

POPLAVNA VARNOST V LJUBLJANSKI URBANI REGIJI – KAKO NAPREJ?

Izhodišča za delo v skupini

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Dogodek:

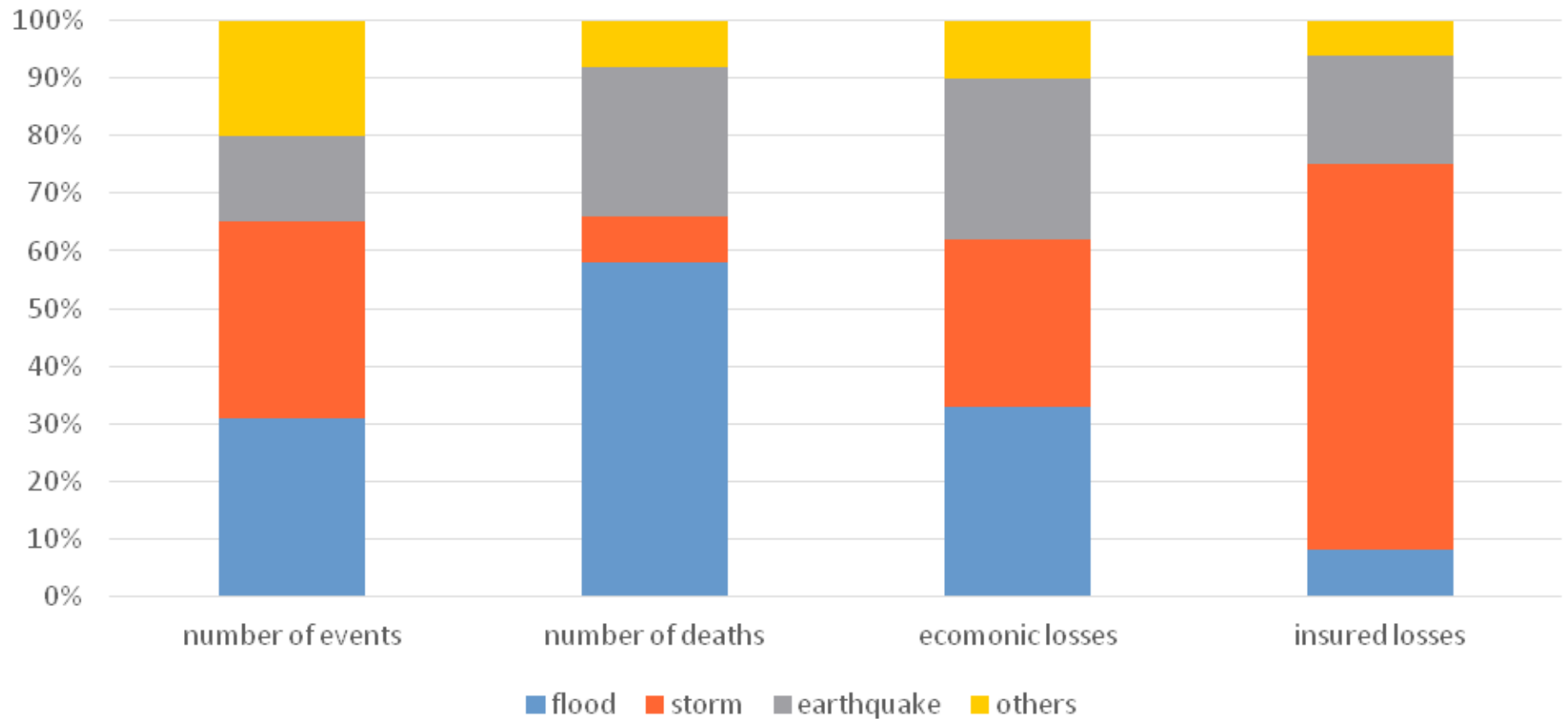
INTEGRIRANO UPRAVLJANJE VODA IN ZAGOTAVLJANJE POPLAVNE VARNOSTI
Regionalna razvojna agencija Ljubljanske urbane regije v sodelovanju z Inštitutom za okoljske študije
Univerze v Amsterdamu in Mestom Rotterdam
17. in 18. september 2015

Delavnica "Kako naprej"

POPLAVNA VARNOST V LJUBLJANSKI URBANI REGIJI – KAKO
NAPREJ? - posvet in delavnica - petek, 18. 9. 2015 ob 9. uri, ljubljanska Mestna hiša, Banketna dvorana.

