ICFM6

6TH INTERNATIONAL CONFERENCE ON FLOOD MANAGEMENT

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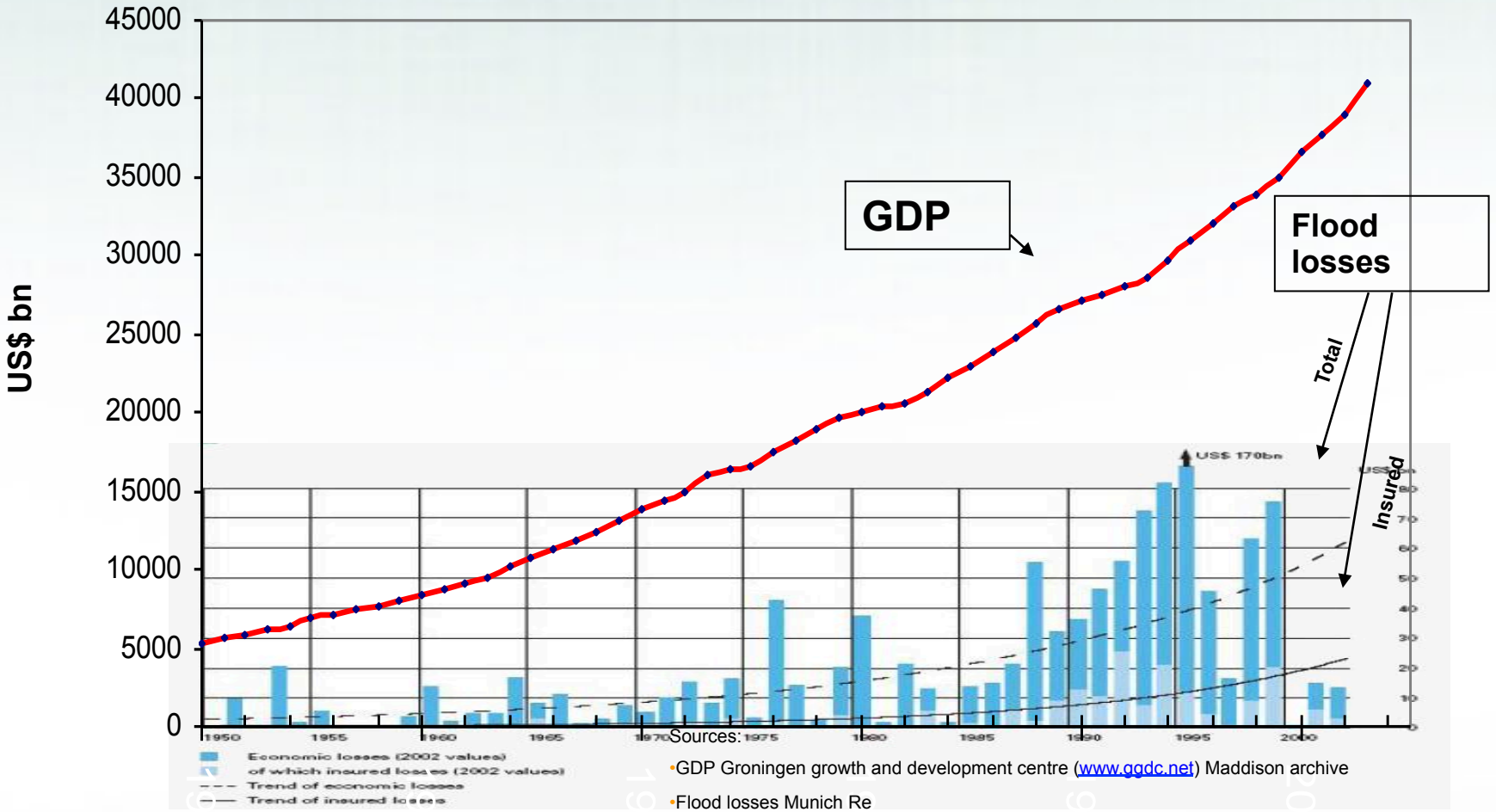
Development of indicators of living with floods

