FLOOD RISK MANAGEMENT IN SLOVENIA according to “Flood Directive”

Introduction of new principle: “Prevention is the most effective measure”

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Zagreb, Transposition of Flood Directive

A framework for the assessment and management of flood risks for human health, environment, cultural heritage and economic activities.

Objective: reduction of flood risk on areas with significant flood risk until 2021.

Obligations:

- Territorial and administrative basis, 2010
- Preliminary flood risk assessment, areas of potential significant flood risk, 2011
- Flood hazard and flood risk maps, 2013
- Flood risk management plan (summary of PRA, FHM, FRM, Measures based on cost benefit analysis, PP, international coordination). 2015

- MS shall report on FRMP into WISE

Zagreb, Transposition of Flood Directive
Transposition of EU legislation into national legal system

What is transposition?
- Integration of all MS’s obligations, deriving from a directive into existing legal system or setting, specially for this purpose, a new legislation frame.

- In general that means defining:
  - competances for implementation of the directive (competant authority or authorities),
  - principles, definitions, objectives, tasks, instruments,
  - administrative and organizational basis,
  - timetable.

- Transposition means a change of national policy according to the directive, but leaves to each MS a liberty to define organizational and administrative basis and financial sources;

- During transposition period MS should identify all necessary tasks of implementation process, including preparation of methodologies, criteria, working programs, defining coordination, stakeholders participation, data collection, financial resources, capacity building, research needs etc;

“Quality” transposition is a pre-condition for successful implementation process.
Slovenia’s example of Flood Directive transposition

**Flood Directive (2007/60/EC):**

Water act, 2002 and amended in 2008-  basis for integrated water management (objectives: good status of water bodies, reduction of flood risks, good environmental status of marine waters) defined basis for:

- Governamental decree defining detailed content of flood risk management plan, 2010
- Ministerial decree on methodologies to define flood hazard and flood risk maps, 2007
- Governamental decree on conditions and limitations for constructions and activities on flood hazard areas, 2008

- **Civil Protection Act**, - interventions;
- **Meteorological Act** - meteorological survey and prediction,
- **Environmental Act**- hydrological monitoring and prediction;

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Transposition of all main content of the FD:

- Principles (floods are natural phenomena, solidarity, cost-benefit),
- Definitions (Flood, flood hazard, flood risk, significant flood risk areas),
- Territorial and administrative grounds,
- Flood risk management plan-detailed content:  
  - preliminary risk assessment,
  - flood hazard and risk maps,
  - measures* based on cost benefit analysis
- Coordination with neighbouring MS and non-MS,
- Public participation,
- Timetable,
- Data and reporting.

* measures: constructional and non constructional (insurance, limitations, flood plains protection, meteorological and hydrological monitoring and predictions, alert system, intervention planning, publicly available flood information, etc.)
(1) Ministerial decree on methodologies to define flood hazard and flood risk maps, 2007

1 – A method for determination of flood and erosion zones
2 – A method for classification of land areas into hazard and risk classes
3 – Criteria for the determination of classes
(2) Ministerial decree on methodologies to define flood hazard and flood risk maps, 2007

Flood hazard criteria are function of hazard parameters:
Q100 Water depth,
Q100 Water velocity x water depth,
Q10,
Q500 (extreme flood)

Flood hazard parameters:

Flood hazard classes:

- Pp: območje preostale nevarnosti
- Pm: območje majhne nevarnosti
- Ps: območje srednje nevarnosti
- Pv: območje velike nevarnosti

Zagreb, Transposition of Flood Directive
(3) Ministerial decree on methodologies to define flood hazard and flood risk maps, 2007

Flood hazard map
Q100 Water depth, Q10, Q500 (extreme flood)

Flood hazard map
Q100 Water velocity (v > 1 m/s) x water depth, Q10, Q500 (extreme flood)

Flood hazard classes map:
Pv  RED, high hazard
Ps  ORANGE, middle hazard
Pm  YELLOW, small
Pp  RED, residue hazard (dots)

Zagreb, Transposition of Flood Directive
(4) Ministerial decree on methodologies to define flood hazard and flood risk maps,

Flood risk criteria:
Flood hazard / vulnerability * = flood risk

* Vulnerability of human health, the environment, cultural heritage and economic activities associated with floods

