Bundesamt für Bevölkerungsschutz
und Katastrophenhilfe

**Federal Office for Civil Protection
and Disaster Response, Germany**

Vulnerability of modern societies towards natural disasters

The impact on critical infrastructures

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   - Critical Infrastructure Protection in Germany
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Definition

Critical infrastructures (CI) include the
assets and **systems** that,
if disrupted,

would threaten our

national security,
public health and
safety,
economy, and
way of life.

CI Sectors

- Energy production
- Supply & distribution
- Communication & IT
- Transportation
- Hazardous Material
- Banking & Finance
- Government Services
- Media, Research Institutes, Cultural Assets

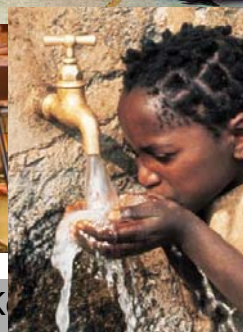




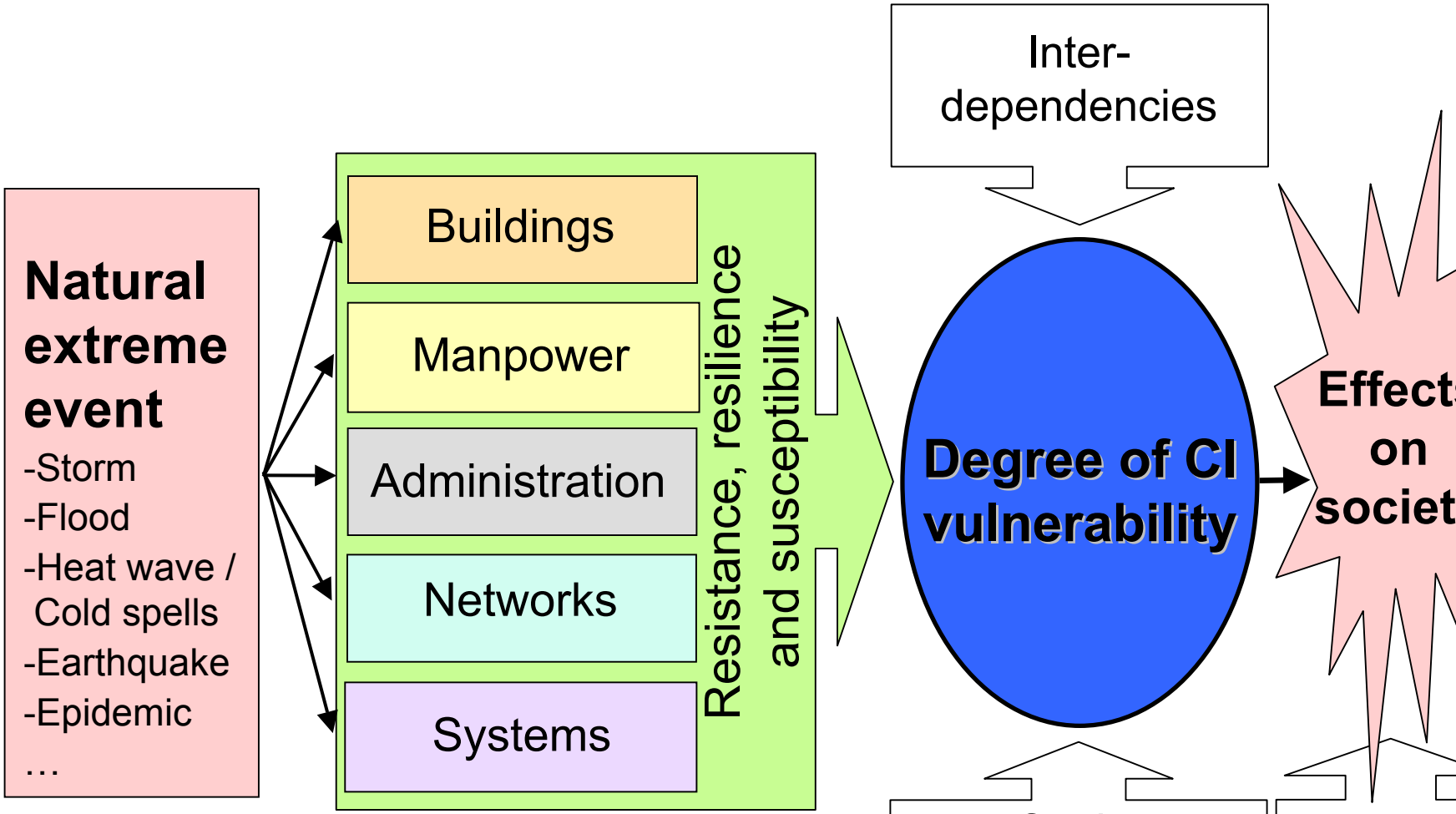








Vulnerability of Critical Infrastructures



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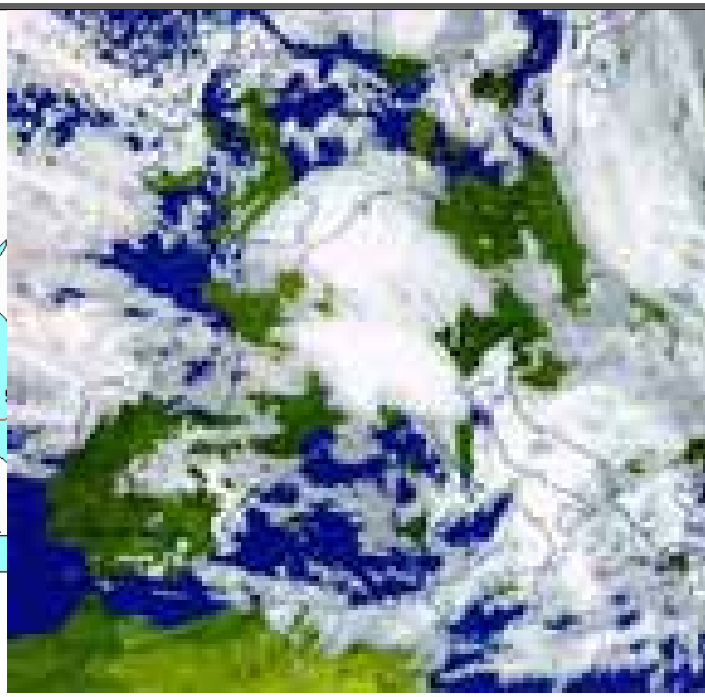
Event 1 - Storm Lothar (12/1999)

- **Extreme event**
  - Low pressure area over Atlantic Ocean covered Belgium, France, Switzerland and Southern Germany within 6 hours
  - Wind velocities>200 km/h
  - No effective warning
- **Losses**
  - 122 deaths in Europe
  - ~ 6 thousand million Euro damage in Europe



Event 1 - Storm Lothar (12/1999)

Effects on critical infrastructure and society

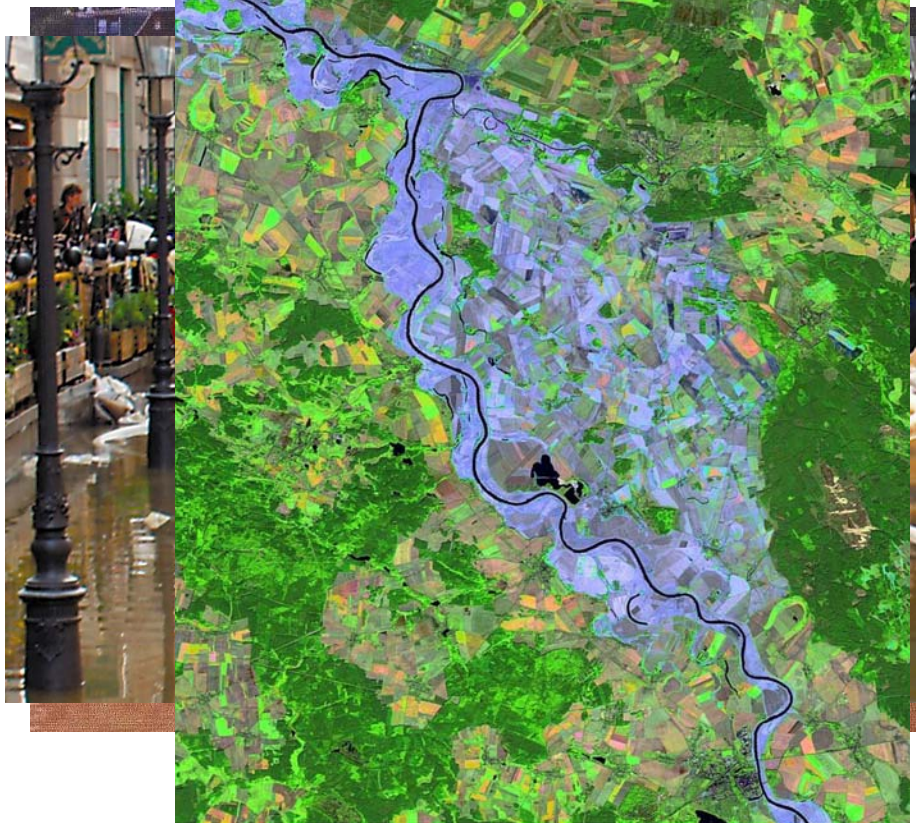
- Buildings, large forest areas and electricity supply heavily damage
- France: electricity blackout for 3 million people