World perspective

Natural catastrophes worldwide 1988 - 1997: distribution by event type

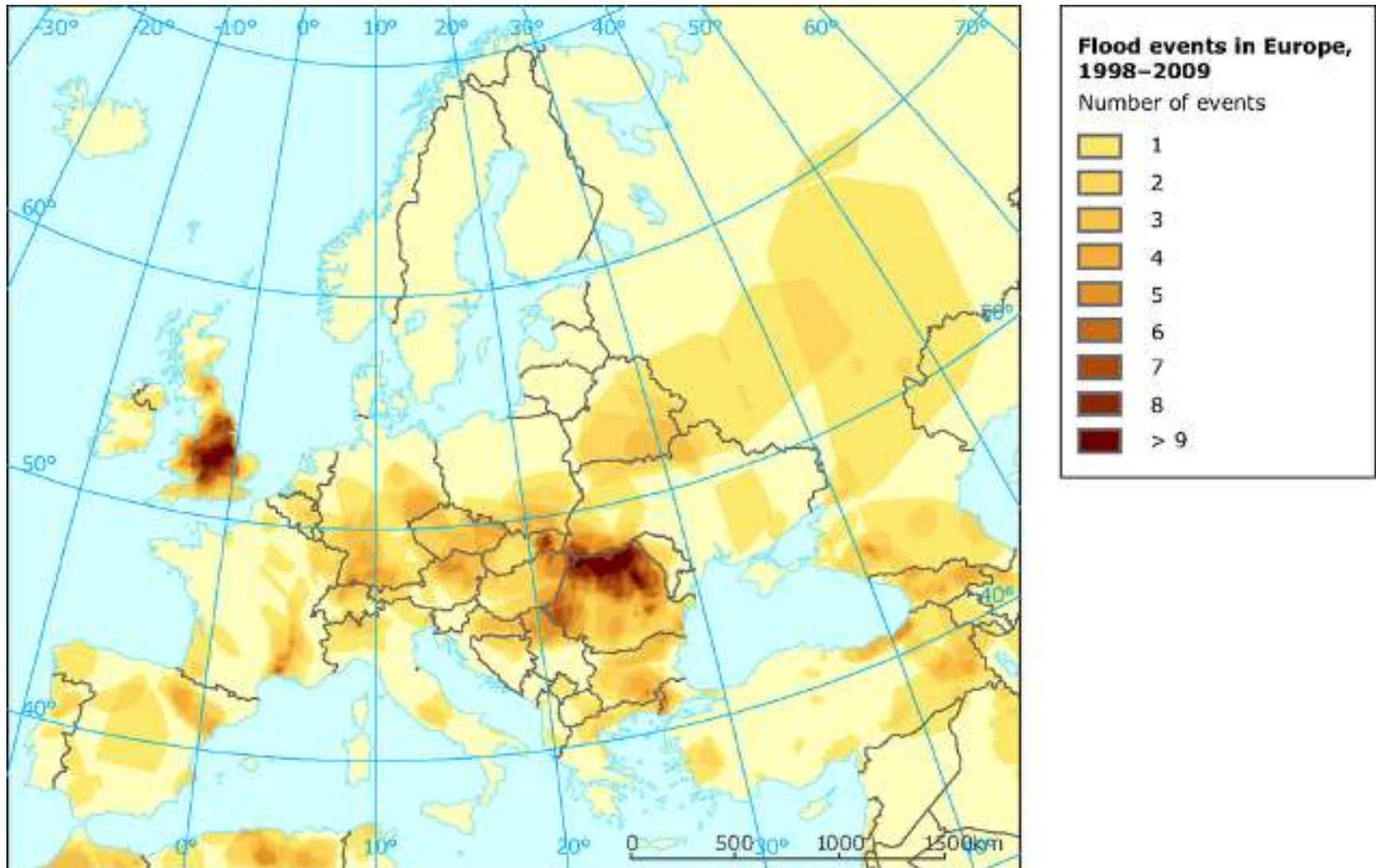


(Berz, 2000; Knight, D.W., 2005)

Europe:

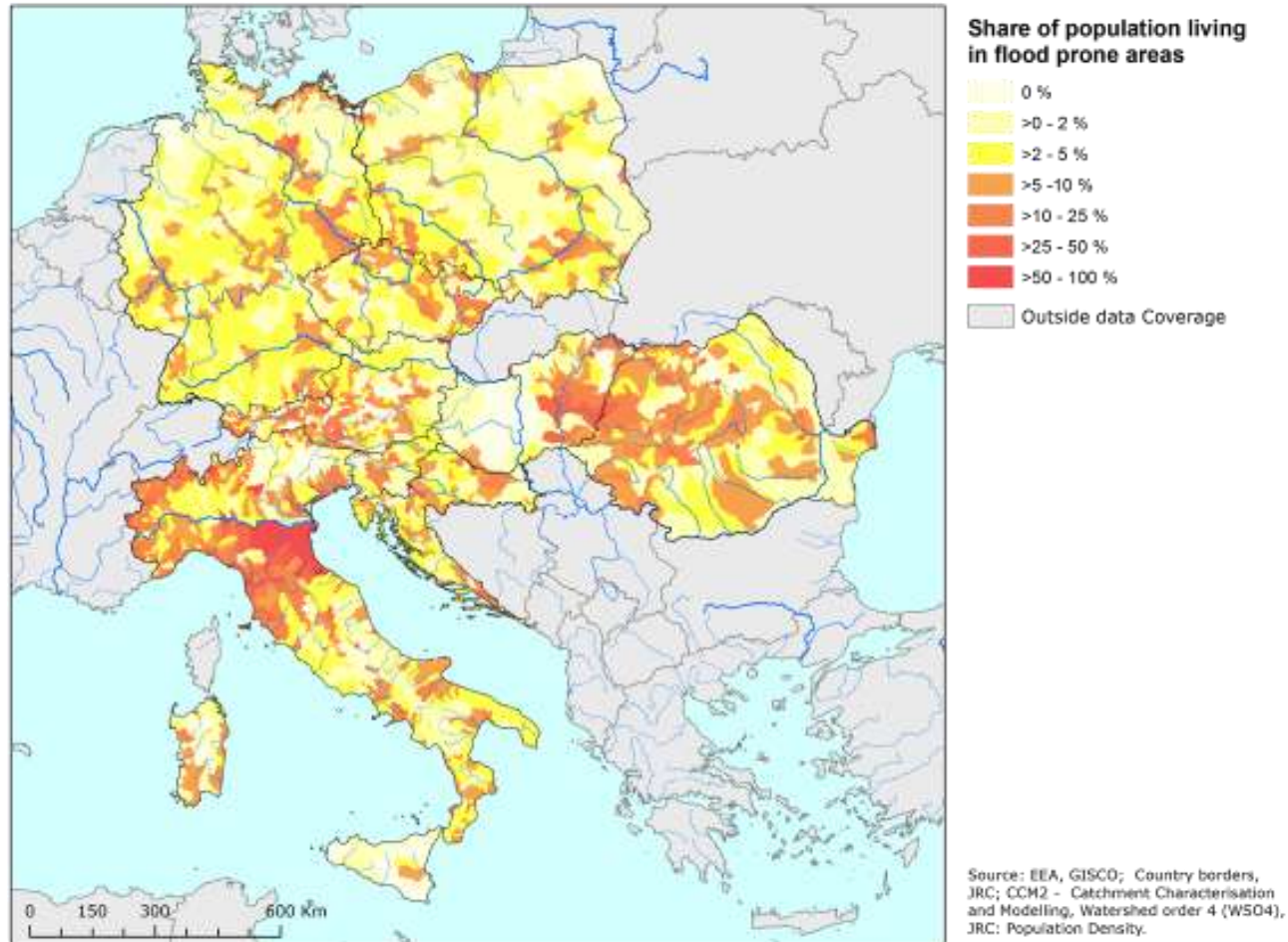
- There were more than 325 major river floods reported for Europe since 1980, out of which 200 since 2000 (EEA, 2015; Flood directive reporting). Some areas have been affected by flooding multiple times.