Zagreb, Transposition of Flood Directive
(3) Ministerial decree on methodologies to define flood hazard and flood risk maps,

HAZARD INDICATION MAP
Scale 1: 50.000 or more

FLOOD HAZARD MAP, Flood hazard classes map
FLOOD RISK MAP
Scale: 1: 5000 or less

Flood hazard classes map:
- RED, high hazard
- BLUE, middle hazard
- YELLOW, small
- WHITE/YELLOW very small

Flood risk classes map:
- HIGH RISK (urban areas, industrial, transport corridors)
- MIDDLE (intensive agr., recreational areas)
- SMALL (extensive agr., forest, meadows)
Decree on conditions and limitations for constructions and economic activities in flood areas, a measure to reduce flood risks

Objectives:
- Reduction of flood risk to human health, environment, economic activities, cultural heritage,
- Protection of flood plains and flood conveyance routes,
- Protection of water environment on the occurrence of floods.

Refers to spatial planning procedures (programmes, development plans) at all levels (state, local communities), using SEA, EA and building permissions as tools.

It defines limitations and conditions related to flood hazard classes:
- Limitations for spatial planning, used as criteria in SEA and EA procedures,
- Limitations and conditions under which buildings could be (re)constructed, used as criteria in building permission procedures,
- Limitations and conditions for different high risk activities in flood conditions.

SEA ... Strategic Environmental Directive
EA ... Environmental Assessment Directive

Zagreb, Transposition of Flood Directive
Table 1 - limitations and conditions for constructions (SC-SI),

- “+” permitted with building permission,
- “-” not permitted,
- “-1” not permitted, except in densely populated urban areas, when advanced measures can be taken to reduce impacts of new construction on flood risk,
- “-2” not permitted, except when the results of SEA or EA are determined as non significant, or when the influence on the runoff regime is neglectable, taking into account the advanced mitigation measures (to reduce impacts on flood risk and prevent pollution);

Table 2 - limitations and conditions for constructions related to certain activities

- “√” permitted upon conditions from water permission and environmental permission,
- “x” not permitted,
- “?” not permitted, except when advanced mitigation measures* are taken to reduce risk in flood conditions

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### Limitations for CONSTRUCTIONS

#### Hazard map + spatial elements at risk

<table>
<thead>
<tr>
<th>Classification of constructions (CC-SI)</th>
<th>CONDITIONS and LIMITATIONS</th>
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<tbody>
<tr>
<td></td>
<td>HAZARD CLASS</td>
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<tr>
<td></td>
<td>HIGH (Pv)</td>
</tr>
<tr>
<td>11 Residential buildings</td>
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<tr>
<td>1.1.1 12 Non-residential buildings</td>
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<tr>
<td>12111 Hotels</td>
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<tr>
<td>12303 Gas stations</td>
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<td>12620 Museums</td>
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<tr>
<td>12640 Buildings for health care</td>
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<tr>
<td>1.1.2 23 Complex industrial buildings</td>
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<tr>
<td>1.1.3 24 Other buildings</td>
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<tr>
<td>24110 Sport fields</td>
<td>+</td>
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<tr>
<td>24203 Dumping ground</td>
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Zagreb, Transposition of
<table>
<thead>
<tr>
<th>Activity</th>
<th>CONDITIONS and LIMITATIONS</th>
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<tbody>
<tr>
<td></td>
<td>HAZARD CLASS</td>
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<td>HIGH (Pv)</td>
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<td>MEDIUM (Ps)</td>
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<td>LOW (Pm)</td>
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<td>RESIDUAL (Pp)</td>
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<td>Activities in industrial plants pollution of large scope can occur</td>
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<td>Activities that they can have harmful influence on human health because of occasional or permanent retention of larger number of people (for instance hospitals, schools, homes of senior citizens, underground garage, …)</td>
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<tr>
<td>Activities connected to cultural heritage and documentary and archival material (for instance libraries, archives, museums…)</td>
<td>×</td>
</tr>
<tr>
<td>Activities connected to storage of environmentally dangerous substances</td>
<td>×</td>
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<tr>
<td>Activities intended for protection and rescue during the natural and other accidents (firefighters, units of civil protection, health intervention units)</td>
<td>×</td>
</tr>
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Limitations for ACTIVITIES

Hazard map + spatial elements at risk
Thank you for your attention, your questions are welcome.