Protection or substitution measures

- Small power generators establishe for energy supply substitution
- Storm resistant construction norms prevented damage on buildings/Cl in some countries

Event 2 - Elbe-Flood (08/2002)

- **Extreme event**
  - Heavy rainfalls in the upper gorges of the Elbe river (Czech Republic and Eastern Germany)
  - Strong floods occurred within a few days
- **Losses**
  - 38 deaths in Europe
  - Ca. 11.3 thousand million Euro damage in Europe



Event 2 - Elbe-Flood (08/2002)

- **Effects on critical infrastructure and society**
  - Heavily damaged public transport system

- **Protection or substitution measures**
  - Water supply secured by neighbourhood waterworks, emergency processing plants and distribution of bottled water
  - Last-minute emergency measures to protect cultur assets

Event 3 - Heat wave (07-08/2003)

- **Extreme Event**
  - Extreme high temperatures over 6 weeks in Middle and Southern Europe
  - No real cool downs during nights
  - Almost no rainfall during this period
- **Losses**
  - Ca. 20.000 deaths in Europe (excess mortality)
  - Ca. 10 thousand million Euro damage in Europe

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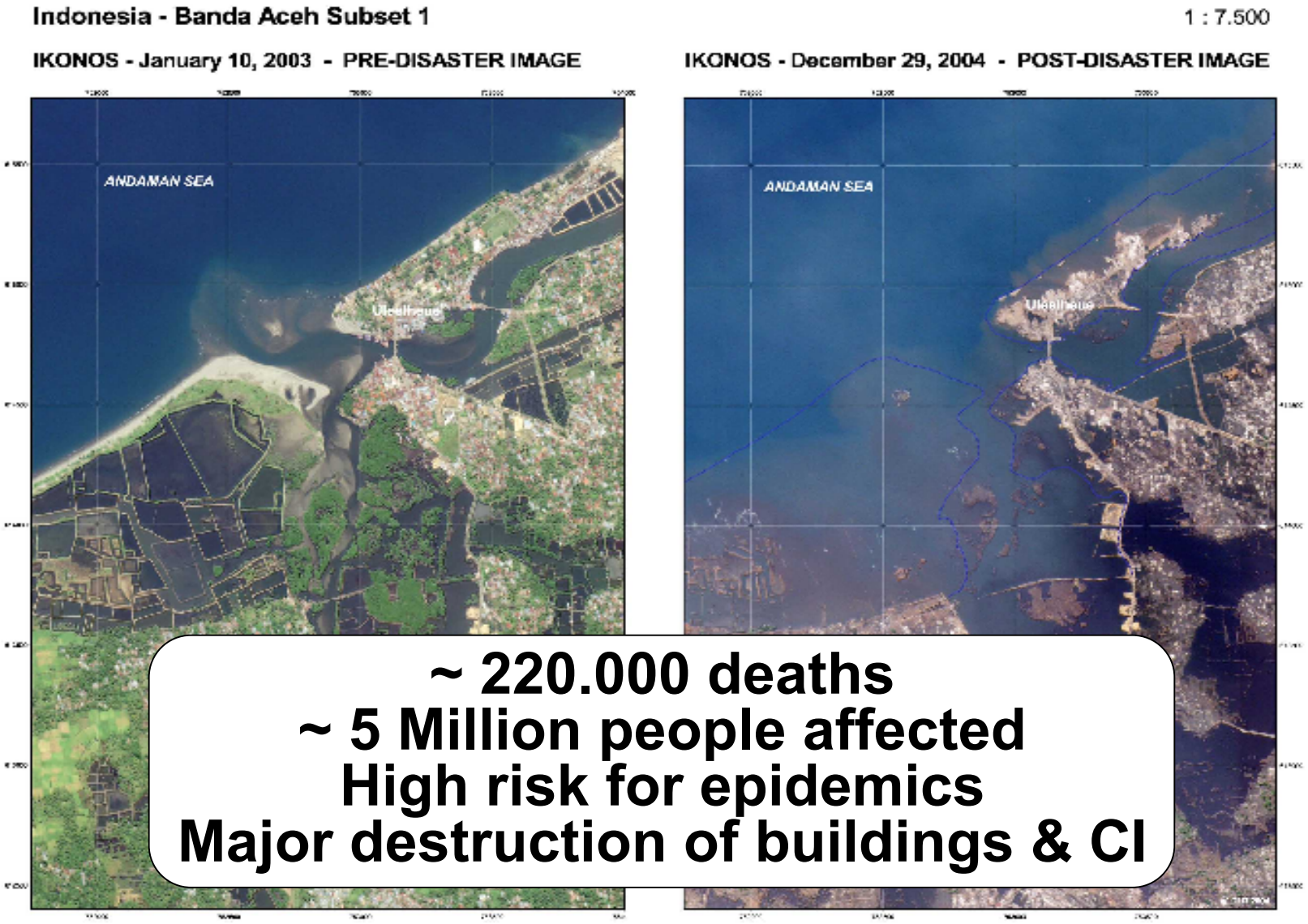
Event 3 - Heat wave (07-08/2003)

