Human health and climate change

UNFCCC expert meeting
on assessing the risk of loss and damage
associated with the adverse effects of climate change
26-28 March 2012, Tokyo, Japan

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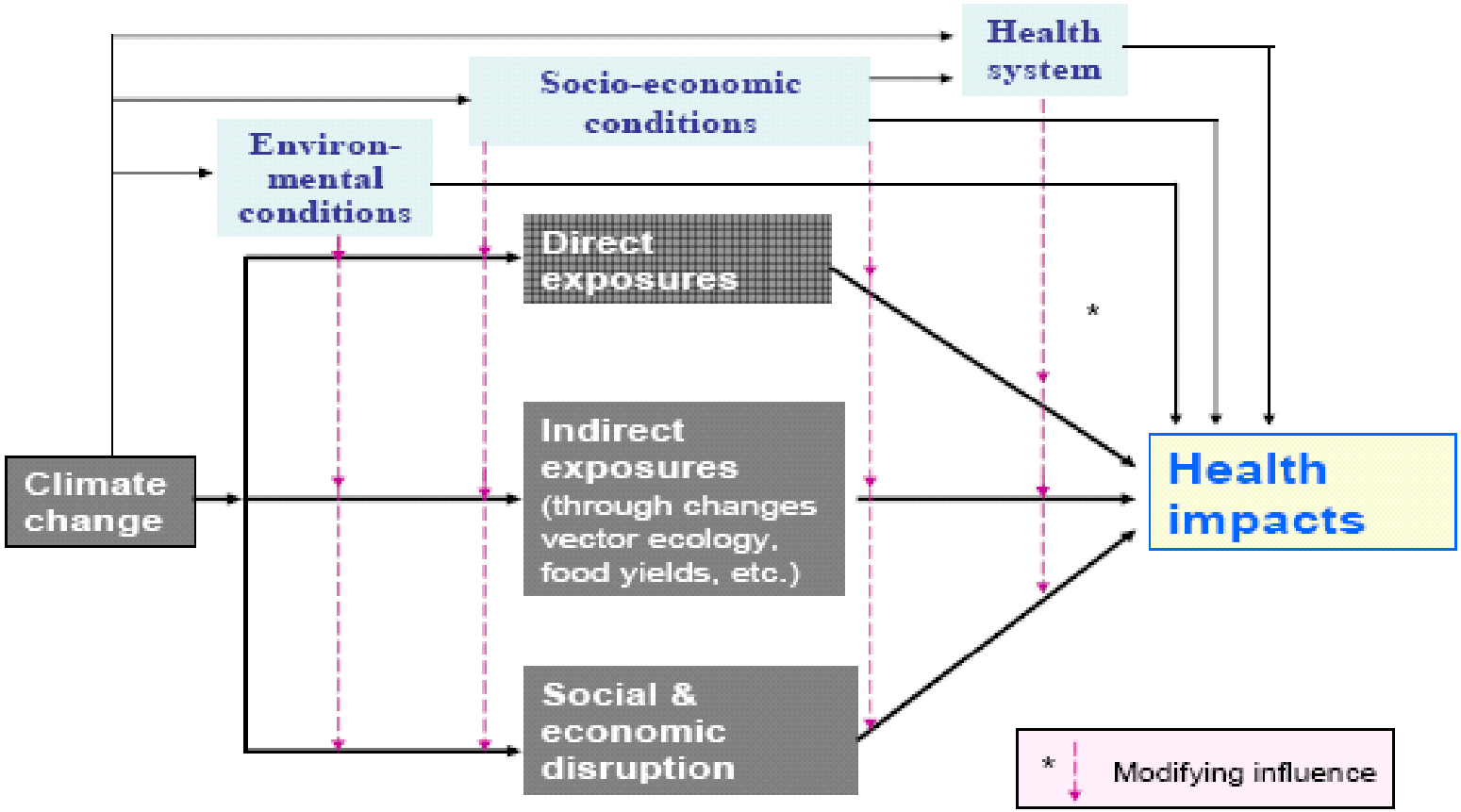
COP Work Programme 2012

