“Advancing human security through knowledge-based approaches to reducing vulnerability and environmental risks”

United Nations University Institute for Environment and Human Security

(UNU-EHS)
The Significance of Governance in Mitigating Water-Related Disasters

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General definition

Governance deals with the processes and systems by which organizations and societies operate.

Governance possesses notion of „steering“ in contrast to the notion of „driving“

Governance implies „power to…“ contrasted by „power over…“
UNDP’s definition

Governance defines the exercise of political, economic and administrative authorities in the management of a country’s affairs at all levels. Governance is a neutral concept comprising the complex mechanisms, processes, relationships and institutions through which citizens and groups articulate their interest, exercise their rights and obligations as well as their differences.

Good governance addresses and fosters the allocation and management of resources to respond to collective problems, it is thus characterized by:
### Good governance

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>participation</td>
<td>Placing concerns for all stakeholders.</td>
</tr>
<tr>
<td>transparency</td>
<td>Sharing information anytime for communication &amp; decision-making.</td>
</tr>
<tr>
<td>accountability</td>
<td>Officials answer to all stakeholders.</td>
</tr>
<tr>
<td>rule of law</td>
<td>Clear communication of rules, applications &amp; proposed outcome.</td>
</tr>
<tr>
<td>effectiveness</td>
<td>Requiring competence, sensitivity &amp; responsiveness. Formulate goals.</td>
</tr>
<tr>
<td>equity</td>
<td>Similar cases treated similar ways.</td>
</tr>
</tbody>
</table>
Major challenges

- Increasing flood losses, affected people as well as number and magnitude worldwide
- Flood plains play important role for livelihood of large portions of the world’s population – losses have to be reduced, benefits be strengthened
- Coordinated input to the UN International Decade for Action: „Water for Life“ (2005-2015)
- 520 million people affected each year
- Today 1bn. people live in path of 100-year flood
- 2bn. people vulnerable to floods in 2050

Source: Bogardi, 2005
### Major challenges

**Economic losses due to natural disaster (-2004)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Country, region</th>
<th>Event</th>
<th>Losses* (Bn. US$)</th>
<th>Insur. Losses* (Bn. US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Japan, Kobe</td>
<td>Earthquake</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>2004</td>
<td>USA, Carribean</td>
<td>Hurricane season</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>1994</td>
<td>USA, Northridge</td>
<td>Earthquake</td>
<td>44</td>
<td>15.3</td>
</tr>
<tr>
<td>1998</td>
<td>China, Jangtse</td>
<td>Flood</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>1992</td>
<td>USA, Florida</td>
<td>Hurricane Andrew</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td>1996</td>
<td>China, Jangtse</td>
<td>Flood</td>
<td>24</td>
<td>0.5</td>
</tr>
<tr>
<td>2002</td>
<td>Europe</td>
<td>Flood</td>
<td>21.5</td>
<td>3.5</td>
</tr>
<tr>
<td>1993</td>
<td>USA, Mississippi</td>
<td>Flood</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>1990</td>
<td>Europe</td>
<td>Storms</td>
<td>15</td>
<td>10.2</td>
</tr>
<tr>
<td>1995</td>
<td>North-Korea</td>
<td>Flood</td>
<td>15</td>
<td>/.</td>
</tr>
<tr>
<td>1988</td>
<td>Armenia, Spitak</td>
<td>Earthquake</td>
<td>14</td>
<td>/.</td>
</tr>
<tr>
<td>2004</td>
<td>Indian Ocean</td>
<td>Tsunami</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>Europe</td>
<td>Drought</td>
<td>13</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2005</td>
<td>USA, Ls., Ms. &amp; Fl. + further states</td>
<td>Hurrican Katrina and subsequent extreme floods</td>
<td>100</td>
<td>~50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Event</th>
<th>Death toll</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>Bangladesh</td>
<td>Storm surge</td>
<td>300,000</td>
</tr>
<tr>
<td>1976</td>
<td>China</td>
<td>Earthquake</td>
<td>290,000</td>
</tr>
<tr>
<td>2004</td>
<td>Ind. Ocean</td>
<td>Tsunami</td>
<td>220,000</td>
</tr>
<tr>
<td>1991</td>
<td>Bangladesh</td>
<td>Storm surge</td>
<td>140,000</td>
</tr>
<tr>
<td>1970</td>
<td>Peru</td>
<td>Earthquake</td>
<td>67,000</td>
</tr>
<tr>
<td>1990</td>
<td>Iran</td>
<td>Earthquake</td>
<td>40,000</td>
</tr>
<tr>
<td>1988</td>
<td>Armenia</td>
<td>Earthquake</td>
<td>25,000</td>
</tr>
<tr>
<td>1985</td>
<td>Columbia</td>
<td>Vulcano eruption</td>
<td>24,700</td>
</tr>
<tr>
<td>1976</td>
<td>Guatemala</td>
<td>Earthquake</td>
<td>22,700</td>
</tr>
<tr>
<td>1963</td>
<td>Bangladesh</td>
<td>Storm surge</td>
<td>22,000</td>
</tr>
<tr>
<td>2003</td>
<td>Europe</td>
<td>Drought</td>
<td>&gt;20,000</td>
</tr>
<tr>
<td>2004</td>
<td>USA, Carrib.</td>
<td>Hurricane season</td>
<td>2,000</td>
</tr>
</tbody>
</table>