Occurance of floods in Europe 1998-2010



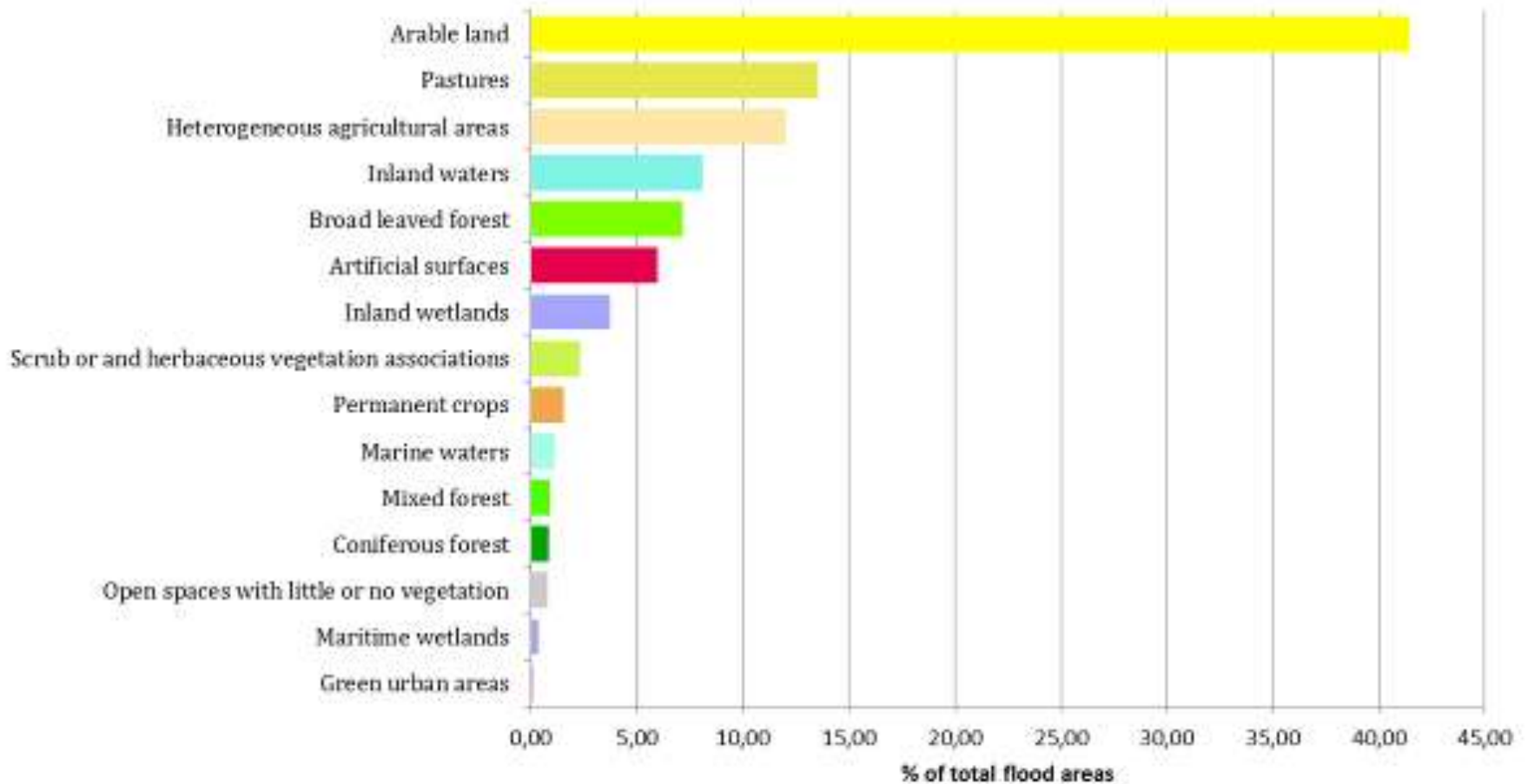
Occurrence of major floods in Europe from 1998 – 2009 (EEA, 2012)

Flood hazard area in Europe – share of population



Share of population living in the flood prone areas per subcatchment (map prepared by TC Vode, 2015; ETC/ICM, 2015. The vulnerability of floodplains and the environmental impacts of flood protection measures. ETC/ICM Technical Report 2015, Magdeburg: European Topic Centre on inland, coastal and marine waters, 154 pp. In print.)

