Environmental Health in the Western Pacific Region

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Issues, Challenges and Future Directions

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Western Pacific Region

Outlines:

- Introduction
- Environmental Burdens of Diseases
- Some insights:
  - Air Pollution
  - Water Pollution
  - Chemicals
  - Occupational Health
- Roles and Functions of WHO-WPRO in Health and the Environment Programmes
- Conclusion

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Introduction

Why Health and the Environment by WHO ?

WHO CONSTITUTION:

- broad definition of health ~ a state of complete physical, mental, and social well-being and not merely the absence of disease;
  - disease ~ trouble or a condition of the living body or one of its parts that impairs the performance of a vital function;
- We all aim safe ~ free from harm or risk; secure from threat of danger, harm and loss; and zero risk

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The world we live today – reality

- Economic growth – environment – health interaction
- Rapid economic growth (production, consumption) - impacts on the state of the environment;
- Environmental change beyond the carrying capacity – pollution, degradation, contamination;
- Environmental risks and hazards –
  - Effects on health ~ disease
- Climate change aggravate the consequence;

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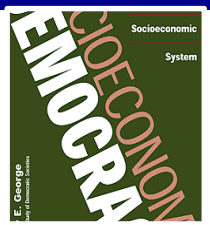
Relative importance of factors shaping health

Behaviour

- 30-40%

Socio-economic conditions

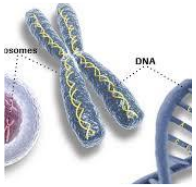


Environment

- 10 – 20 %

Genetic

15 – 30 %



Health care

10- 20 %

Source: 1993 – M = McGinnis and Foege, JAMA, 1993, 270, 2207-2212; 2002 - McGinnis, Russo, Knickman, 2002, Health Affairs, 21,3,83; HPC – "Healthy, Productive Canada, Final Report of the Senate Subcommittee on Population Health. June 2009; CHR = County Health Rankiings, 2010 www.countyhealthrankings.org/

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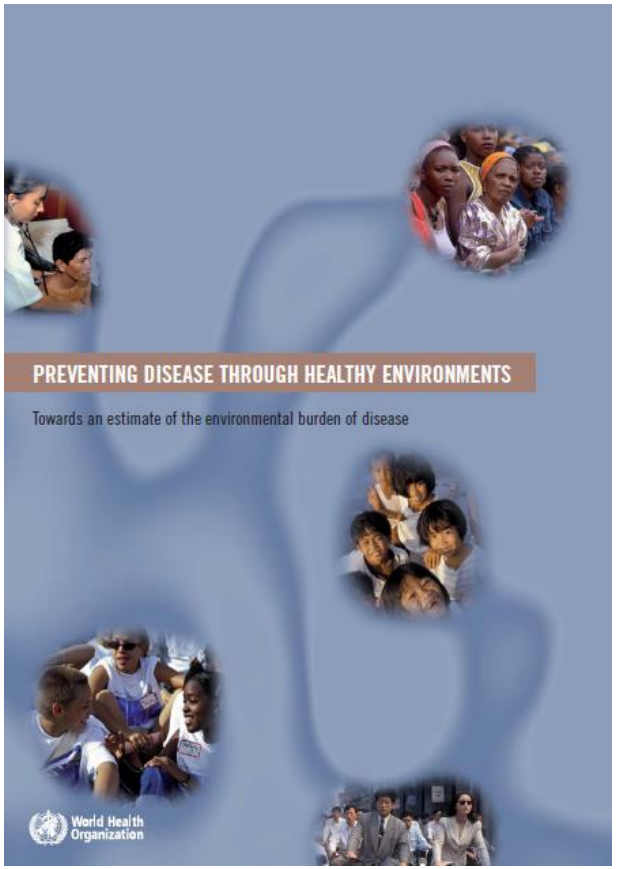
Environmental Burdens of Diseases



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ENVIRONMETAL HEALTH RISK

Traditional Risk

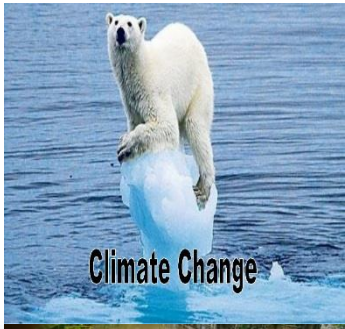
Modern Risk

Unfinished Agenda

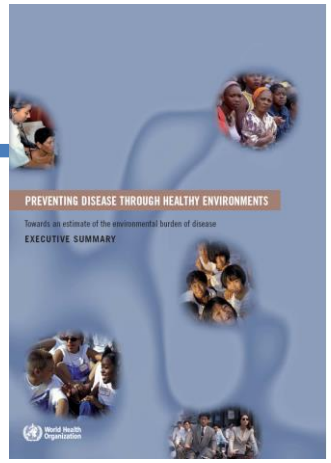
- Water and Sanitation
- Poor living condition
- Poverty
- Vector borne diseases

Emerging Agenda

- Toxic substances
- Environmental Pollution
- Resources depletion
- Industrialization
- Urbanization
- Climate Change
- Globalization
- Technology advancement



Consequences



Southeast and the Western Pacific (2006)

- Approximately 6 million deaths or 26% total deaths
- About 146 million disability adjusted life years (DALYs) or 23% of DALYs lost
- ***11 deaths every minute from environmental-related causes***
- Unevenly Distributed Within and Among Countries

Not a burden that can just be addressed by more hospitals, more doctors and cheaper medicines

Preventing disease through healthy environments

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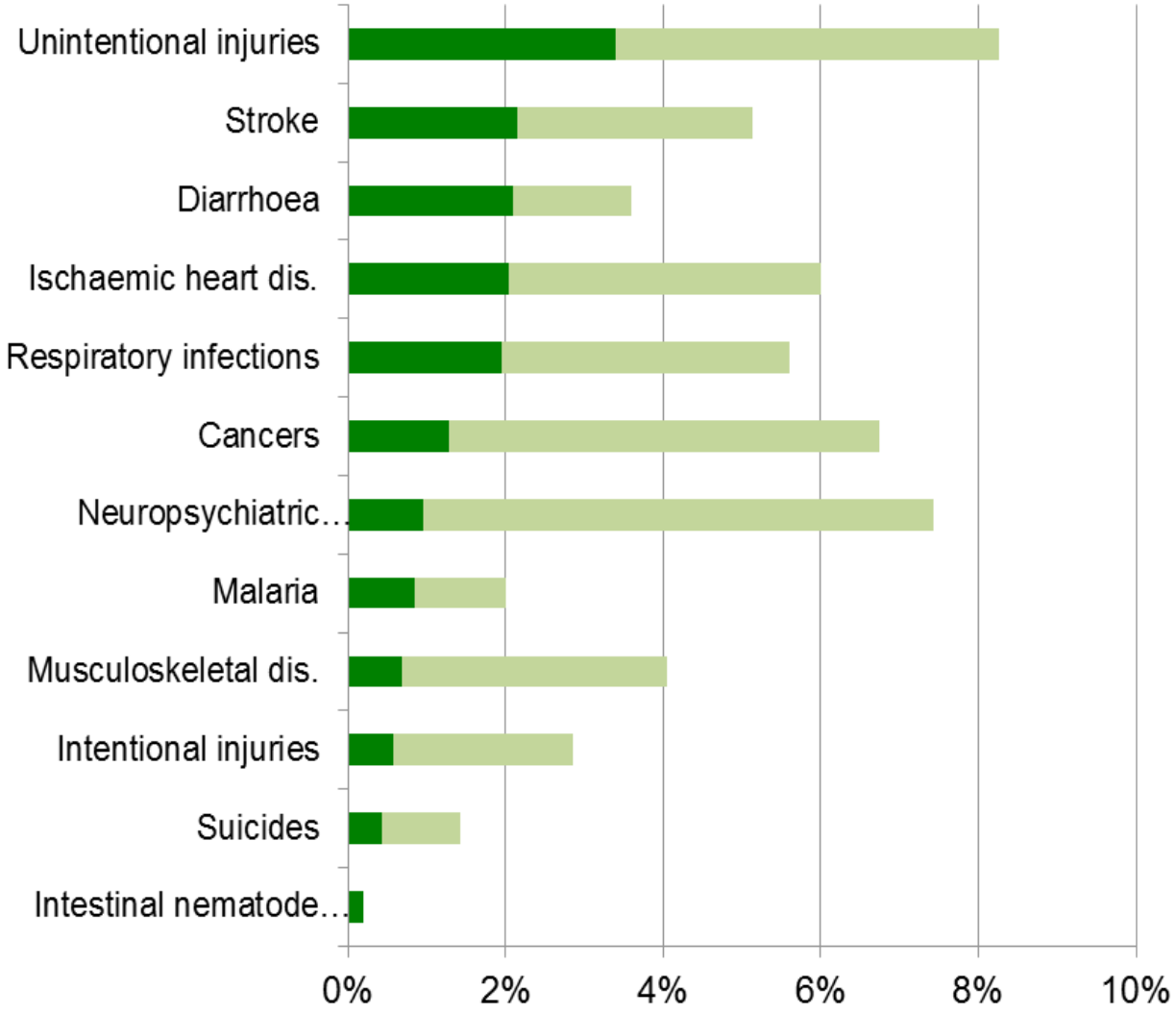
Diseases with largest environmental contributions, global (preliminary draft, currently being updated)