Giacomo Teruggi, WMO

Settling on floodplains has enormous advantages…

...but at the same time poses great risks

Flood Damages

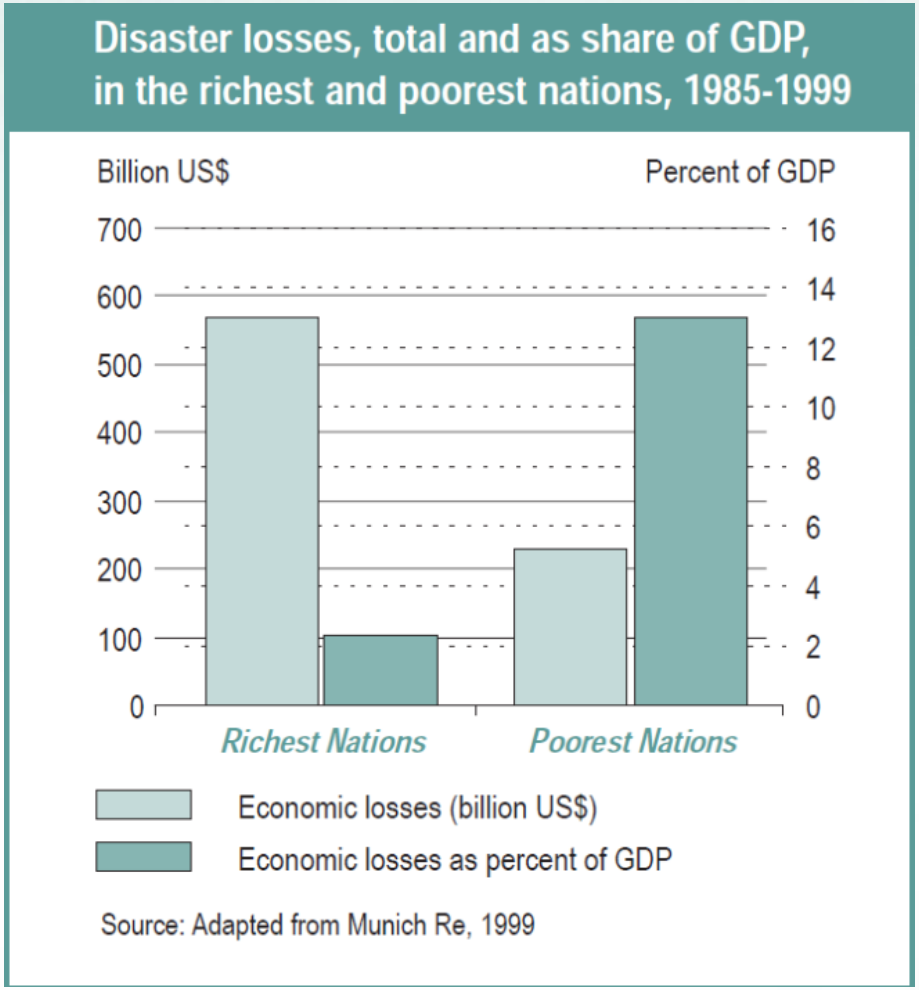


Sources:

- GDP Groningen growth and development centre (www.ggdc.net) Maddison archive
- Flood losses Munich Re