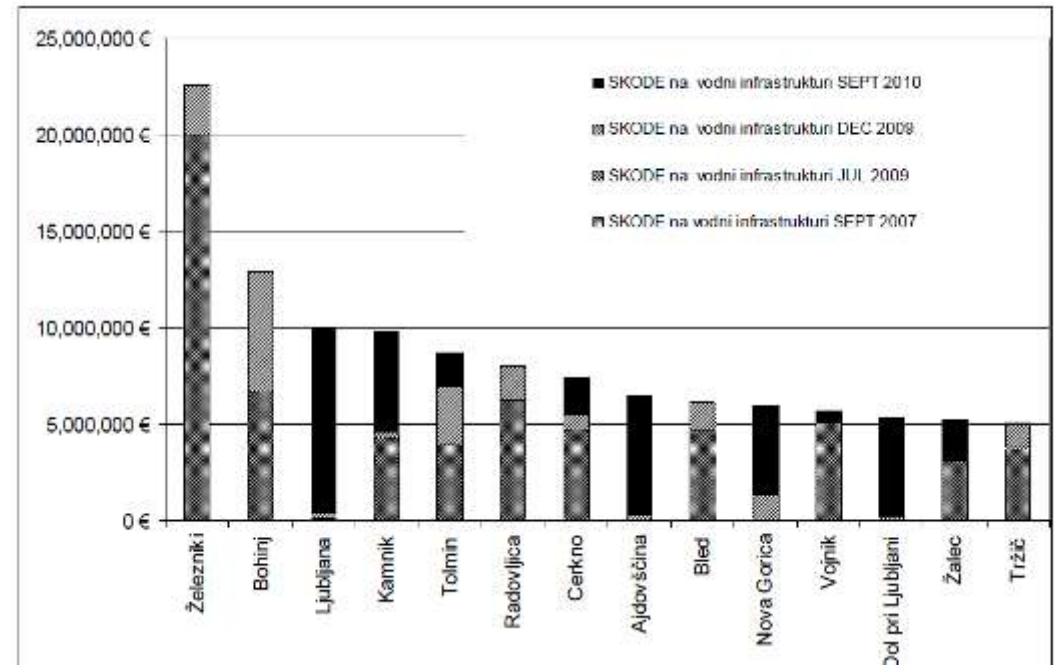
Flood hazard area - land use



Source: The vulnerability of floodplains and the environmental impacts of flood protection measures. ETC/ICM Technical Report 2015, Magdeburg: European Topic Centre on inland, coastal and marine waters, 154 pp. In print.)

Some numbers- 2010 flood, Slovenia

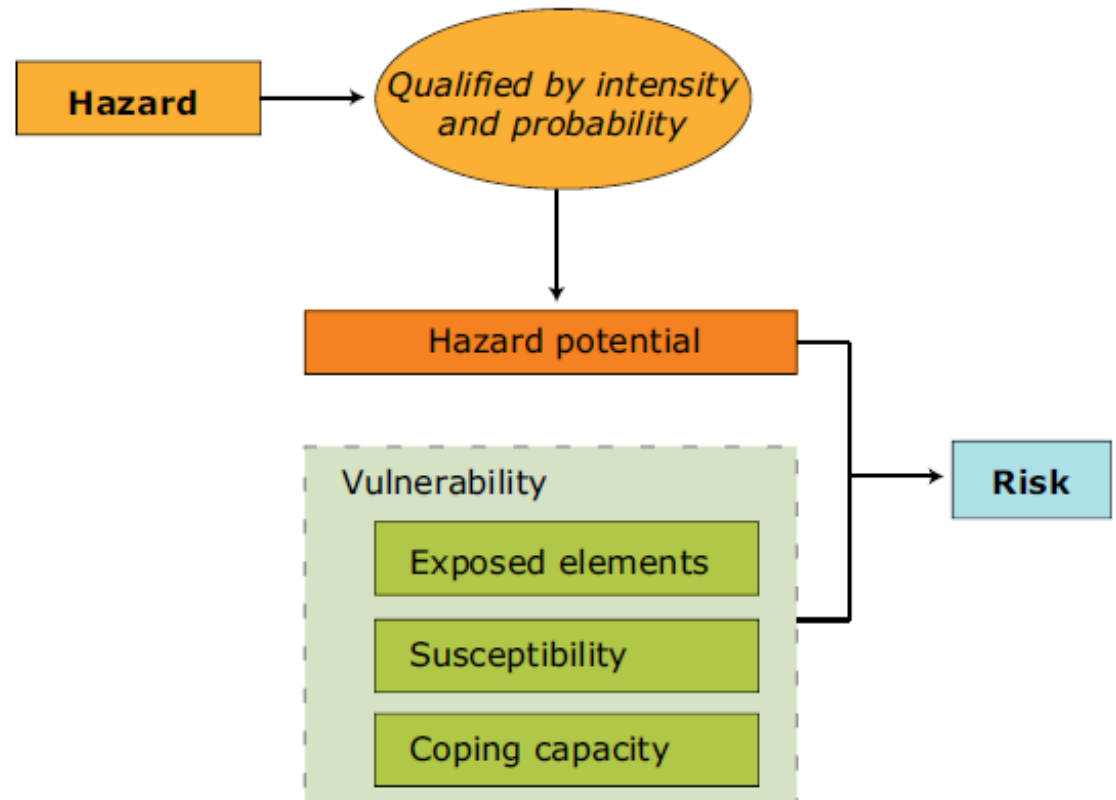
- 70 mio €, 115 communities ..damage on housing, commercial facilities, municipal infrastructure and in the field agriculture and forestry (AJDA forms 1-6)
- 136 mio € on water management infrastructure
- 25 mio € on state road network