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EARLY ENVIRONMENTAL ORIGINS OF DISEASE

WE ARE BEGINNING TO UNDERSTAND THE IMPORTANT AND DIFFERING ROLES ENVIRONMENTAL HAZARDS PLAY THROUGHOUT THE LIFE COURSE

- Concern is growing about the environmental origin of diseases and developmental problems, especially in children.
- "Critical windows of vulnerability"

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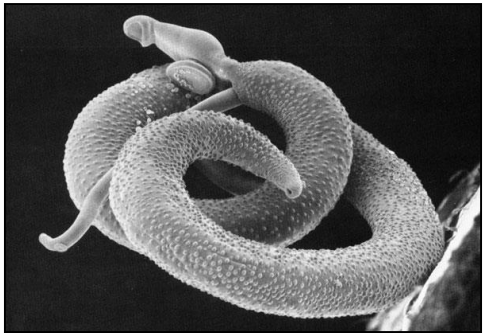
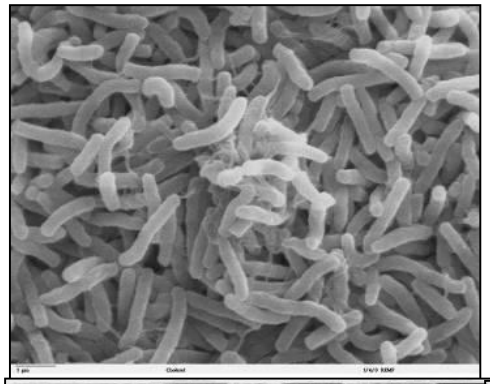
Water and Sanitation

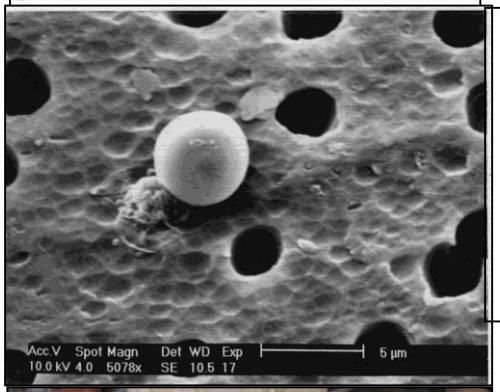


Electron microscope image of a pair of Schistosoma mansoni

(Credit: Davies Laboratory, Uniformed Services University)



Cholera



Electron microscope image of a single Cryptosporidium oocyst

(Credit: Australian Flow Cytometry Group and Macquarie University)

Arsenicosis

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Global Burden of Diarrhoeal Disease from Water, Sanitation and Hygiene

- Studies done on 145 low- and middle-income countries (2012 data and using new global estimates of total mortality):
  - ~ **only 19%** of the world's population washes hands with soap after contact with excreta;
  - **10-15 %** reduction in diarrhoea (e.g. 10-15%) through use of basic improved water or sanitation facilities (source may be already contaminated)
  - **Diarrhoea can be reduced significantly** if water **quality can be ensured up to the point-of-consumption**. Effective and consistent application of household water treatment and safe storage can reduce diarrheal disease by 28% to 45%
  - **Major diarrhoea reductions (e.g. 70-80%)** can be achieved by transitioning to services that confer **safe and continuous piped water supply**
  - **Handwashing** reduces the risk of diarrhoeal disease by **40%**, (still not sure).

Unsafe Drinking Water and Lack of Sanitation

- 2014 WHO and UNICEF estimated that:
  - 137 million people in WPR with no access to improved drinking water sources,
  - 547 million with no access to improved sanitation facilities

- 2012 WHO estimated that:
  - annually 842,000 million diarrhoea deaths (DD):
    - 502,000 (60%) DD from inadequate drinking water,
    - 280,000 DD from inadequate sanitation,
    - 297,000 DD from inadequate hand hygiene;

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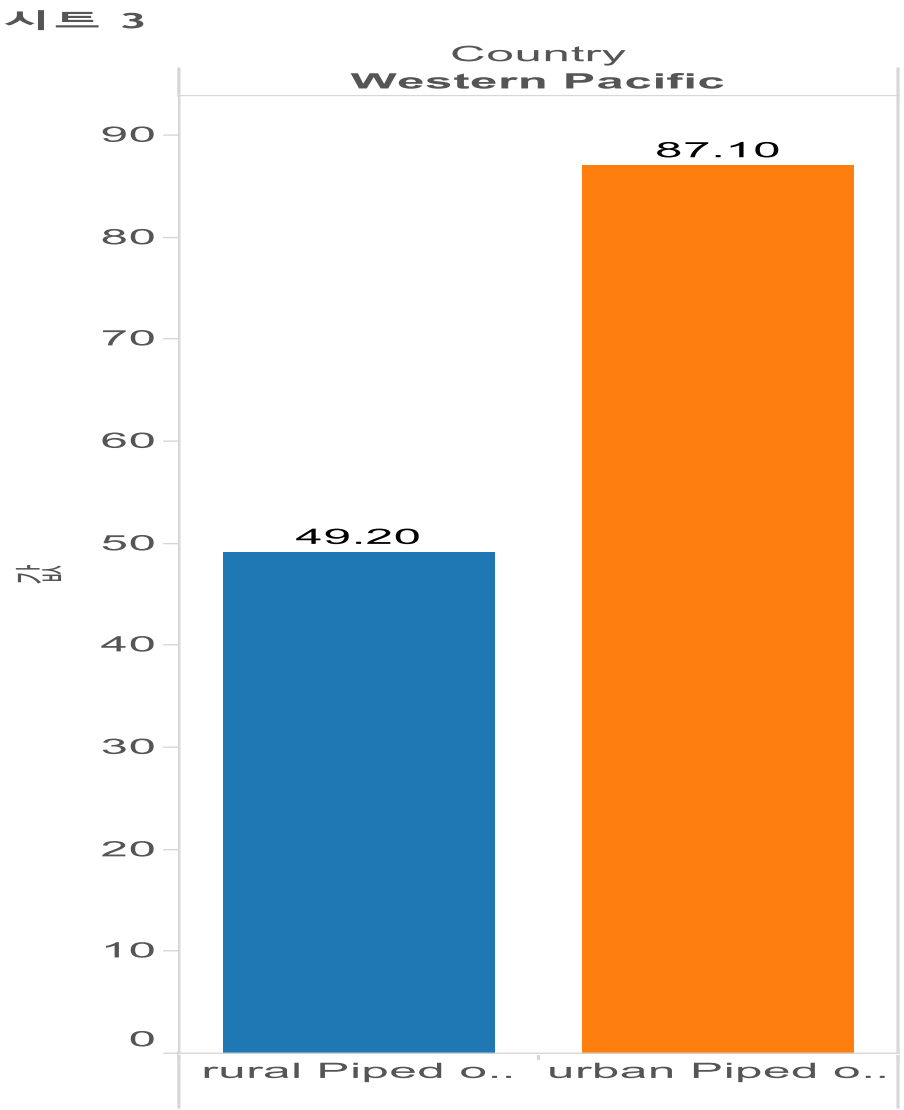
Also, there are large difference between urban and rural areas



Access to piped water on premises varies : 87% in urban and only 49% in rural areas.

