Flood Risk Mapping Elbe River - Germany

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Fugro, Netherlands
EU Floods Directive (EUFD)

FD approach to flood risk management for all EU member states

- 2007: Established
- 2011: Preliminary Flood Risk assessment
- 2013: Flood Hazard and Risk Maps
- 2015: Flood Risk Management Plans
- Every 6 years synchronized with Water Framework Directive (water quality protection)
# The Floods Directive Scoreboard

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**Explanation of symbols and colours**

- **Report or information submitted**: 🌻
- **Requirements only partially fulfilled**: 🙁
- **Report or information not submitted**: 😞
Location Elbe River
Flood Risk Mapping Process
Elbe River - Germany

1. Detailed analysis of actual and historical data
2. Processing of geodata
3. Hydrological investigation
4. Streamflow simulation (hydraulic modeling)
5. Determination of flood plains, water depth, flood risk
6. Dimensioning and planning flood protection measures
7. Emergency and contingency mapping
8. Implementation of flood protection measures
GIS analysis and processing Geodata

Elimination of bridges in laserscan-DTM
Hydrological simulation / hydraulics

One-dimensional hydraulic models non-urban
Hydrological simulation / hydraulics

Two-dimensional hydraulic models – urban areas
Flood Risk Assessment

- Inundation areas
- Level of impact on structures
- Velocity damage assessment
- Water depths – important for evacuation scenarios
Dimensioning Measures

- Flood polders
- Dike raising and local measures
- Dike back moving
Impact of measures

... and after realization of all measures of the flood protection concept for a 100-year-event
Cost benefit, Planning, supervision

⇒ Hydraulic engineering planning and site supervision for new developments, redevelopment of structures in the area, river control works, weirs, dams, flood basins and flood protection measures
⇒ Cost estimation for the developed measures
⇒ Cost-benefit analysis
⇒ Documentation

Dike reconstruction

Flood protection walls
Categorization of risks

High risk

Low risk
Danger zones and evacuation routes
Groundwater risks

Risk for increase groundwater level due to high river water levels

High risk level

Low risk level
Thank you