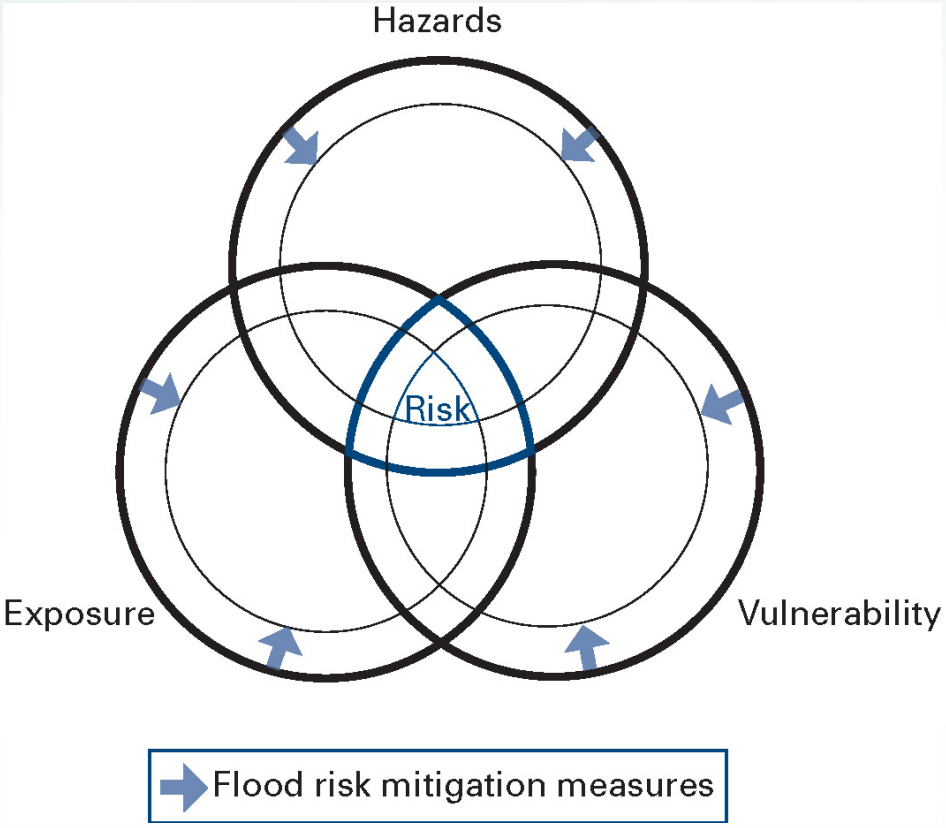
Losses caused by natural disasters

Total value and percentage of GDP in richer and poorer countries (1985-1999)



Integrated Flood Management: Objectives

- **Maximizing net benefits** and
- **Minimizing loss of life**
- Sustainable development (balancing development needs and flood risks)