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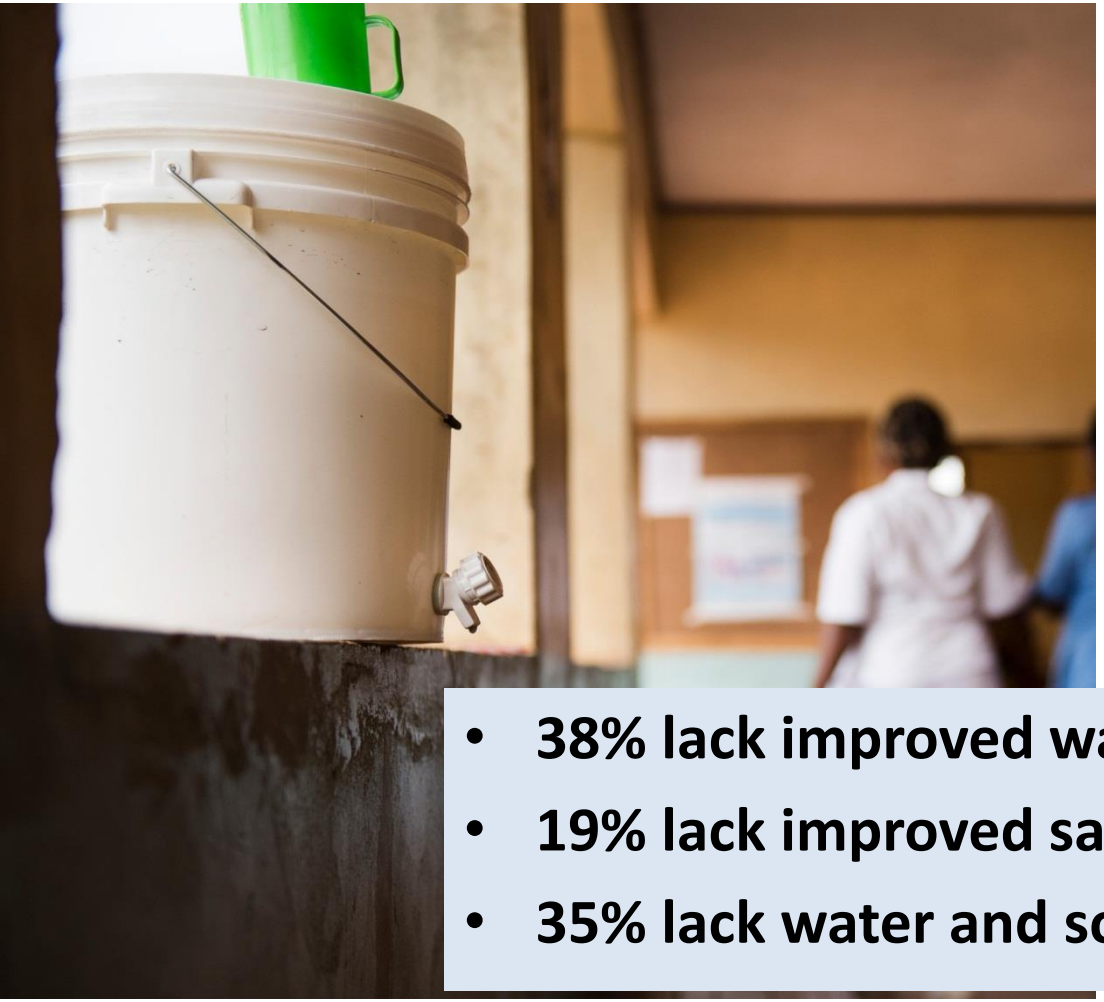
Health Care Facilities



- **38% lack improved water sources**
- **19% lack improved sanitation**
- **35% lack water and soap**

Water, sanitation and hygiene in health care facilities
Status in low- and middle-income countries and way forward

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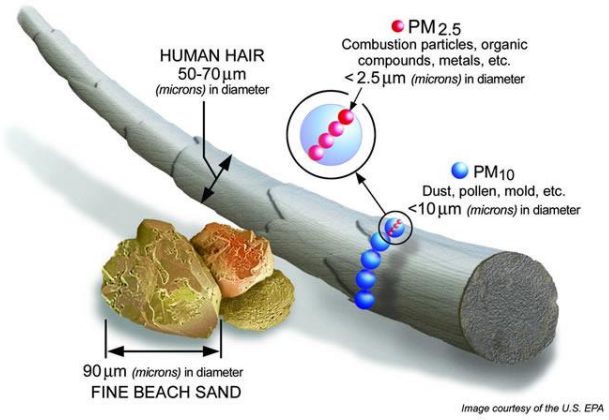
Air pollution

On 25 March 2014 WHO Reported

- Air pollution is now the world's largest single environmental health risk
- Studies in 2012 found out that around 7 million people died due to air pollution: 4.3 mil indoor air pollution and 3.7 mil due to outdoor air pollution
- **One in eight of total global deaths is caused by air pollution**
  - 41% of the deaths are in the Western Pacific Region



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Air Pollution

Facts on Air Pollution by WHO:

1. Risks to **health even at relatively low levels**;
2. Cross borders - transboundary
3. Strongly associated with stroke, heart and respiratory diseases and cancer, and with **maternal and child health**.
   a) Over **50% of pneumonia deaths in children under 5 years of age** - particulate matter inhaled from burning of solid fuels in the home,
   b) 1/5 of deaths from stroke and ischaemic heart disease –air pollution main risk factor.
4. **IARC** identified air pollution as a whole, as well as the **fine particles** that are present in air pollution (PM2.5), as a cause of **lung cancer**.
5. IARC had already classified **diesel exhaust and coal smoke** (two main components of ambient and indoor air pollution) as **carcinogens**.

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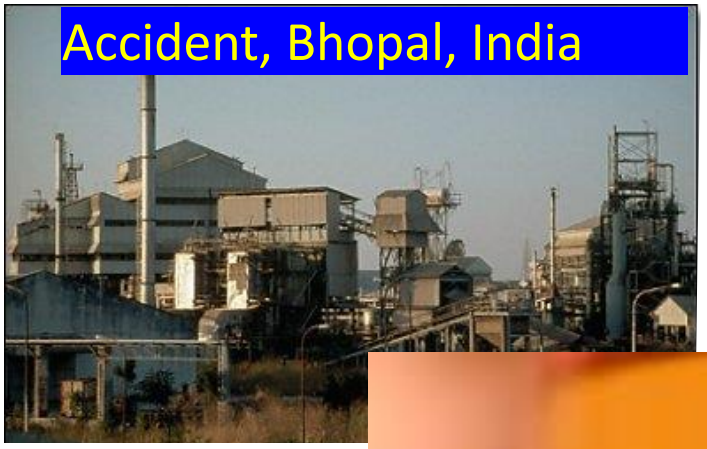
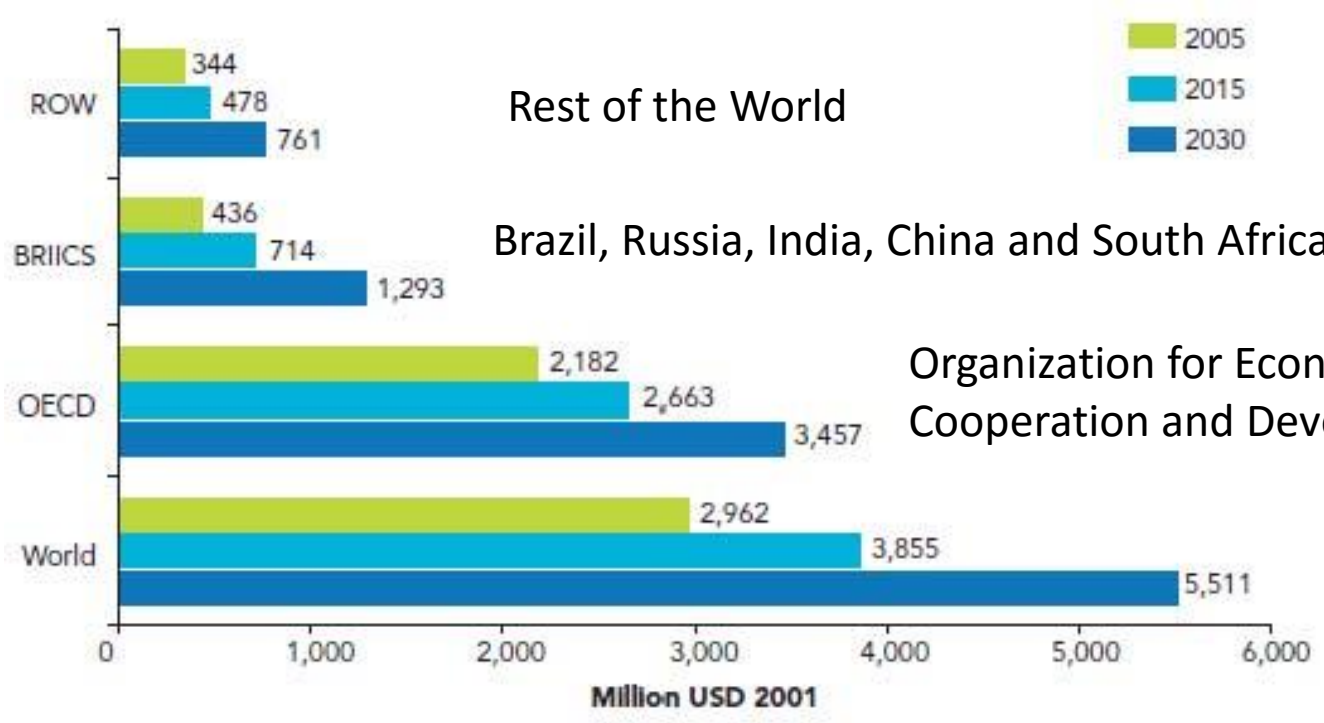
Accident, Bhopal, India



Outlook - World chemical production due to double between 2005 and 2030



Rest of the World

Brazil, Russia, India, China and South Africa

Organization for Economic Cooperation and Development

Source: OECD, 2008b [3]