- **Thematic area 1**: Assessing the risk of loss and damage associated with the adverse effects of climate change and the current knowledge on the same
- **Thematic area 2**: A range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration experience at all levels
- **Thematic area 3**: The role of the Convention in enhancing the implementation of approaches to address loss and damage associated with the adverse effects of climate change

Climate change and health impacts



Source: IPCC, 2007

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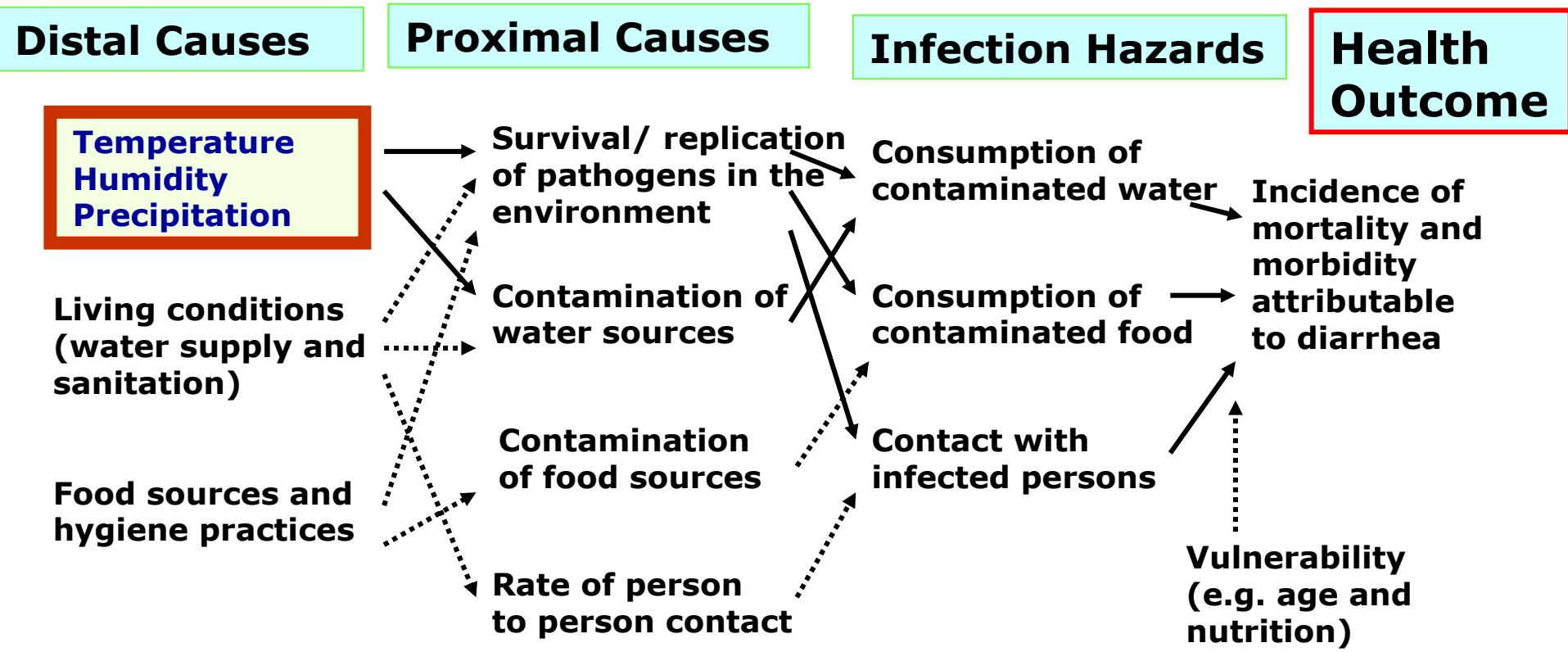
Climate change increases health vulnerability

Example: Diarrheal Disease



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Climate sensitive disease burden

Each year:

- Undernutrition kills 3.5 million
- Diarrhoea kills 2.2 million
- Malaria kills 900,000
- Extreme weather events kill 60,000
- >140,000 excess deaths

Weather-related disasters kill thousands in rich and poor countries

"It is *virtually certain* that increases in the frequency and magnitude of warm daily temperature extremes and decreases in cold extremes will occur in the 21st century on the global scale."