Flood risk

- hazard a consequence of natural processes inside the hydrological cycle
- vulnerability is directly linked with human activity disturbed or/and destroyed by the hazard.
- HAZARD and VULNERABILITY produce FLOOD RISK (Valdes,1994)

Figure 1.3 The concepts of risk, hazard and vulnerability in the risk-hazard framework

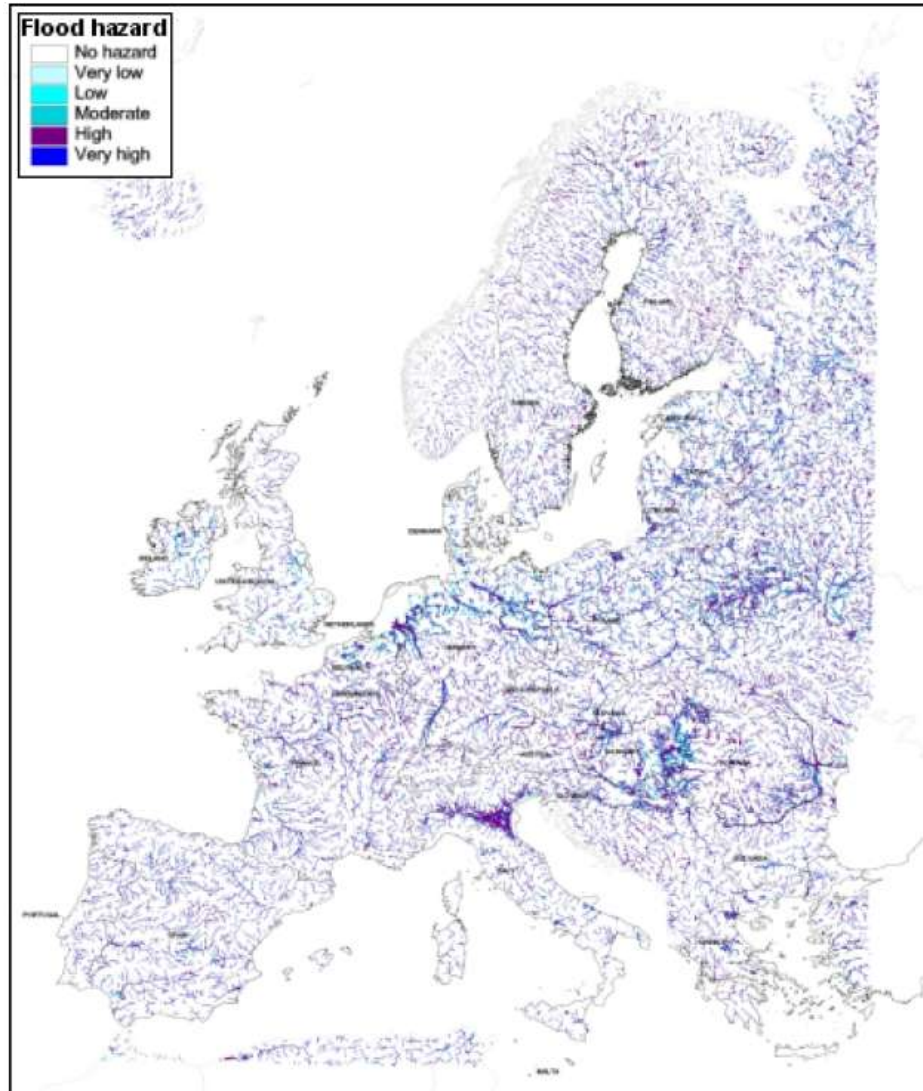


EEA, 2012 (Climate change, impacts and vulnerability in Europe, 2012. Indicator based report)

Note: The exposure of various elements is shown here as part of the vulnerability of the group of elements but exposure assessment may also be regarded as separate from vulnerability assessment (as shown in Figure 1.4)

FLOOD risk modelling at JRC

(Flood risk = hazard*vulnerability*exposure)