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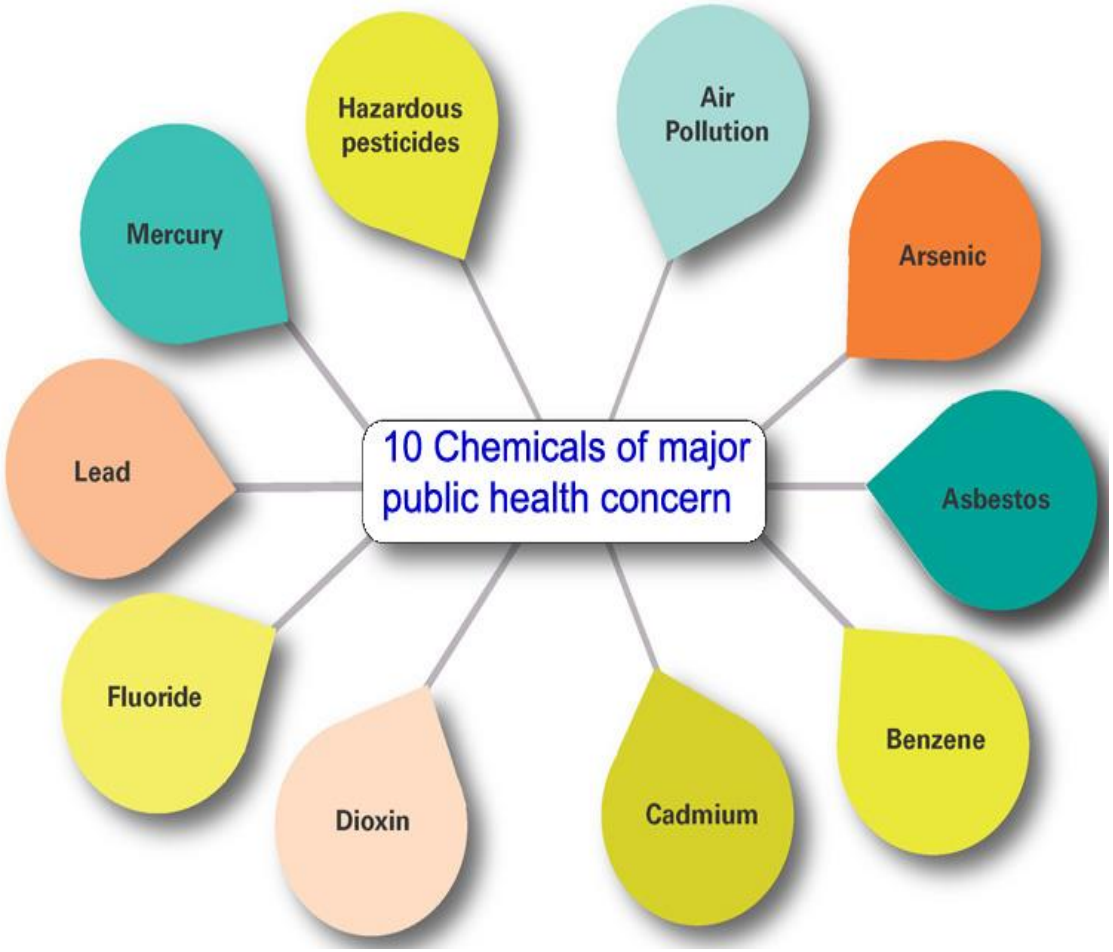
Chemical Exposures



- Chemical exposures cause loss of 7.4 million years of healthy life per year.
- Unintentional poisoning causes >350,000 deaths
  - >94% occur in low- and middle-income countries

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Climate Change

Photo source: WHO-WPRO

Photo source: Guilberto Borongan

Photo source: WHO Mongolia

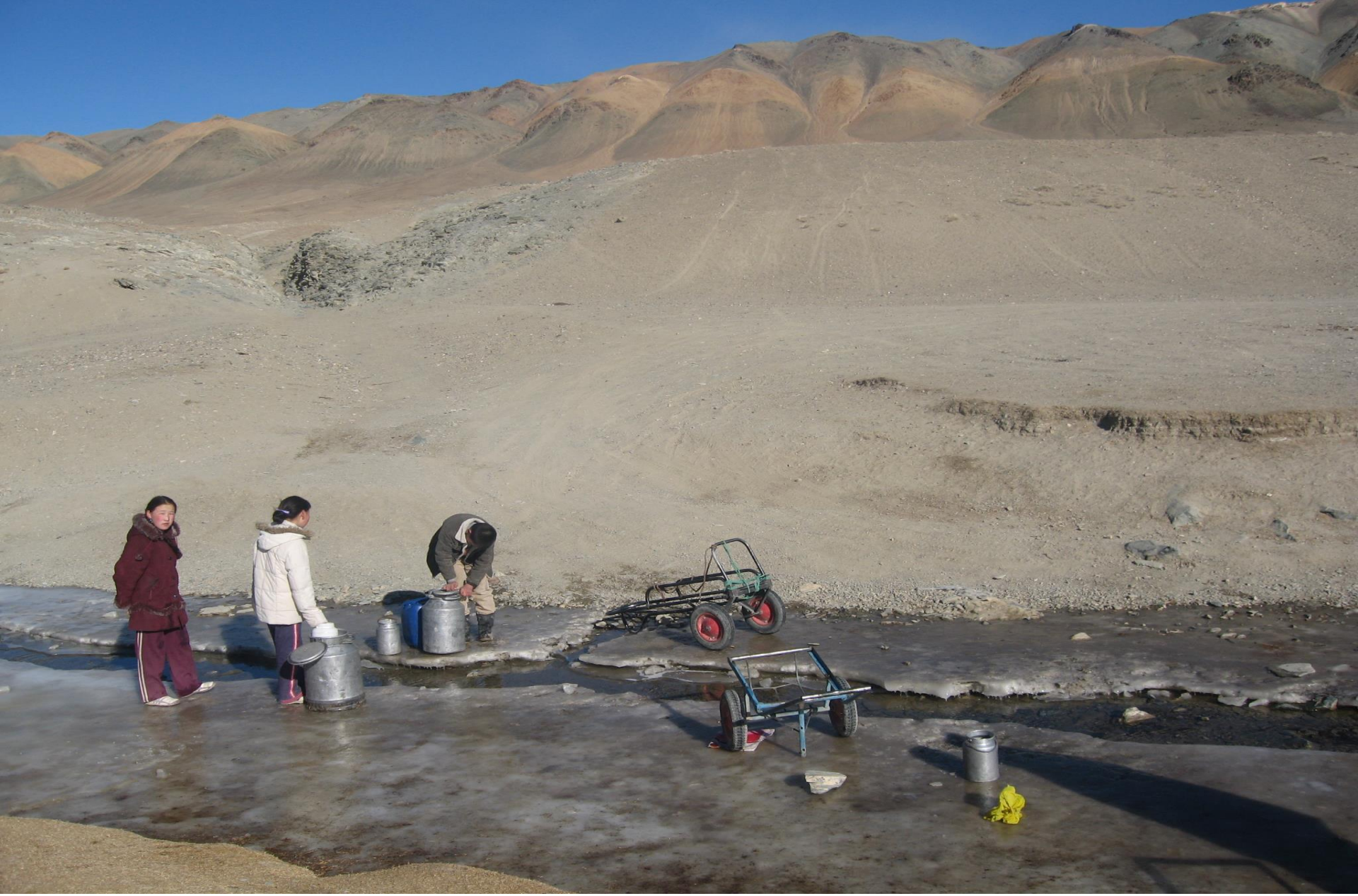


Photo source: WHO Mongolia

How Climate Change Can Rattle the Foundations of Public Health

Posted: 09/15/2014 11:14 am EDT Updated: 09/15/2014 11:59 am EDT

As the Ebola Zaire virus -- one of the deadliest pathogens on earth -- continues to ravage

This is what Dr Margaret Chan, Director General of WHO says:

For public health, climate change is the defining issue for the 21st century.

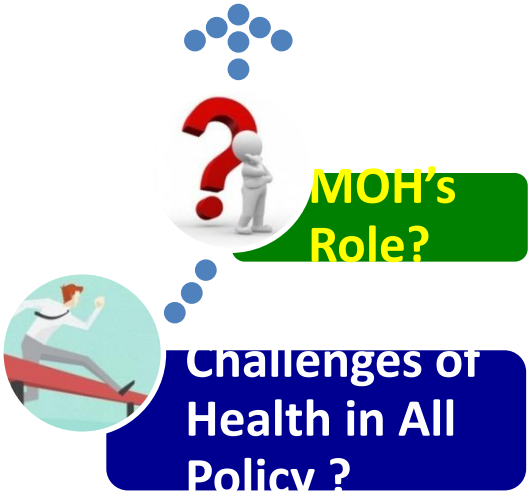
- Climate and weather variables affect the air people breathe, the food they eat, the water they drink, and the chances that they will get infected with a life-threatening infectious disease.
- Signals about what human activities have done to the environment are becoming increasingly shrill.
- Records for extreme weather events are being broken a record number of times.