Draft Special report on extreme weather events (SREX) SPM, Pg 10

Russia 2010:
1 month heatwave (38 degrees+)
54,000 excess deaths (cf 2009)

'Mega-heatwaves' such as the 2003 and 2010 events broke the 500-yr long seasonal temperature records over approximately 50% of Europe. According to regional multi-model experiments, the probability of a summer experiencing 'mega-heatwaves' will increase by a factor of 5 to 10 within the next 40 years. Barriopedro et al Science 21 March 2011 10.1126/science.1201224

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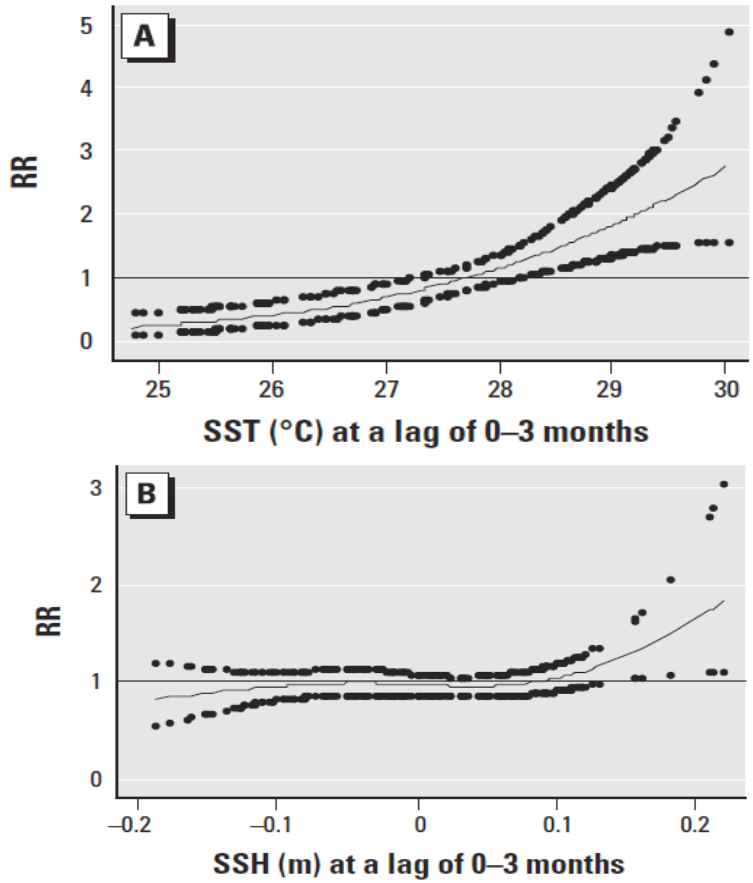
Infectious disease outbreaks are affected by multiple climate factors

"It is *very likely* that mean sea level rise will contribute to upward trends in extreme coastal high water levels in the future". Draft SREX SPM, Pg 12

"It is *likely* that the frequency of heavy precipitation … will increase in the 21st century over many areas of the globe. Draft SREX SPM, Pg 10

