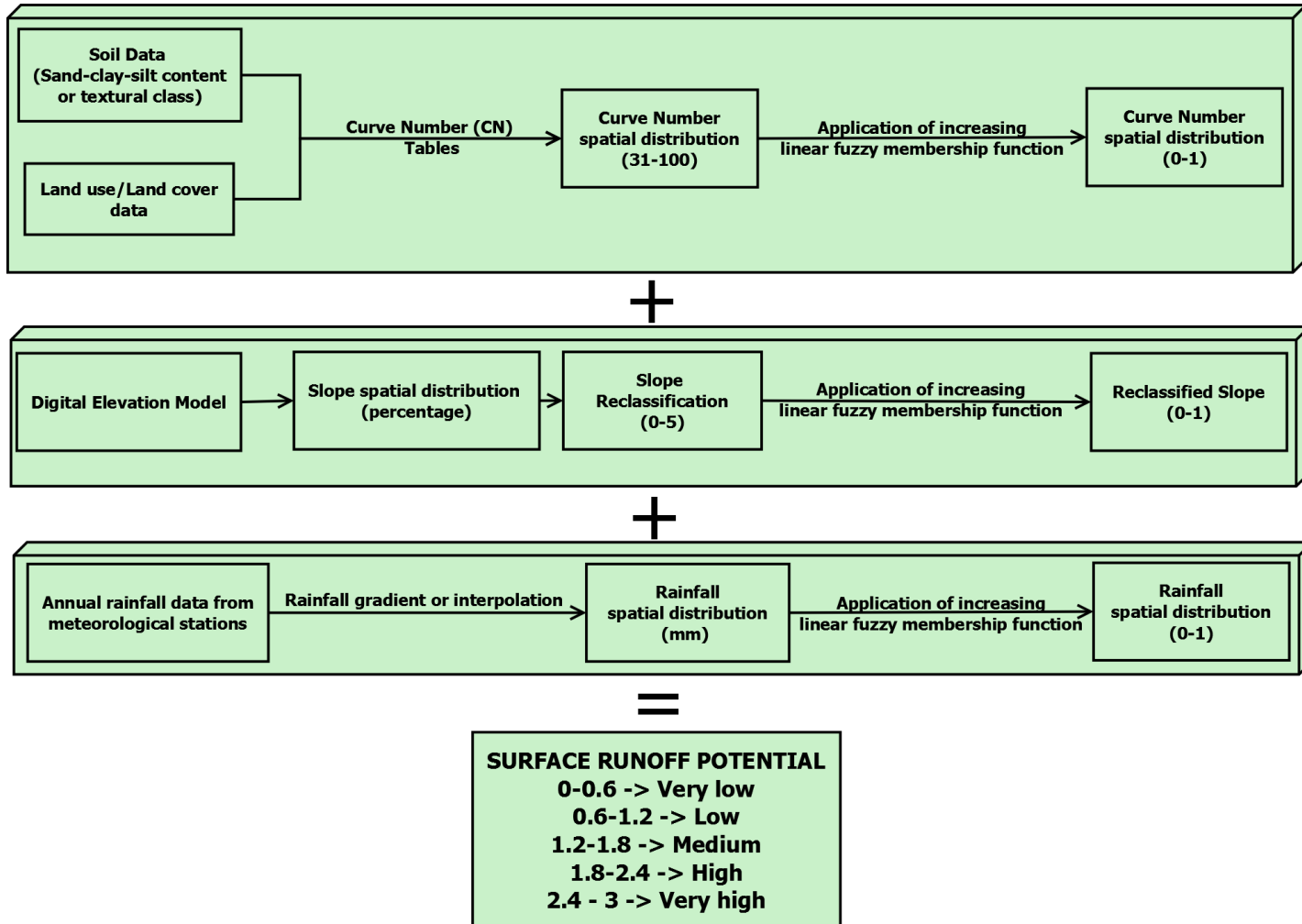


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Flood Risk Assessment: Methodology: Surface runoff potential