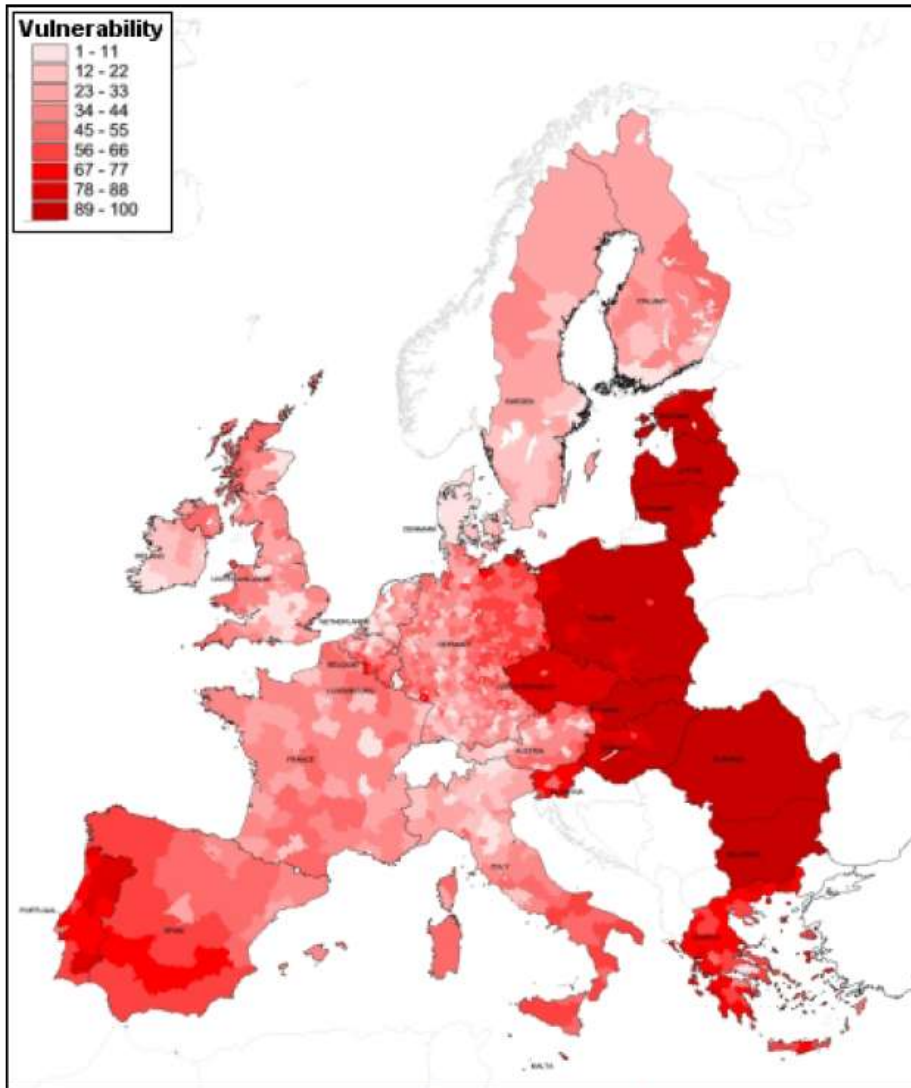


FLOOD HAZARD

(From Barredo et al., 2005)

FLOOD risk modelling

(Flood risk = hazard*vulnerability*exposure)

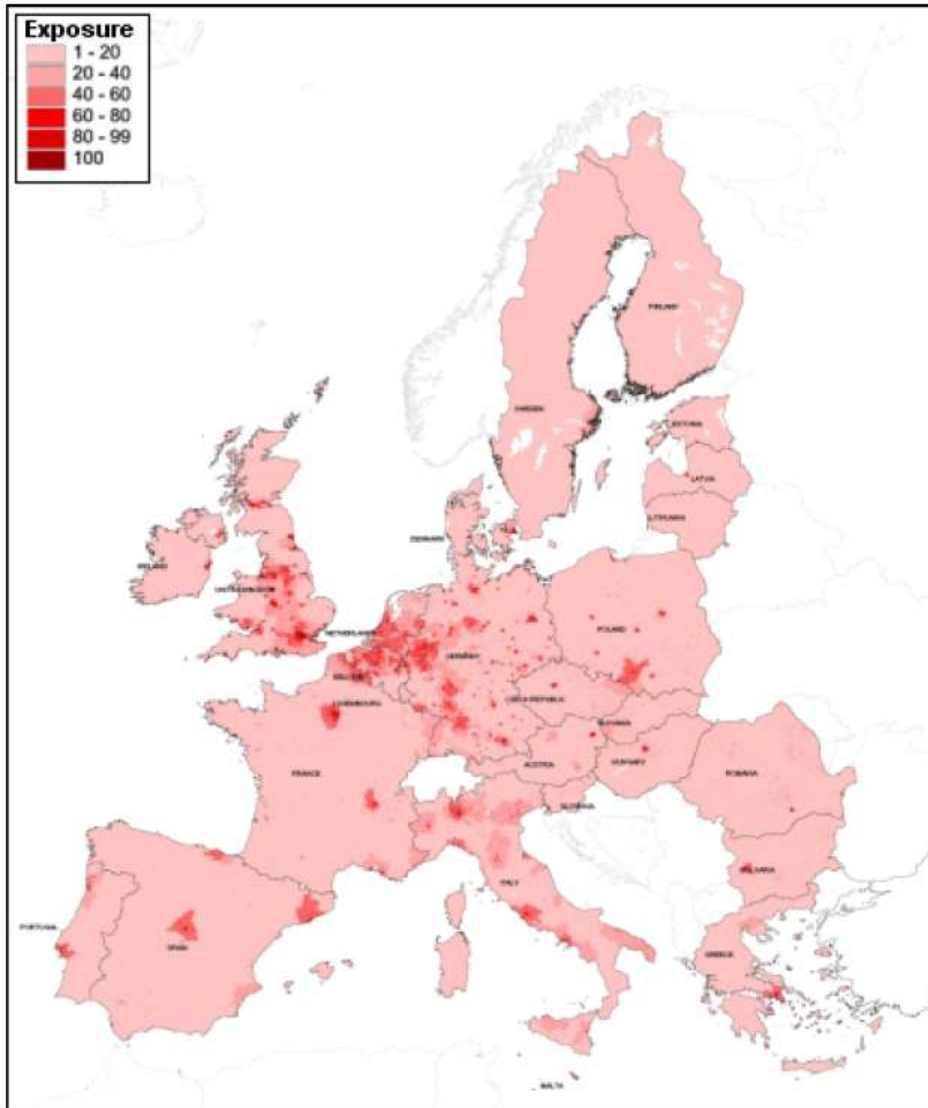


FLOOD VULNERABILTIY

(Flood vulnerability as a function of GDP (From Barredo et al., 2005).