- Environmental preservation (for ecosystem services & health)



Maximize Net benefits

Gain

Derived from the activities and use of floodplains (agriculture, urban development, transportation, recreational use, etc.)

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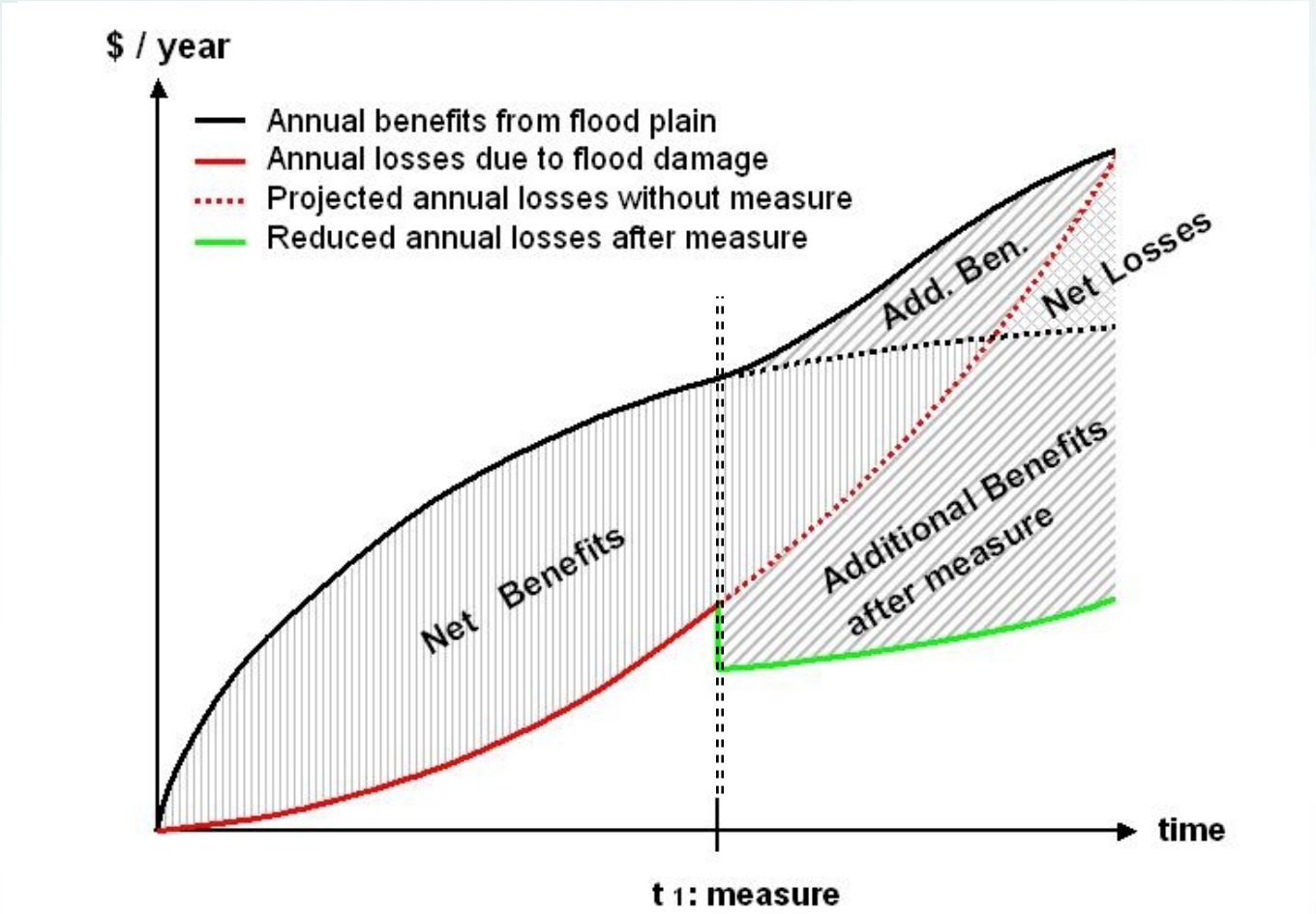
Losses