Flood Action Plans: Flood Risk Assessment results



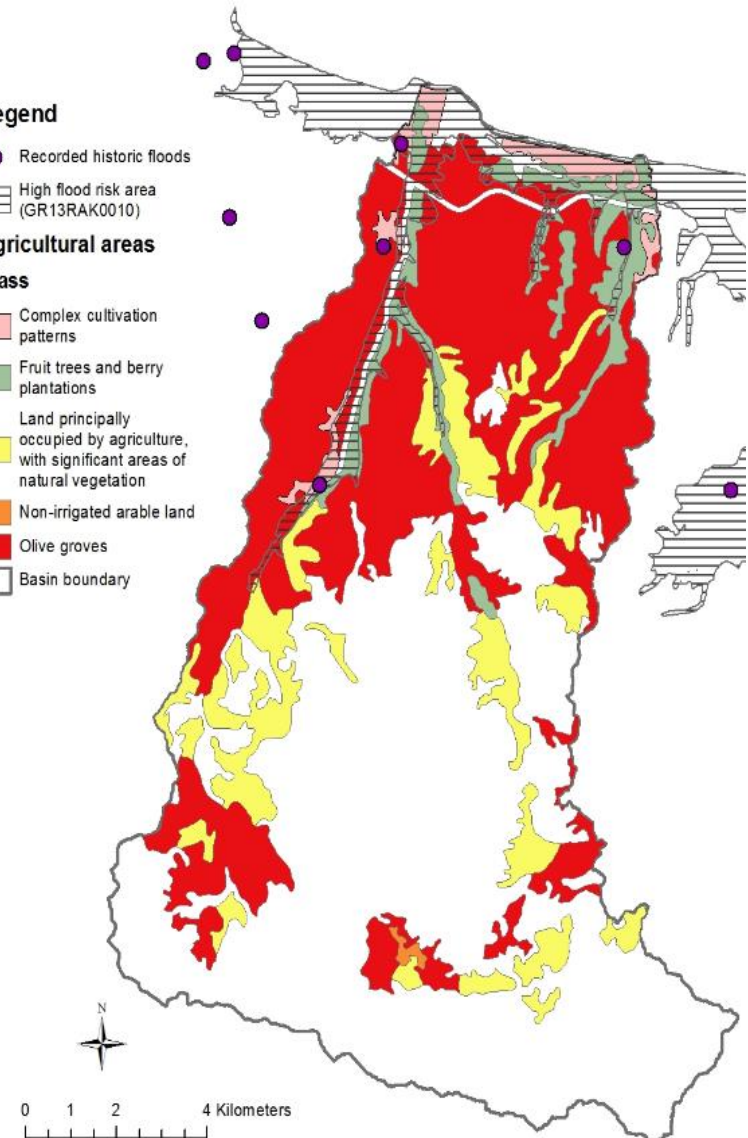
- The methodology is applied in the premises of **Public Services Company of Platanias Municipality**, located in **Crete Island**.
- The agricultural activity is taking place in **Tavronitis watershed** and is **concentrated in the northern half**.

With regard to flood risk and according to Floods Directive reports:

- A **high river flood risk zone** was identified at the **northern half** of the watershed, in which some agricultural areas are included.
- For recurrence periods of **50 and 100 years**, potential flood impact is predicted to be low or very low.

Legend

- Recorded historic floods
- ▨ High flood risk area (GR13RAK0010)
- Agricultural areas**
- Class**
- Complex cultivation patterns
- Fruit trees and berry plantations
- Land principally occupied by agriculture, with significant areas of natural vegetation
- Non-irrigated arable land
- Olive groves
- ▭ Basin boundary