The Changing Context

Changing role of Ministries of Health

"(The) toxic combination of bad policies, economics, and politics is…. Responsible… for poor health" WHO Commission on Social Determinants of Health

- WHO Global Programme of Work (2014-2019) acknowledges that:
  - Health is beyond health sector
  - Many environmental determinants of health are beyond the health sector's roles and responsibility
- Recognises that:
  - Agenda for global health increasingly requires multi-sectoral responses;
- Hence:
  - Role of the ministry of health is expanded, from a primary preoccupation with the provision and financing of health services, to becoming a broker and interlocutor with other parts of government.
- Additional Roles of the Ministries of Health:
  - Steer, regulate and negotiate with a wide range of partners in an increasingly complex environment
- For Health the Environment:
  - Active engagement of the health sectors with other sectors to deal with issues that have a major impact on health, such as trade, agriculture, energy or the environment.



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Environmental Health Management in Countries

- **The roles and responsibilities of various government agencies**
  - **EH management activities are part of the operational policies and strategies of various government agencies**

- **Only a few of environmental health related laws are within the legislative powers of Ministry of Health**

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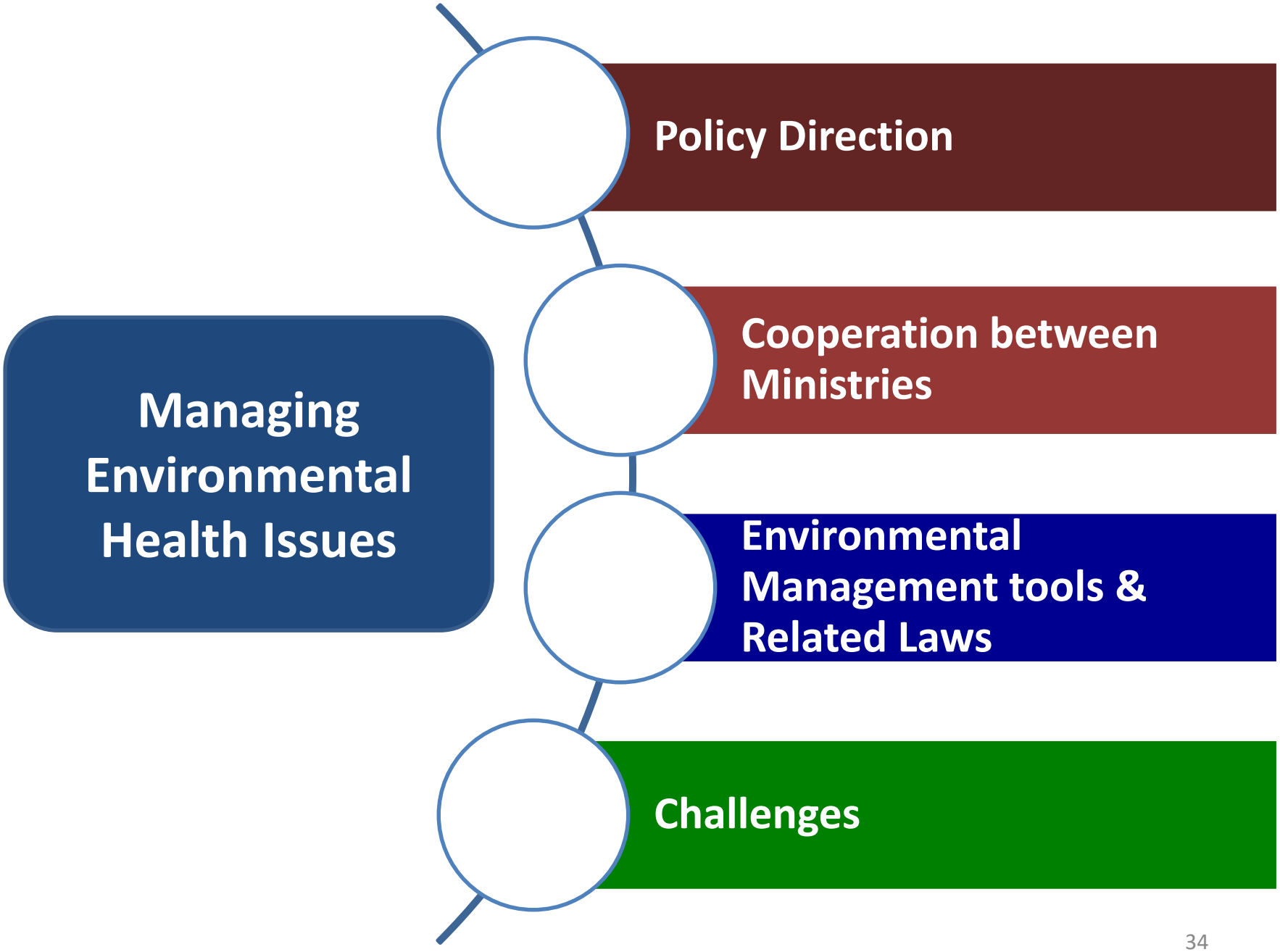
WHO Work in Health and the Environment


Managing Environmental Health Issues
Policy Direction
Cooperation between Ministries
Environmental Management tools & Related Laws
Challenges

Roles of WHO and Expected Outputs

- Providing leadership on matters critical to health and engaging in partnerships where joint action is needed;
  - **Country capacity strengthened** to assess health risks, develop and implement policies, strategies or regulations for the prevention, mitigation and management of the health impacts of environmental risks.
  - **Public health incorporated in (regional and national plans)**.
  - **Public health incorporated in multilateral agreements and conventions on the environment and sustainable development**.

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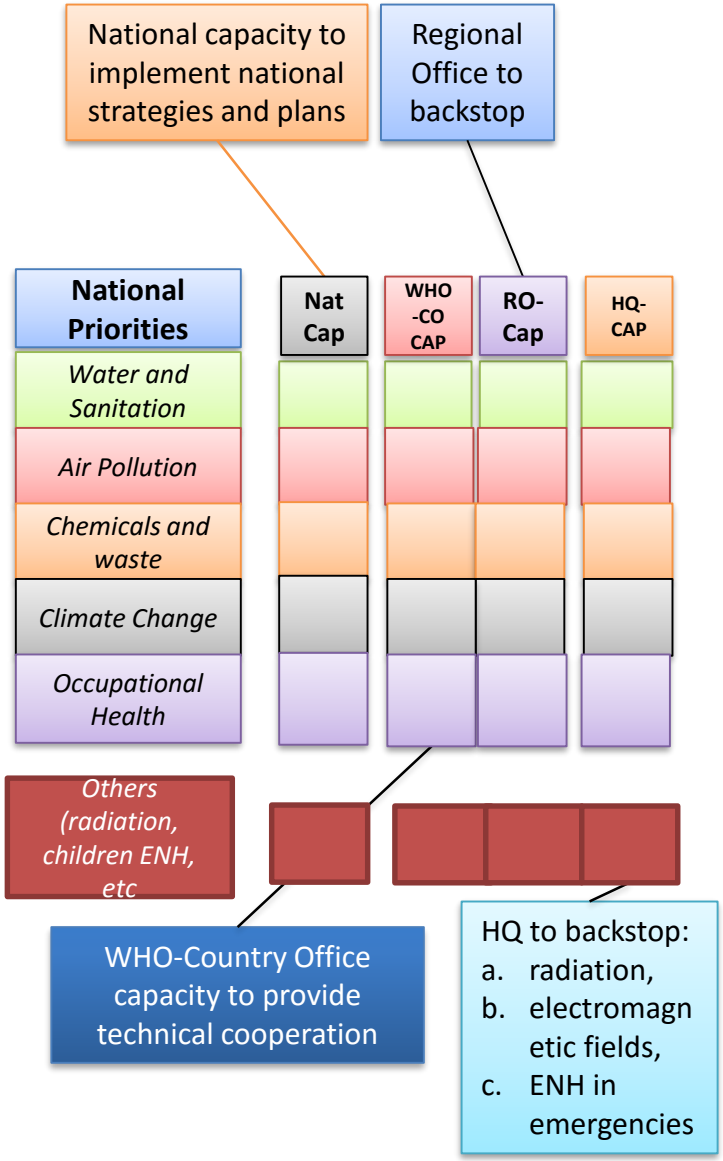
Basis for Environmental Health Programme in WHO-WPRO

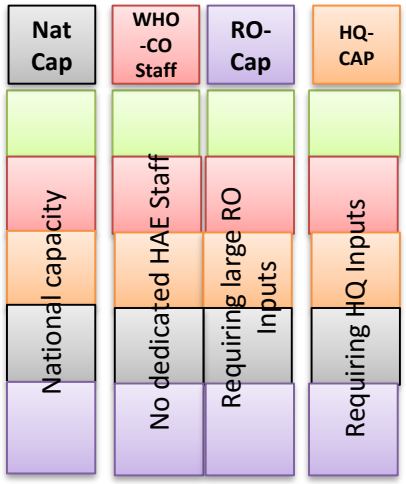
Mandates and Legal Standings:
 	
Member States:
• National Plans
• National Health
• National Environmental Health Action Plans
 	
WHO:
• Resolutions:
  ○ Global WHA
  ○ Regional RCM
• Country Cooperation Strategies
 	
Others:
 	
• International Conventions
• Regional Forums and initiatives
• WHO-Collaborating Centres
	Areas of Work					

Area Work	**Technical Support and Building Capacity**	**Providing Leadership**	**Norms and Standards**	**Research Agenda**	**Articulating Policy Options**	**Monitoring and trends**
Air Pollution						
Water, Sanitation and Hygiene						
Chemicals and Waste						
Occupational Health						
Climate Change						
Environmental Health Programme						

Country support plans in Environmental Health:

Which level? How it can be planned and presented?