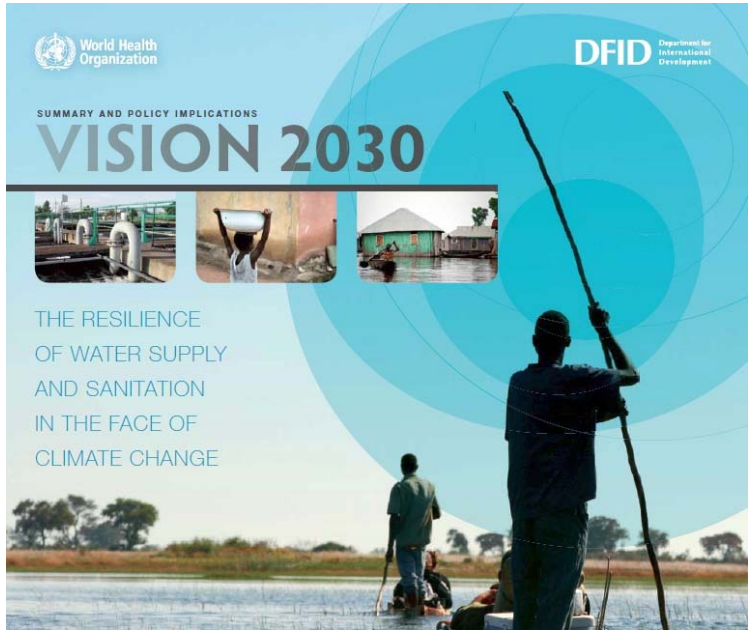


Cholera cases increased by 14% per 10-mm above average rainfall, and by 24% per 10-mm below, in Dhaka.

Increase in the frequency and intensity of droughts overloads health supporting systems

"There is *medium confidence* that droughts will intensify in the 21st century in some seasons and areas, due to reduced precipitation and/or increased evapotranspiration."

Draft SREX SPM, Pg 11



"Major changes in policy and planning are needed if ongoing and future investments are not to be wasted."

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Health risks from climate change

- The causal links between environmental change and human health are complex because these are often indirect, displaced in space and time, and dependent on a number of modifying forces
- Climate change has a greater influence on the health and well-being of poor and vulnerable populations.

Damage to health

- *Air:* Over 70 000 excess deaths were recorded in the extreme heat of summer 2003 in Europe. By the second half of this century, such temperatures will be the norm.
- *Shelter.* Unless protection is improved, by 2080 sea level rise is expected to lead to a 10-fold increase in the number of people exposed to coastal flooding, to more than 100 million people a year, and increase frequency of inland floods by several times.
- *Freedom from disease.* Climate change is projected to increase the population at risk of malaria in Africa by 170 million by 2030, and the global population at risk of dengue by 2 billion by the 2080s.
- *Health facilities are often damaged or destroyed in weather related disasters, hampering the ability to provide emergency health services and primary health care to populations in need.*

Estimating climate change adaptation costs

Table 1. Estimated global annual cost of climate change adaptation (US$ billion):

Sector	World Bank (2005 prices)	UNFCCC (2007 prices)
Period or time point	**2010-2050**	**2030**
Health sector	**2.0**	**3.8 - 4.4**
Water supply	13.7	9.0 - 11.0
Agriculture, forestry and fisheries	7.6	14.0
Extreme weather	6.7	-
Total health-related	**30.0**	**26.8 - 29.4**
Total (all)	**89.6**	**56.8 - 193.4**
% health-related	**33.4%**	**13.8 - 47.1%**