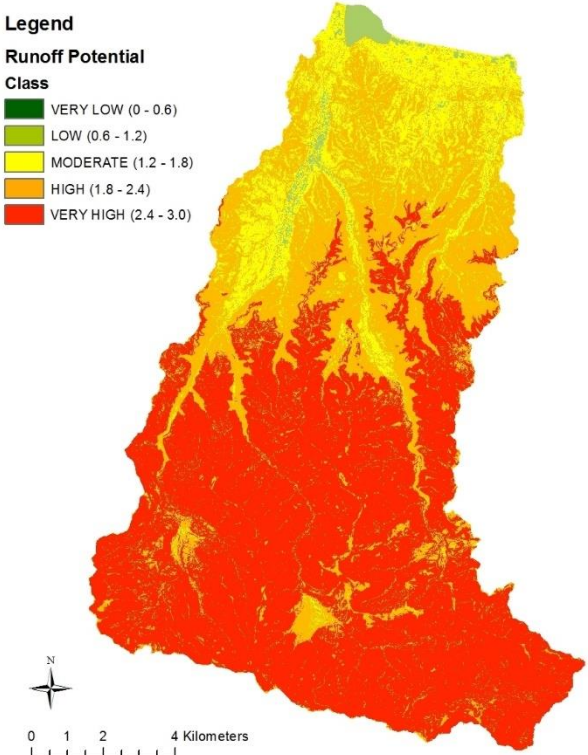
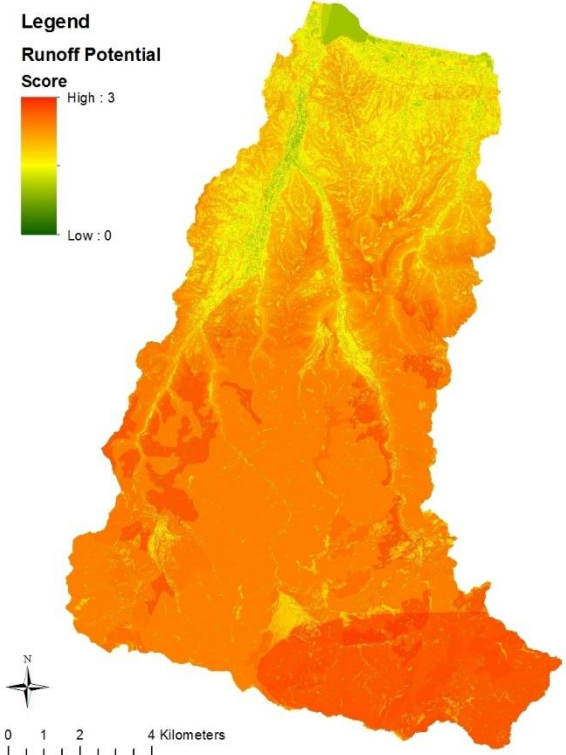
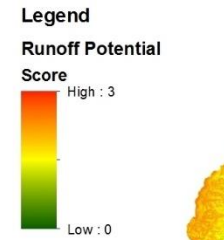


Flood Risk Assessment: Results for surface runoff potential



Land Cover Code	Land Cover Description	Area		Average	
		(km ²)	(%)	Score	Class
221	Non-irrigated arable land	0.26	0.16	2.00	High
222	Fruit trees and berry plantations	7.86	4.76	1.59	Moderate
223	Olive groves	53.41	32.34	2.06	High
242	Complex cultivation patterns	2.95	1.79	1.58	Moderate
243	Land principally occupied by agriculture, with significant areas of natural vegetation	17.08	10.34	2.52	Very High

- Surface runoff potential in the **agricultural land of Tavronitis basin** ranged on the average from **moderate to very high**.
- **For olives**, which cover the major part of the agricultural area, **surface runoff potential was on the average high**.