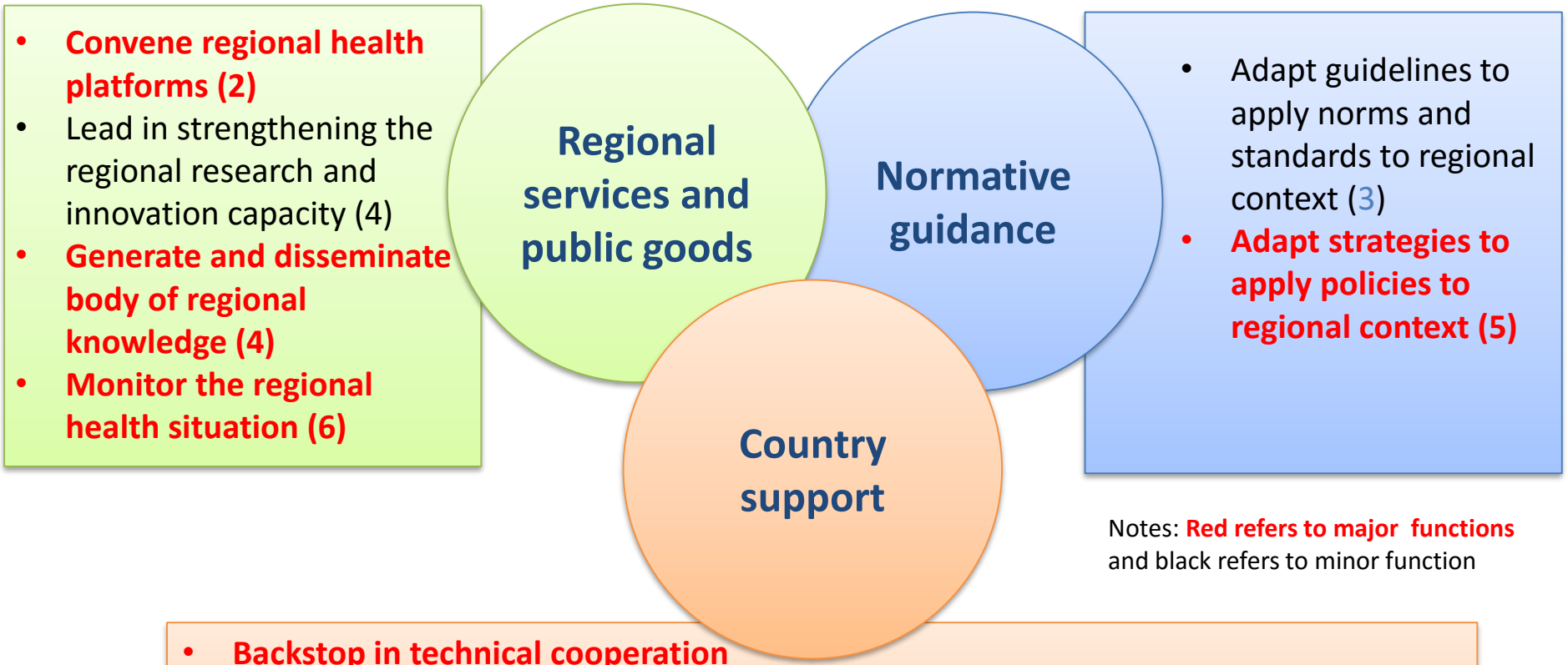
A country without a dedicated WHO technical staff and requiring large RO input

A country with a dedicated WHO technical staff and requiring relatively small WHO input

A country without WHO office and requiring a small WHO input

- WHO's technical cooperation to compliment national capacity
- Full alignment with national strategies and plans
- CO capacity– primary frontline force of WHO
- RO to compliment CO capacity (except the last case)

WHO's Regional core functions in Health and the Environment



- **Convene regional health platforms (2)**
- Lead in strengthening the regional research and innovation capacity (4)
- **Generate and disseminate body of regional knowledge (4)**
- **Monitor the regional health situation (6)**

- Adapt guidelines to apply norms and standards to regional context (3)
- **Adapt strategies to apply policies to regional context (5)**

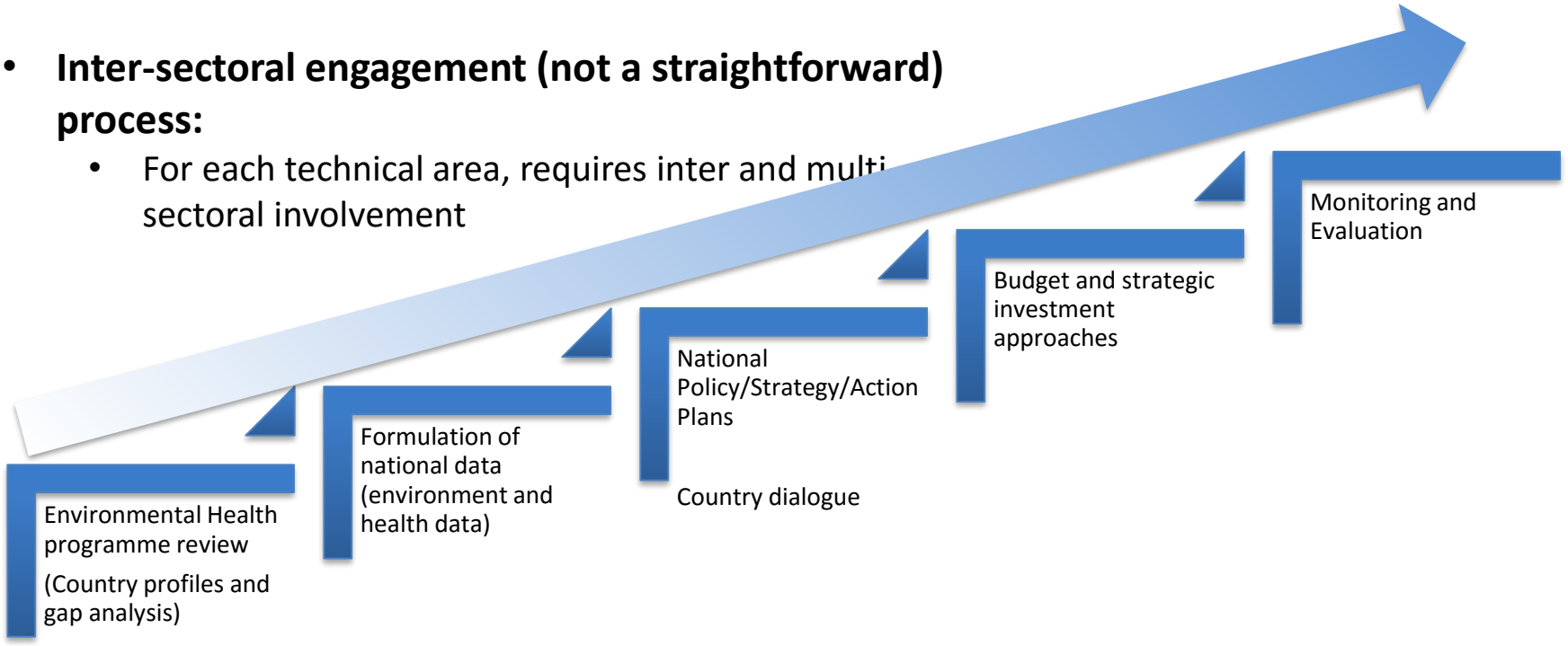
Notes: **Red refers to major functions** and black refers to minor function

- **Backstop in technical cooperation and in supporting implementation of international commitments (1)**
  - Promote research and generate knowledge (4)
  - **Articulate policy options (3,5)**
  - **Monitor health situation (6)**
- **Backstop in the evaluation of national policies and programmes (1)**
- **Lead technical collaboration in countries with no WHO presence (1)**