Direct damages and mid to long term impacts on environment and socio-economics

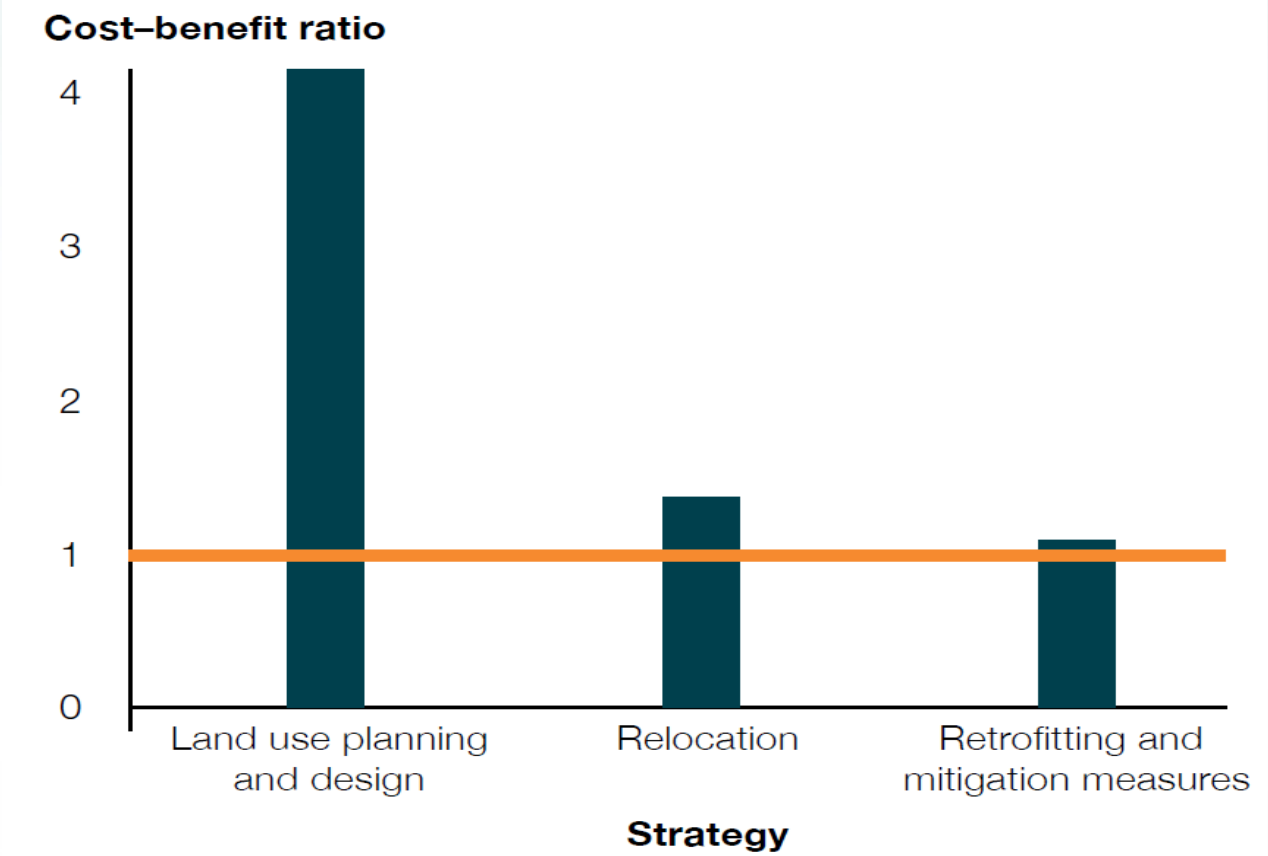
> 0

The objective is not to avoid losses per se

Net benefits



Limitations of economic considerations



Multi-criteria analysis (MCA)

- Judging the expected performance of each development option against a number of criteria or objectives

	Option A (Plan A)	Option B (Plan B)	Option C (Plan C)	Option D (Plan D)
Criterion 1 (e.g. cost-benefit)	**1**	**3**	**5**	**4**
Criterion 2 (e.g. social impact)	**5**	**2**	**2**	**3**
Criterion 3 (e.g. environmental impact)	**2**	**1**	**4**	**3**

OECD approach to Flood Loss Assessment

Losses → / Impacts ↓	Tangible	Intangible
Direct	▪ Physical damage to: ▪ Buidlings ▪ Furniture ▪ Infrastructures ▪ Enterprises stocks ▪ Enterprises tools	▪ Human losses ▪ Consequences on: ▪ Public Health ▪ Environment ▪ Cultural heritage
Indirect	▪ Loss of industrial production ▪ Networks disruption: ▪ Electric supply ▪ Water supply ▪ Transport ▪ Telecom ▪ Response and recovery costs	

Beneficial aspects of floods

- Recharging water sources (recharge groundwater, restock man-made reservoirs)
- Agriculture (provide nutrients and sediments)
- Fishery (provide an ecological trigger for spawning and migration)
- Rejuvenation of the river ecosystem (provide seasonal variability and variable sediment, wash down pollutants and contaminants, flush out organic substances)

Provide livelihood opportunities

A wider consideration: living on floodplains

	Potential Tangible Losses	Potential Intangible Losses	Potential benefits
Direct	▪Physical damage to: ▪Buidlings ▪Furniture ▪Infrastructures ▪Enterprises stocks ▪Enterprises tools	▪Human losses ▪Consequences on: ▪Public Health ▪Environment ▪Cultural heritage	▪Availability of freshwater resources ▪Increased productivity for agriculture and livestock
Indirect	▪Loss of industrial production ▪Networks disruption: ▪Electric supply ▪Water supply ▪Transport ▪Telecom ▪Response and recovery costs		▪Transportation ▪Urbanization ▪Development opportunities

Limitation of indicators

- Economically developed societies devote considerable resources to collecting economic and social indicators to help policy makers in their deliberations about how to best increase quality of life. These measures have had notable successes, and yet they suffer from substantial limitations: economic and social indicators cannot reflect the full range of factors that affect quality of life. For example, no complete list of factors affecting quality of life can be created, and the way people weight these factors differs. Furthermore, it is often not clear which set of measures best reflects desirable states in various areas such as the economy: there is disagreement about which forms of goods and services need to be counted, for example whether housework should be part of the gross domestic product (GDP).
  (adapted from "Well-Being for Public Policy", by Ed Diener et al., Oxford University Press 2009)

- In addition, to measure indicators is sometimes extremely demanding from a data collection point of view: the risk in developing indicators for living with floods is that too much energy would be put in the exercise, and too little in actually finding strategies to cope with floods

Thank you for your attention!