FLOOD risk modelling

(Flood risk = hazard*vulnerability*exposure)

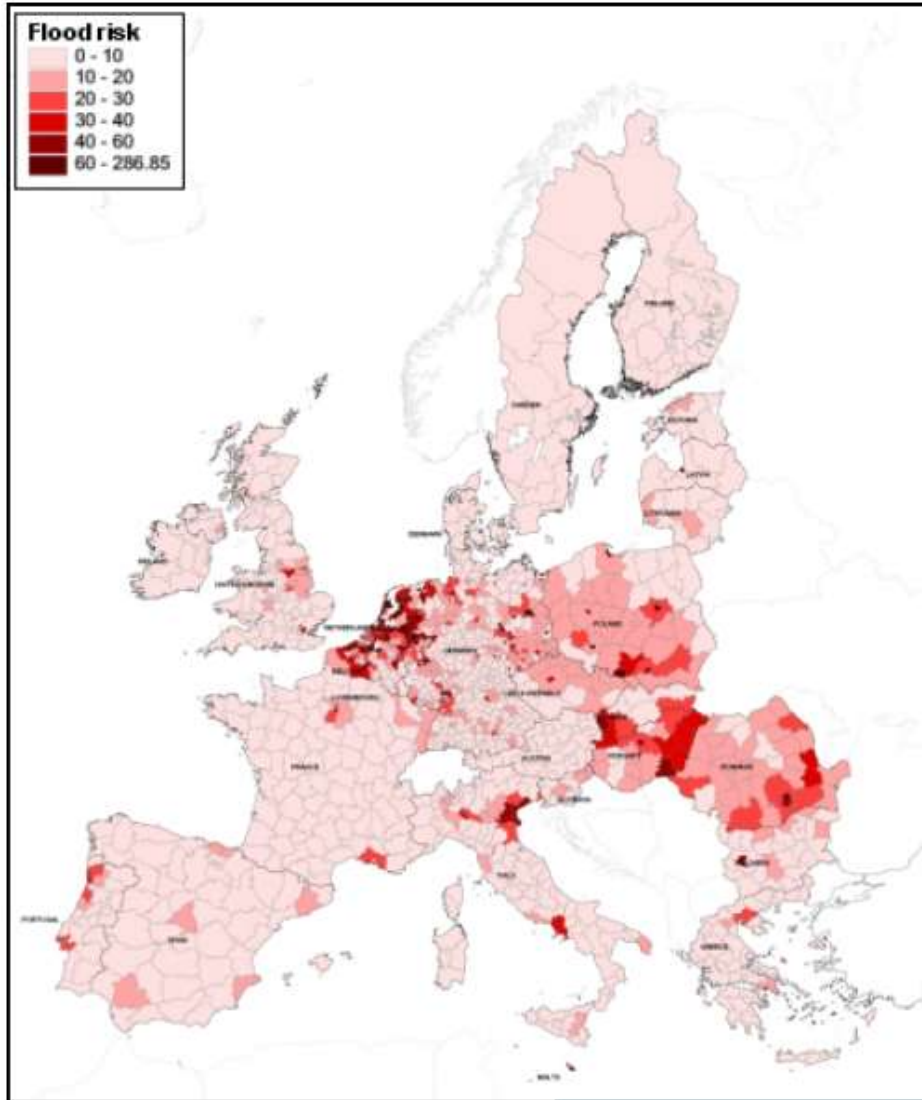


EXPOSURE TO FLOODS

- produced by merging the effect of population density at NUTS-3 level and land-use potential cost of damage due to a flood (From Barredo et al., 2005).