Health sector knowledge gap

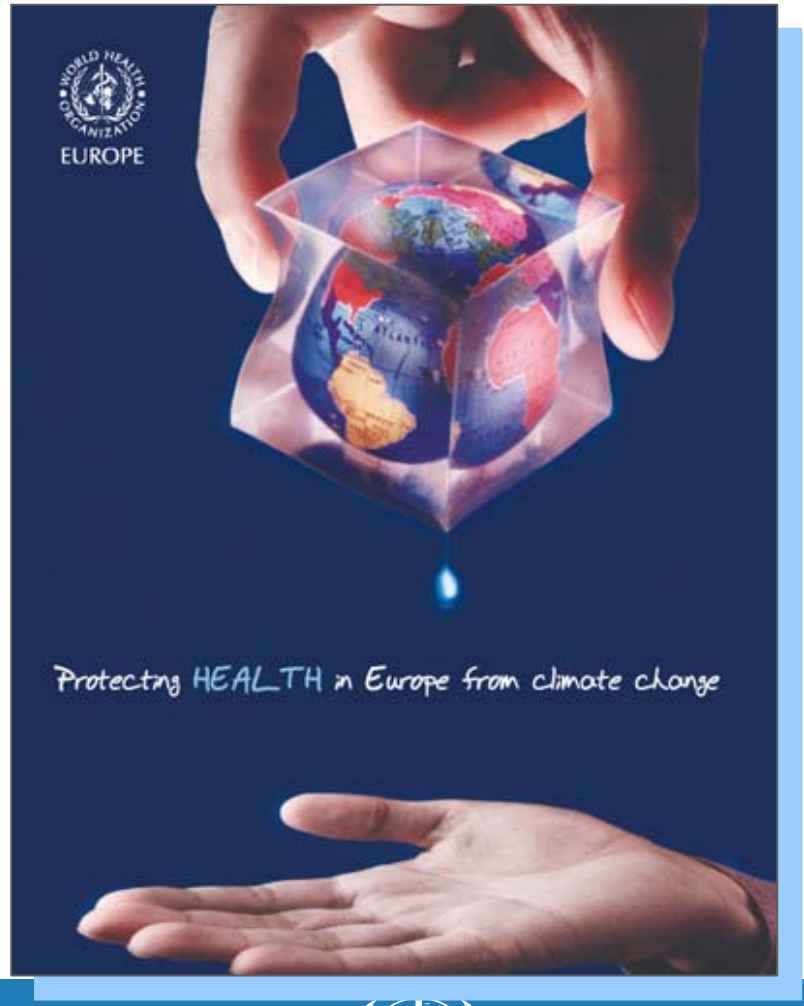
- ? Economic losses from health impacts
  - Cost of premature death
  - Impact on people's productive capacity
  - Burden by the impinged health system to deal with increasing caseload

- Costed health sector adaptation plan:
  - Bangladesh: USD18 M/year – average annual adaptation cost from 2010-2050
  - Ghana: USD350M by 2020

Health sector actions

- Global damage cost study
- Damage cost tool

  - Implementation is country-led and enables a country to assess costs based on its specific needs



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Damage Cost Tool

- How to estimate
  - Health related damage costs associated with the unmitigated health impacts of climate change; and
  - Adaptation costs to protect health from climate change
- 3 Sections
  - Sec I: general info
  - Sec II: instructions on data needs (where to collect, skills, analysis and presentation examples)
  - Sec III: manual describing methods, data requirements for economic analysis, excel sheet w/algorithm for economic cost estimation

Decision making support tools

- Impact Analysis
  - Burden of disease assessment
  - Risk or vulnerability assessment
  - Intervention impact assessment
  - Ecological 'foot printing'
  - Sustainability assessment
  - Network (causal chain) analysis
- Economic analysis
  - Damage cost assessment (costs of no action or doing nothing)
  - Cost of alternative policy options
  - Health economic evaluation
- Planning tools
  - Activity-based costing
  - Budgeting
  - Monitoring framework (e.g., logical framework)
  - SWOT analysis
  - Multi-criteria analysis
- Policy studies
  - Project evaluation
  - Strategic assessment
  - Stakeholder analysis

Approaches in economic analysis

- **Health damage costs** (cost of inaction) = "the costs associated with climate change in the absence of planned adaptation or mitigation responses"
- **Health adaptation costs** = "the costs of taking measures to reduce or to cope with additional impacts arising as a result of climate change"
- **Health economic evaluation studies** – compare the costs and benefits of health adaptation measures, estimating a return on spending in the form of a cost effectiveness ratio (such as cost per averted death) or a cost-benefit ratio (monetary return per currency unit spent)

WHO proposal (1)

- Quantification of loss in terms of well-being and household resilience.
- Estimation of interactions and linkages between climate-change effects and impacts on human populations, with an emphasis on the level and equity of distribution of productivity and wealth impacts.
- Analysis of impact variation between countries with similar climate change patterns can serve as a measure to monitor vulnerability and inequities between countries, and as an indicator for how different countries at different stages of economic development are affected by climate change.
- Estimation of losses in health infrastructure and to health systems from the impact of climate events.

Approaches to address risk of loss and damage associated with adverse effects of climate change

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Implement a "minimum package" for health resilience to climate change

Multisectoral Governance and coordination:
- Health input on env., climate, devp. Policy, and vice versa.