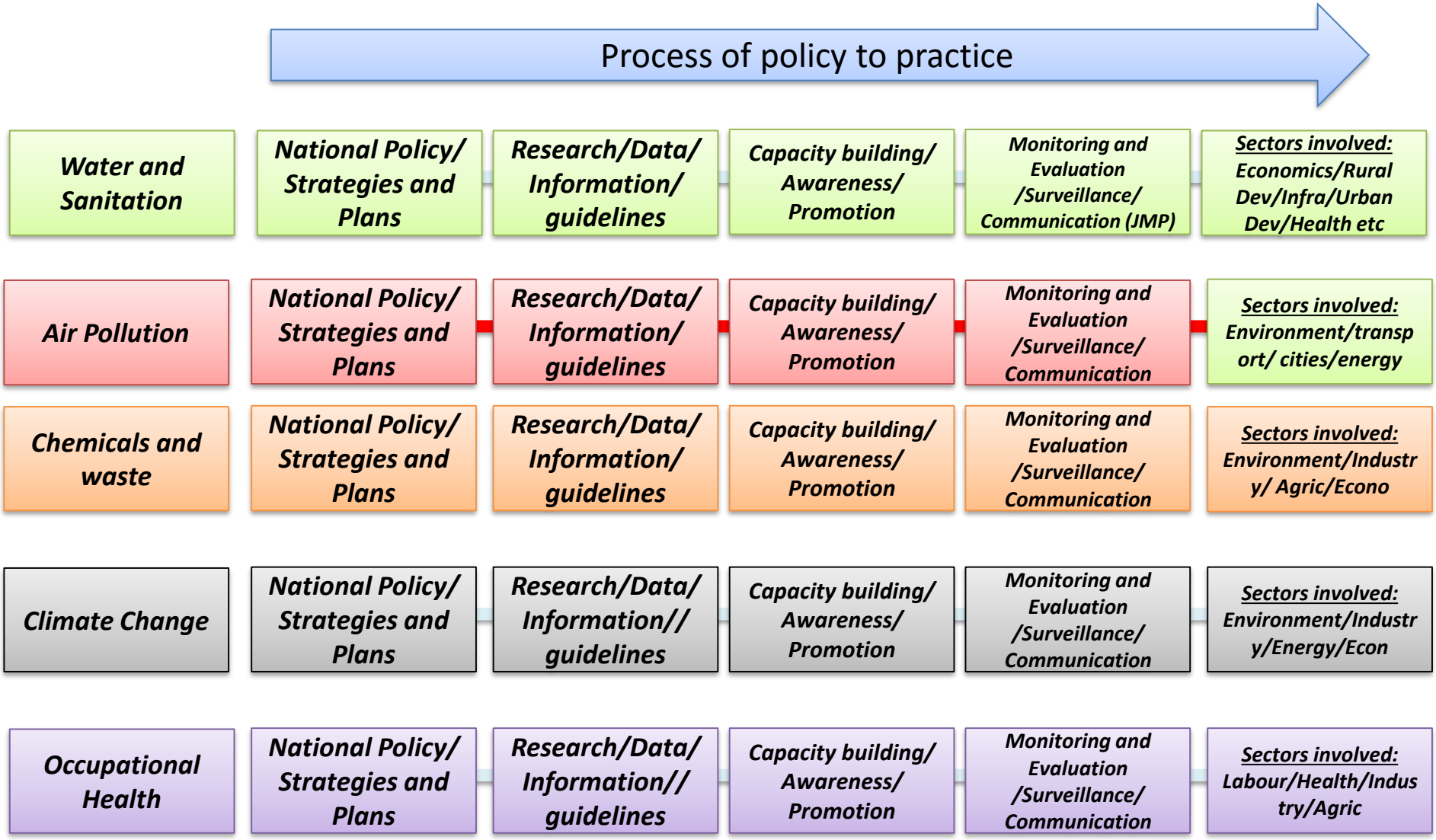
[Planning for policy formulation in Environmental Health]

- **Policy formulation:**
  - National policy in environmental health
  - National strategy
  - National action plans (NEHAP)

- **Inter-sectoral engagement (not a straightforward) process:**
  - For each technical area, requires inter and multi sectoral involvement



[Portfolio Management of Environmental Health Programme]



The reality on the ground:

Health Effects

Disease Burdens:

- **Deaths**
- **Disabilities: cancer, IQ, growth etc….**

Options/Actions/Priorities

- Policies:
- Monitoring/surveillance:
- Advocacy/promotion:
- Engineering:
- Economics/Cost-Benefits

Air Pollution: Types

- Particulate matter (PM2.5/PM10)
- Sulphur oxides
- Nitrogen Oxides
- Ozone

Air Pollution: Sources

- Motor vehicles
- Power plants
- Industries

Beyond the HEALTH Sector

- **Management of air pollution: MOE**
- **Motor vehicles: transport**
- **Power plants: energy**
- **Industries: Industries/Commerce/Economic**

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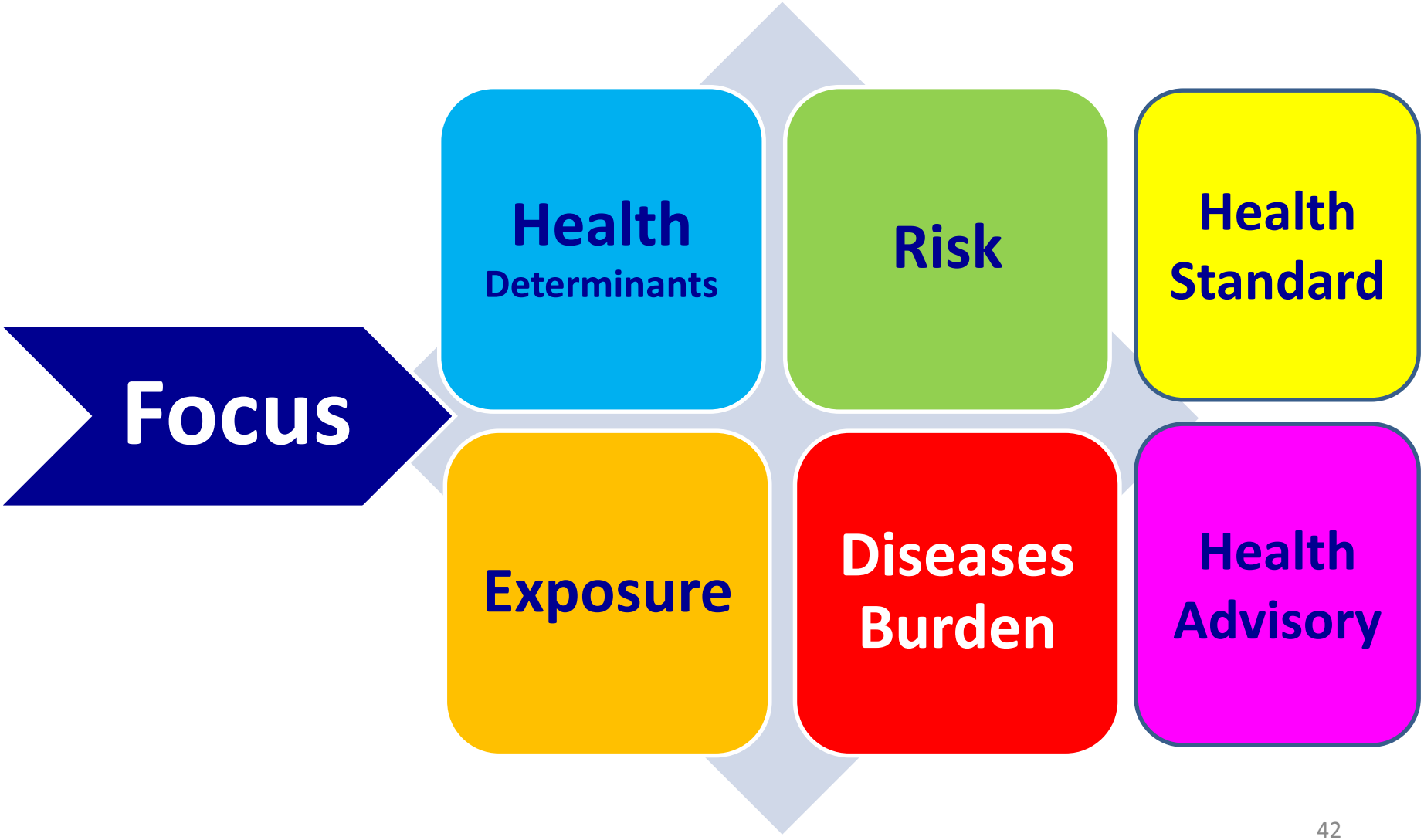
Malaysia's Perspective:
Protection of human health from environmental hazards



Malaysia's Perspective: Role of Health Sector

- Healthier Policy
- Better EH Standard
- Healthier setting
- Well informed community

Role of health sector: Provide Evidence

Look for Evidences

- Research
- Disease monitoring
- Conduct Review

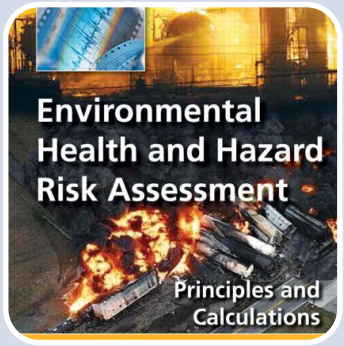
Translate Knowledge to

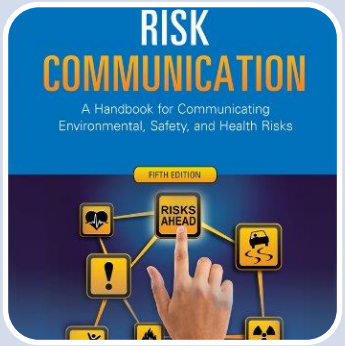
- Standards
- Guidelines
- Best Practices