*non-inflation clear-up

**Death tolls due to natural disaster (-2004)**

Source(s): MunichRe, TopicsGeo
Session 3: Governance and Integrated Flood Management

- Lack of public awareness and preparedness (early warning systems)
- Loss of indigenous knowledge
Core elements of Tsunami Early Warning System (GI-TEWS)

Steering Committee
headed GFZ-Potsdam

( GFZ, DLR, AWI, GKSS, KDM, BGR, GTZ, UNU )

Advisory Committee
( Konrad-Zuse-Institut, U Bochum, acatech, DKKV, U Bremen )

Project management
GFZ-Potsdam

Workgroups (WG)

Earthquake
Monitoring
System
GFZ

Ocean
Instrumentation
KDM

GPS-
Technologies
GFZ

Early Warning and
Mitigation Centre,
Risk Modelling and
Earth Observation
DLR

Modelling
and Simulation
AWI

Capacity
Building (CB)
UNU, GTZ
Core elements of Tsunami Early Warning System (GI-TEWS)

Components of (tsunami) early warning systems:
- Level 1: Monitoring/measuring natural hazard (tsunami)
- Level 2: Risk-based forecast of potential impact
- Level 3: Dissemination of warning (chain)
- Level 4: Onset of anticipated response after warning is issued -> evacuation

Component 6100
- Academic PostDoc and PhD programmes
- Technical training and workshops

Components 6200 & 6300
- Strengthening organizational structures & foster interinstituional communication
- Establish warning & desaster preparedness mechanisms in 3 regions in Indoensia
Lack of political and public awareness
(...but every aspect and all consequences were known by scientists)
Loss of trust and confidence in decision-makers and scientific community
Session 3: Governance and Integrated Flood Management

Preventing and reducing water-related disasters
International Centre for Water Hazard and Risk Management (ICHARM)
Session 3: Governance and Integrated Flood Management

Preventing and reducing water-related disasters
International Centre for Water Hazard and Risk Management (ICHARM)

- Contributing to World Water Development Report (WWDR)
- Promoting the International Flood Initiative (IFI)
- Expanding the Global Flood Alert System (GFAS) and IFNet
- Interdisciplinary studies, hydrological observations and data processing
- Developing database regarding water-related disasters
- Creating international/interdisciplinary network
- Planning and conducting training for administrators and experts mainly in developing countries
Promoting the
International Flood Initiative (IFI)

"International Flood Initiative/Programme (IFI/P) promotes an integrated approach to flood risk management in order to reduce fatalities, property losses, environmental effects and hardship that result from floods and at the same time consider long-term benefits from floods and use of flood plains."

- **Vulnerability (UNU-EHS, IIASA)**
  Estimating social, political, health, ecological & economical impacts

- **Flood Risk Management (IAHS, ICHARM, UNESCO, WMO)**
  Multi-hazard analysis, data collection, modelling, flood hazard mapping, structural & soft measures

- **Governance and Participation (IIASA, USACE, ADPC)**
  People-networking, institutional reform, development of stakeholder processes

- **People-centred EW and EM (WMO, UNISDR, IFNet)**
  Effective forecasting and early warning, effective communication, preparedness, response to warning
Thanks for your kind attention!

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