Capacity building:
- Institutional, professional capacity, and resource mobilization in response to local assessment

Research:
- Stakeholder driven research, focusing on cost effectiveness, equity and sustainability

Awareness raising and social mobilization:
- Communication for behavioural impact from national to community level

Baseline Capacity and Risk Assessments:
- Climate and health vulnerability and adaptation assessments
- Assessments of programme capacity
- Definition of monitoring and evaluation frameworks

Integrated Environment and Health Surveillance:
- Risk mapping and establishment of early warning systems for climate sensitive risks:
- Integration of environment and health monitoring, and response plans

Environmental Management:
- Health impact assessment for decisions in other sectors
- Management of ecosystem services, and risk factors to health

Scale-up and climate proofing of interventions for climate-sensitive health impacts:
- Integrated vector management for vector-borne disease
- Water treatment and safe storage
- Legislation and enforcement for air quality

Strengthening of health capacities in disaster management
- Inclusion of health in DRR and response plans
- Resilient and sustainable provision of energy and water to health facilities

Vulnerability and adaptation assessment

- Identification of the human health risks for current climate variability and recent climate change, and the public health policies and programmes to address the risks.
- Projection of future health risks and impacts under climate change.
- Identification and prioritization of policies and programmes to address current and projected health risks.
- Establishment of a process for monitoring and managing the health risks of climate change.

Enhanced capacity to address public health emergencies

- Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters
  - Political commitment
  - Disaster risk identification
  - Knowledge management
  - Disaster risk reduction
  - Preparedness for effective response

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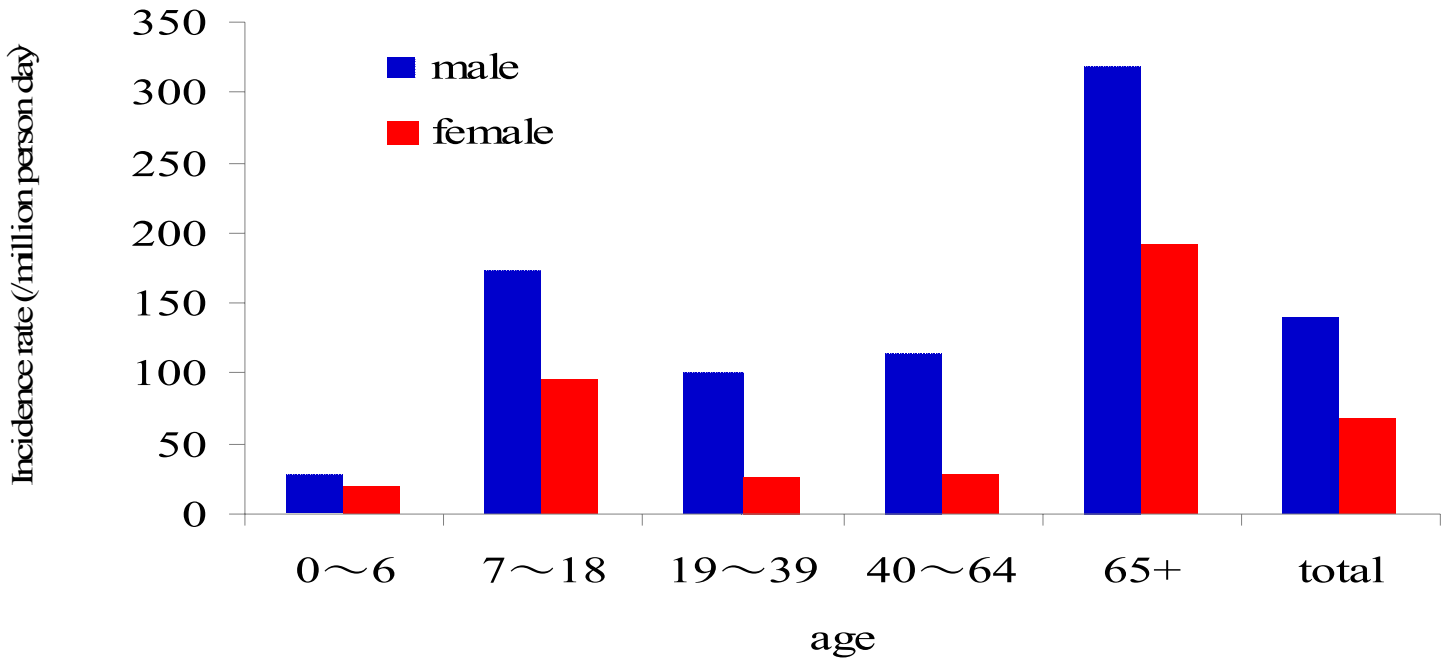
Strengthened disease surveillance