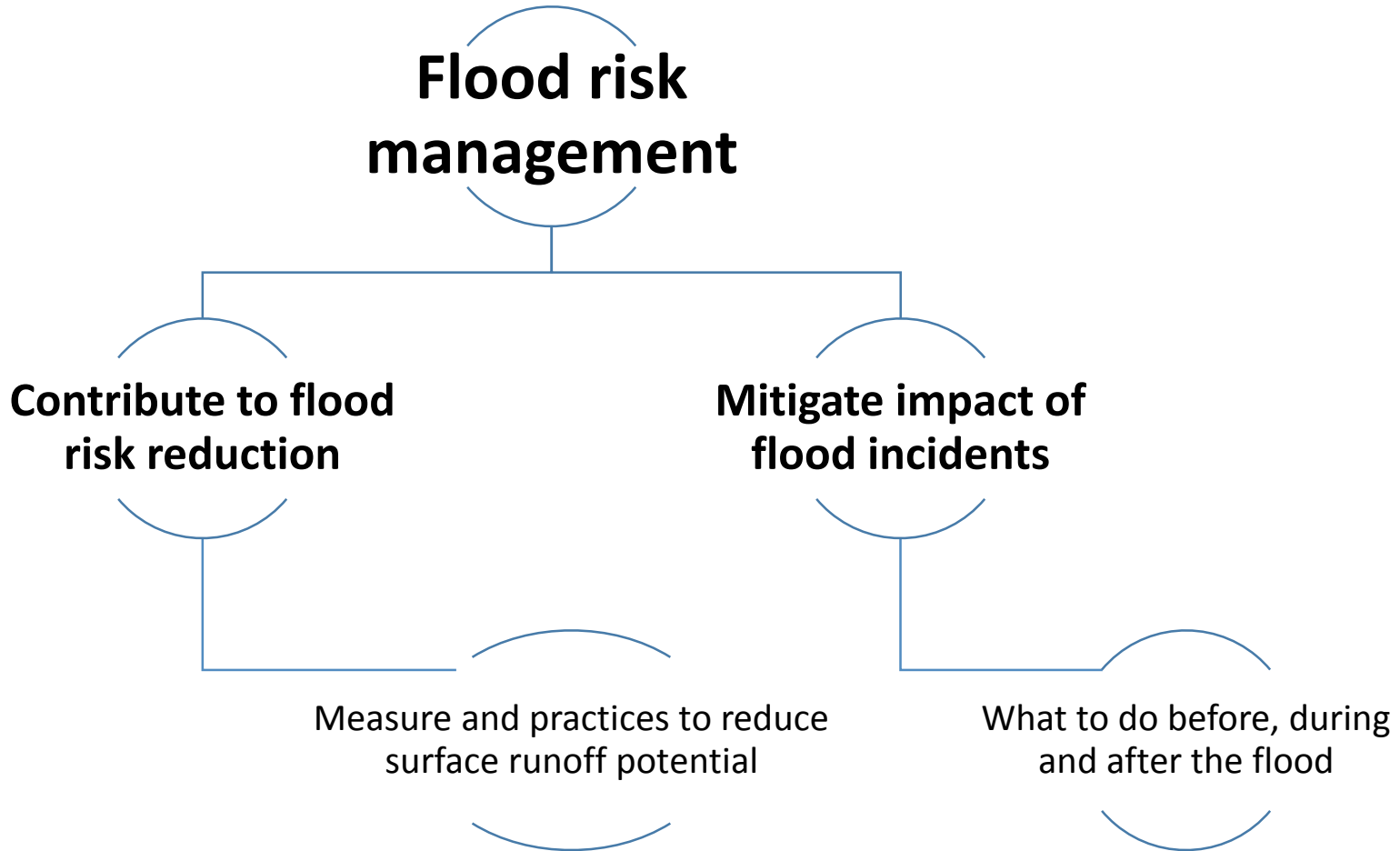


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Flood Risk Management



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Flood Risk Management: Reducing flood risk



Practices to reduce surface runoff potential:

- **No weed control**: Natural vegetation is preserved during the wet season. Therefore, soil is covered during the rainy season resulting in surface runoff potential decrease.
- **No soil tillage**: Except from reduction of evaporation losses, storm runoff reduction and improvement of infiltration capacity can also be expected.
- **Physical reduction of surface runoff**: Surface runoff can be reduced by introducing physical materials along the contour lines.
- **Conservation buffers**: Development and/or maintenance of small areas or strips of permanent vegetation. There are several versions applied such as riparian buffers, filter strips and grassed waterways.
- **Avoidance of vehicle movements** and wheel ruts on wet soil.
- **Avoidance** to the best possible degree, **of heavy machinery use** within the farm to avoid soil compaction.



Flood Risk Management: Mitigating impact of flood incidents **BEFORE the flood**



Actions by the F.OR :

- **Communication with the local Civil Protection authorities.**
- **Update and communicate the list of available F.OR farmers' machinery that can be set at the disposal of the authorities.**
- **Inform the farmers about the expected flood incident.**

Actions by the farmers:

- **Avoid applying fertilizers and PPPs prior to the flood**
- **Turn off electricity.**
- **Seal groundwater wells and boreholes**
- **Record the existing on-farm machinery and equipment.**
- **Store securely potentially hazardous substances, such as fertilizers, PPPs and fuels.**
- **Secure or remove heavy/hazardous equipment and machinery from the farm.**



Flood Risk Management: Mitigating impact of flood incidents **DURING the flood**



Actions by the F.OR:

- **Get informed about the flood status.**
- **Stay in touch on the local Civil Protection authorities.**
- **Report the availability of F.OR member farmers' machinery to help in case this is needed.**

Actions by the farmers:

- **Avoid being on the farm or any other exposed location during the flood.**



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Flood Risk Management: Mitigating impact of flood incidents: **AFTER the flood**



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Actions by the F.OR :

- **Get informed about the impacts of the flood** and **follow the directions** of the local Civil Protection authorities.
- **Communicate** the information to the farmers.
- **Ask farmers if fertilizers or hazardous substances have been applied** in the farm before the flood and **relay this information** to the **Regional River Basin Authorities**.

Actions by the farmers:

- **Be careful when trying to approach** your farm in order to avoid injury.
- **Compare the list** of your equipment compiled before flood in order to identify damages or losses.
- **Check the overall status** of your farm before and after the flood.
- **Stay in touch with the F.OR** in order to guide you for the next steps.
- **In case that fertilizers or PPPs have been applied** in the farm before the flood, communicate this information to the FOR.
- **Report loss of any agrochemical**, piece of **equipment** or **machinery** and any changes to the soil cover at your farm.



Thank you for your attention!

We gratefully acknowledge LIFE AgroClimaWater project.



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<http://www.lifeagroclimawater.eu/>