Tsunami South East Asia (12/2004)



Tsunami South East Asia (12/2004)

- **Internal and external disaster relief measures**
  - Substitution of critical infrastructure
    - Water purification and reconstruction of water wells
    - Emergency hospitals, medical supply, laboratories
    - Emergency power generators
    - Communication systems
    - Transportation systems

External disaster relief for CI substitution necessary

- **Need for preventive measures**
  - Early warning systems
  - Vulnerability analyses for critical infrastructures
  - Preventive planning (site selection and resistance
  - Public Private Networks

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Federal Office for Civil Protection and Disaster Response, Germany

Critical Infrastructure Protection (CIP) in Germany

- Centre for CIP established 08/2004
- Activities
  - Sensitisation of public authorities and of stakeholders
  - Risk and vulnerability analyses
  - Checklists, code of practice
  - Concept for basic protection
  - Strengthening self-protection capabilities
  - International cooperation → know-how transfer
- Acknowledgement
  - that additional CIP-costs affect the economic competitivity of private companies, but still are necessary
  - that preventive action and flexible and pragmatic protection concepts are more necessary than just legal frameworks
  - that 100 % protection is not possible

German CIP-Approach

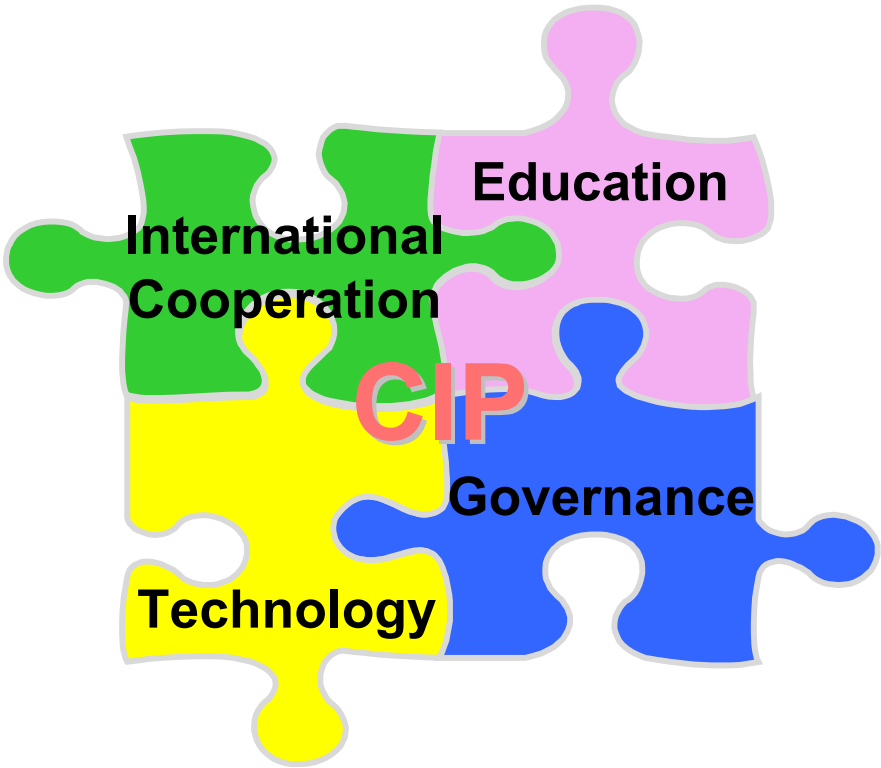
- **Interconnection between**
  - **a) Governance** solutions (preventive planning and laws)
  - **b) Educational** solutions (awareness raising and capacity building, security networks between all stakeholders, information, sensitisation, Public Private Partnership)
  - **c) Technical** solutions (standards, regulation)

- All three solutions should be in **due proportion** to provide effective and sustainable CIP → protection optimum
- Solutions are valid both for **developing** and **developed** countries
  → Proportion is dependent on weak points of **society** and of **development status**

Summary

- CI are vulnerable to natural disasters in all societies
- The trend of natural disasters increasing will have major impacts on CI in the future
- Main problems are key infrastructures, large supply networks and strong interdependencies
- Identification of risk areas is necessary to avoid or protect the location of CI sites and/or population
- National CI protection programmes (combining governance, education and technology efforts) necessary to reduce vulnerability
- International cooperation is needed for effective CIP

Thank you for your attention



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