Source: M. Ono, NIES, 2007 Japan

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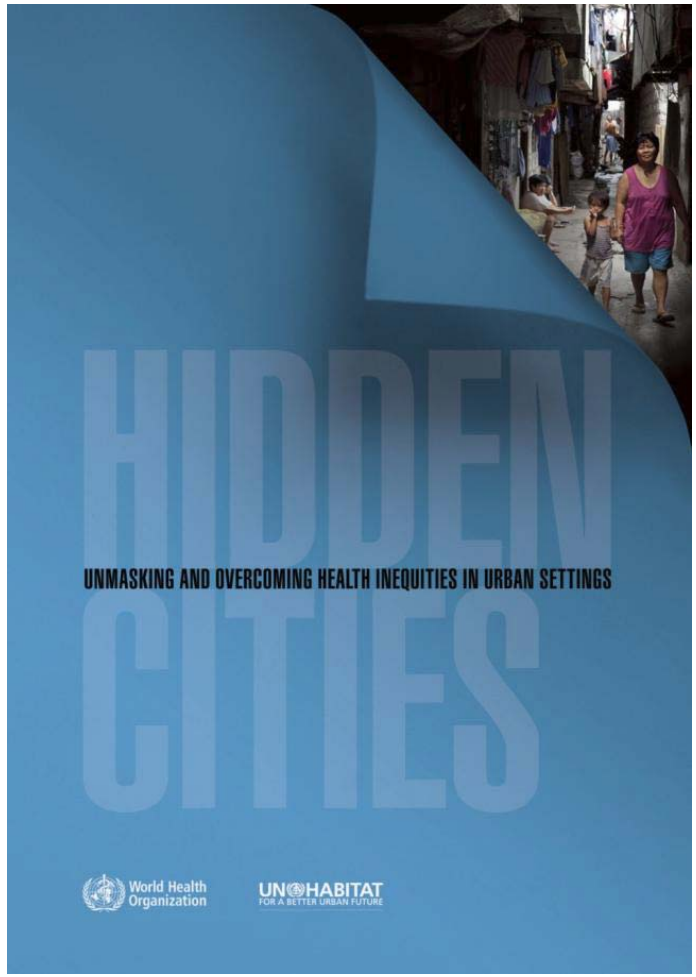
Local public health interventions to build community resilience

- Work on full spectrum of health determinants
  - Reduce environmental hazards
  - Improve social determinants of health
  - Maintain prevention and control programmes
- Reduce health inequities in cities



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The role of the Convention

- Leadership and advocacy
  - International investment in health adaptation is currently less than 0.5% of expected health damage costs.

WHO proposal (2)

- Results-based approach to fulfill the commitment in Article 4.1 (f) of UNFCCC
- Continuing to encourage countries to include health as one of the priorities for national adaptation planning
- Supporting health actors in assessment and response

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WHO Commitment

- To help achieve the goals of the UNFCCC
- To provide technical support for health protection from climate change under the mechanisms agreed by UNFCCC parties

Thank you

For more information:

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Climate Change
http://www.who.int/globalchange/climate/

Health Action in Crisis
http://www.who.int/hac/

WHO Centre for Health Development (WHO Kobe Centre)
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WHO Regional Office for Europe (WHO EURO) http://www.euro.who.int/en/home