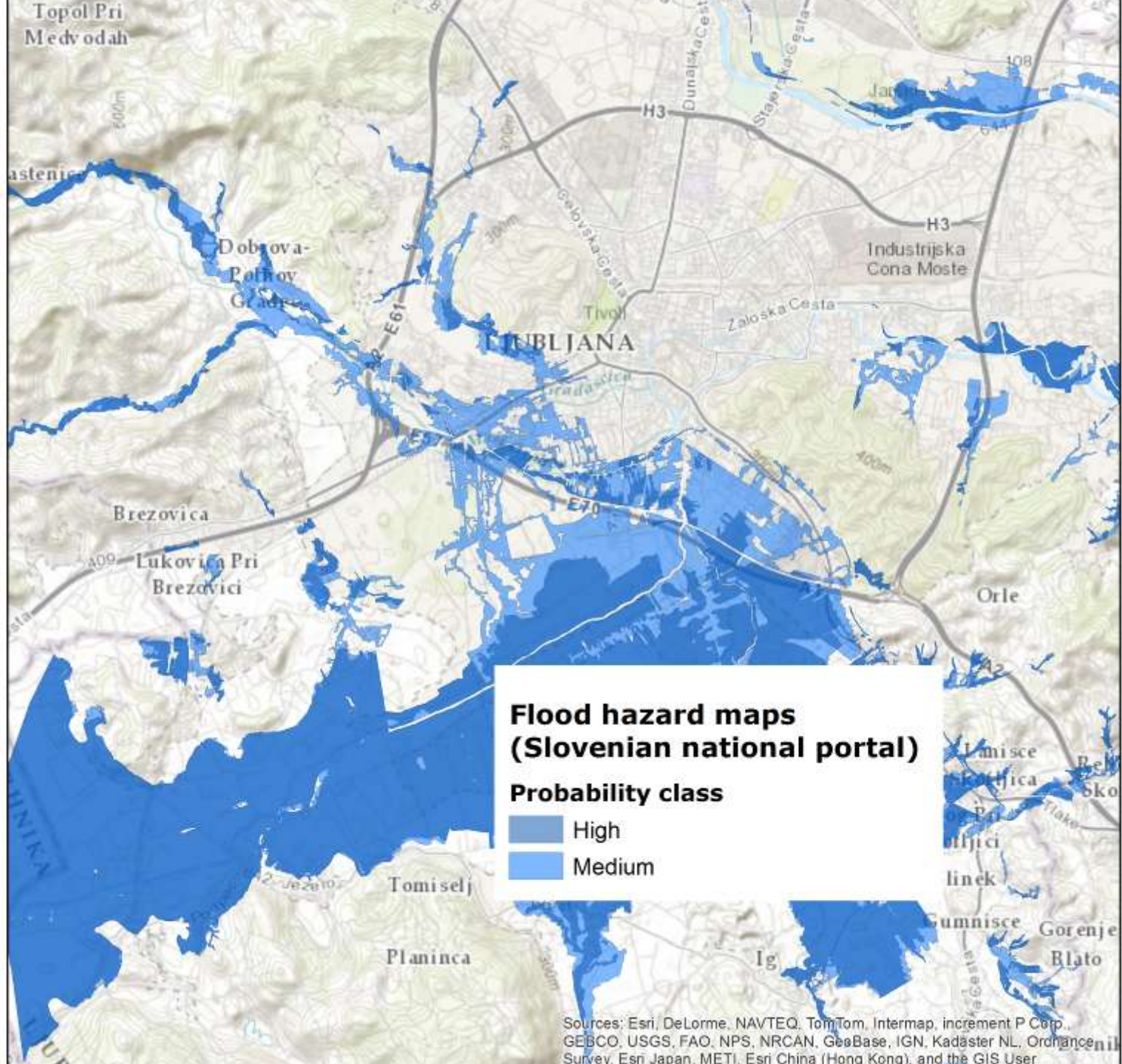
FLOOD risk modelling

(Flood risk = hazard*vulnerability*exposure)



FLOOD RISK MAP FOR EUROPE

summarized at NUTS-3
level (From Barredo et al.,
2005).



**Flood hazard maps
(Slovenian national portal)**

Probability class

- High
- Medium

(active)



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User

Flood risk management

- FRMP: due 2015 in all EU MS
- EU: integrated and systematic approach in mid 90's, starting with research, workshops:
- Dooge J C I & Samuels, P. G. 1998, Overview and conclusions of the second **RIBAMOD workshop**, RIBAMOD River basin modelling. Proceedings of the Second Workshop on Impact of Climate Change on flooding and sustainable river management.

Principal strategies (RABAMOD1998):

Flood protection have three principal strategies to reduce flood damage. The first is

- “keep the flood away from the people”
- “keep the people away from the flood” and
- “clear up afterwards”.

Workshop conclusions:

- The natural phenomenon of flooding not necessarily lead to a human disaster.
- Much can be achieved with mitigation of effects of flooding by preparedness and flood defense activities. These may be considered in a sequence of six activities (Dooge, 1998):
 - a) **flood prediction – data and modelling;**
 - b) **risk assessment;**
 - c) **flood protection;**
 - d) **forecasting in real time;**
 - e) **disaster mitigation measures and**
 - f) **disaster follow-up.**

Conslusions:

- Up t o 1998: There has been mainly one strategy in flood protection implemented in Europe, “keep the flood away from the people”.
- Recently, political and societal attention goes also to flood prediction, monitoring, modeling, forecasting, resilience (coping capacities)
- Recognized in 2000: There is an ignorance on social responses and adaptation to flood risk. The provision of structural flood defenses remove the awareness of flood hazard from the community so that when those defenses are overwhelmed, the flooding is an unexpected catastrophe.
- Now: RISK MANAGEMENT CYCLE

Delavnica “KAKO NAPREJ”

- ISKANJE SKUPNE VIZIJE, oblikovanje strategije za dosežane vizije
- Nekaj za kar si prizadevamo z vso svojo aktivnostjo, v kar verjamemo in kar “mislamo”

Način dela v skupini:

- Tri skupine
- Trije koraki (vsebinska razprava, ideje, predlog):
 - 1) ODPRTO , NEOBREMENJENO RAZMIŠLANJE KATERE MERE IN AKTIVNOSTI BI PREDLAGALI ZA LJUBLJANSKO REGIJO (za zmanjševanj tveganje poplav)
 - 2) Individualni razmislek o se drugih idejah (za Ljubljansko regijo) in predlog treh ukrepov/aktivnosti v Ljubljani; predstavitev izbire ostalim članom skupine
 - 3) Razprava o izvedljivosti predlaganih aktivnosti: normativa, institucije, finance, prostor, ekologija/narava, tehnologija, čas, socialna sprejemljivost, psihološka sprejemljivost,.....skupina koncipira ideje/nastavke lokalne strategije (območje, občine, regija)...spisek aktivnosti, kaj, kje, kdo, kako,kdaj