



Risk Management of Extreme River Floods Vulnerability Aspects

- a Post-/Pre-Event Perspective of the Elbe Flood August 2002 -

General Overview

Damage Potential (DamPot) Analysis → assessment of socio-economic consequences of flood hazards

↓
spatial specification of vulnerability against floods
→ flood risk management strategies

Dam Pot Analysis

Definition: "Total of all values under threat in a flood prone area"

Data for DamPot Analysis: socio-economic statistical sources → estimations of direct and tangible values (methodological difficulties with indirect/ intangible values)

↓
"Key-code" for linking area classifications with socio-economic landuse values

Spatial Specification of Vulnerability Against Flood

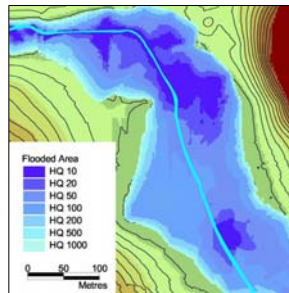


Fig. 1:
Flood hazard map:
zones of different
flood-return periods
depicting indicators
of flood such as
water depth, flow
velocity, duration,
water level rise,
matter and
sediment transport

Fig. 2:
Flood vulnerability
map:
water depths and
affectedness by a 1000-
year-flood depicting
the probability of
threatened buildings

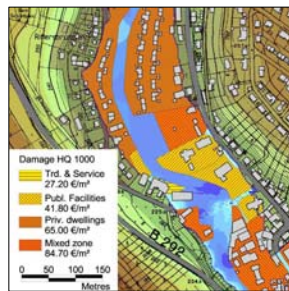
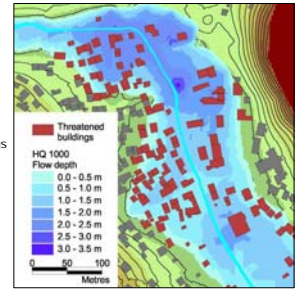
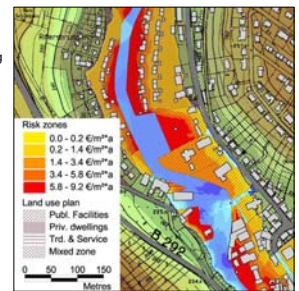


Fig. 3:
Flood damage risk
map: distribution of
the damage in €/m²
to be expected by a
1000-year-flood
depicting the
damage expectancy
value

Fig. 4:
Flood damage risk
map:
risk zones depicting
the expected
annual damage
related to areas of
the land use plan



Flood Risk Definition:
„Damage expectancy value
ex ante for all probable
events (Flood Hazard)“

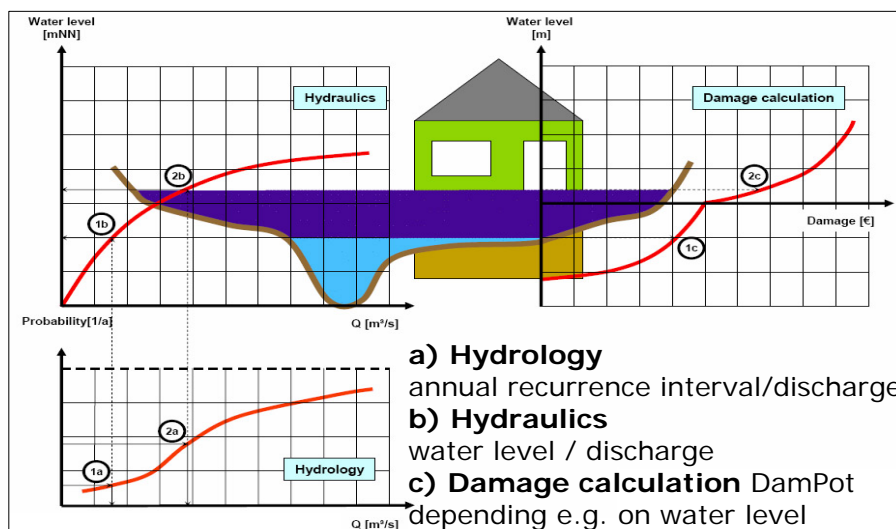
Flood Risk Management Strategies

- Raise people-at-risk's and decision makers' awareness
- Flood-related decisions in the fields of land-use, urban, spatial and investment planning
- Assessment of the effectiveness of structural and non-structural risk reduction measures
- Set out of flood insurance rates (flood zoning)
- Prepare disaster managers for flood defence

Essential Aspect:
**Comparability of concepts
in risk analysis and flood
mapping between regions
and countries**

Lit.: [1] Beyene, M.: Ein Informationssystem für die Abschätzung von Hochwasserschadenspotentialen 1992.

[2] Merz et al.: Flood risk mapping at the local scale: Concepts and challenges 2005.



From hydrological model to economic damage [1]