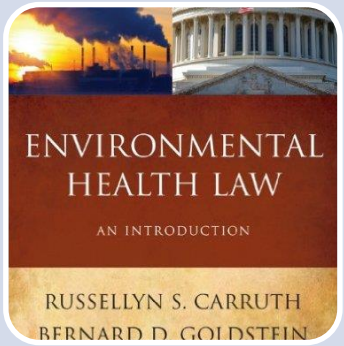
Living Documents …..occasionally updated

Safe limit changes with new evidences, for example Blood Lead Levels

Tools for Evidence-Based Environmental Health Management

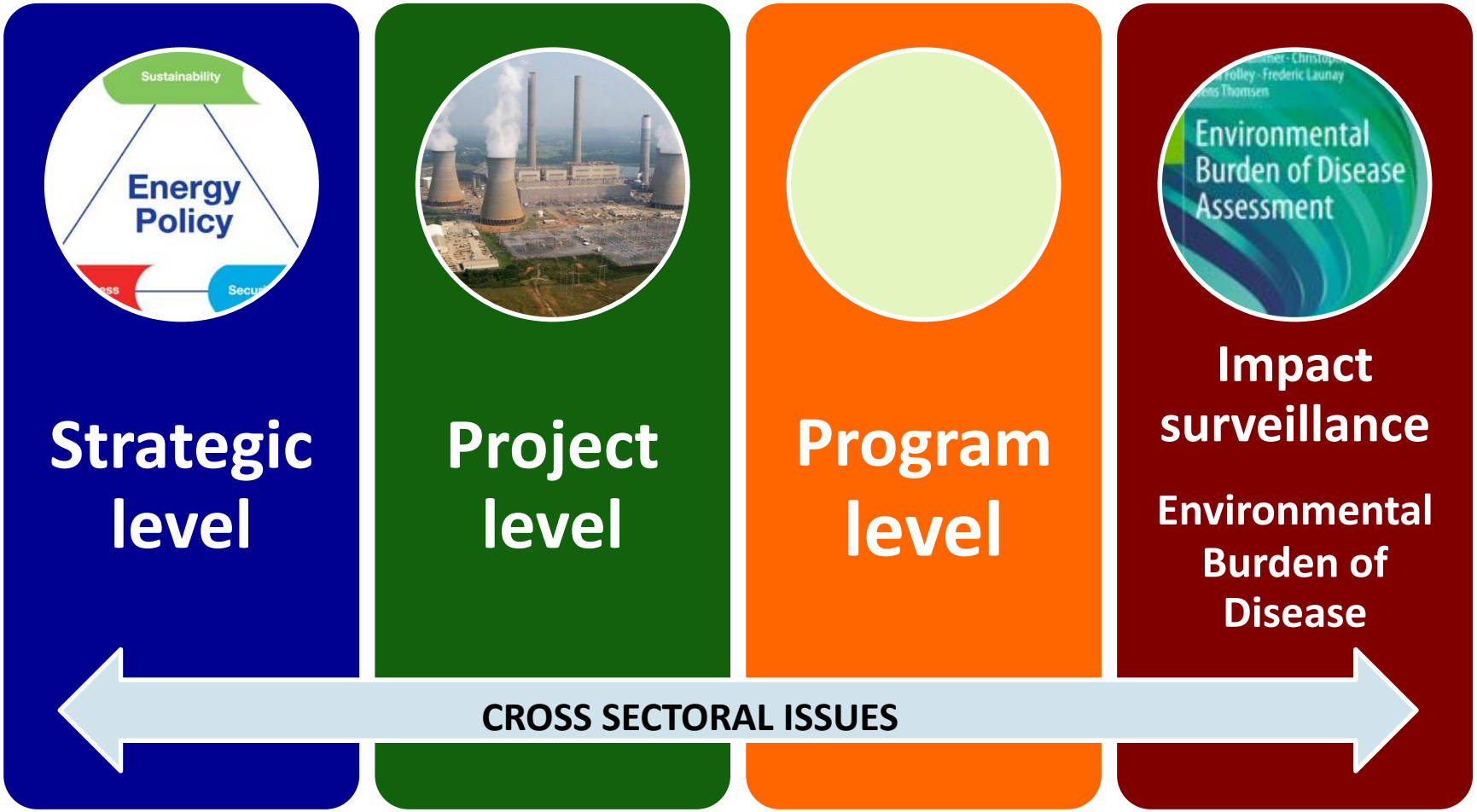






Environmental Health Research	Quality of evidences for impact prediction, Methodology, complex exposure	Standard, Performance indicator, Monitoring , Transparency and Accountability	Risk communication	Environmental Laws

Role of health sector: Technical Expertise



Some Examples of Interventions

What Have We Done: Some Examples Technical Assistance to Improving Capacity of Member States

"to communicate with evidence",
knowledge on:

- environmental risks and hazards;
- tools – environmental risk assessment; health impact assessment
- develop appropriate laws, regulations, policies, plans and programmes to protect health from environmental risks and hazards

"Improved health outcomes linked to environmental risks"

National Environmental Health Policies/Strategies/Action Plans

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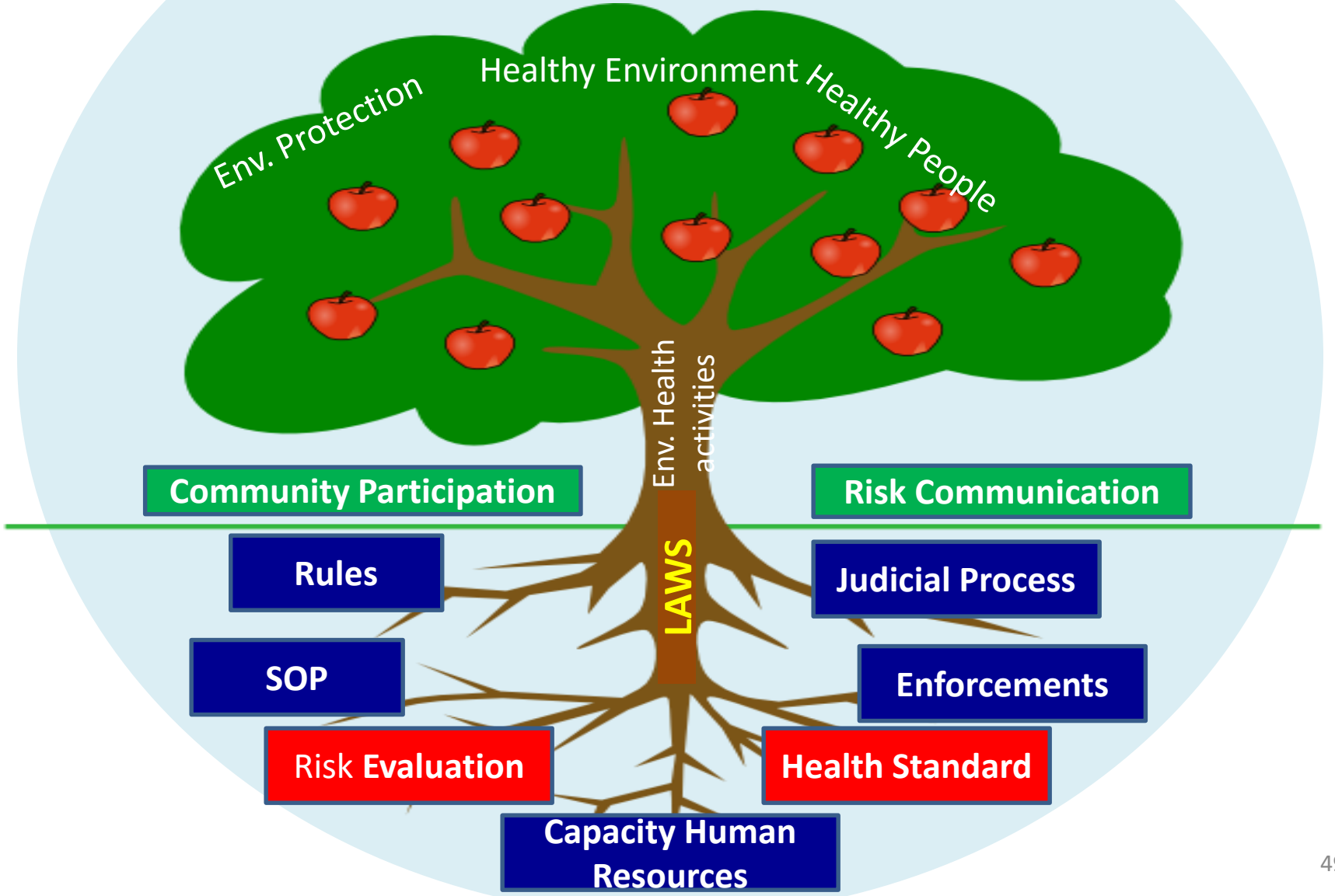
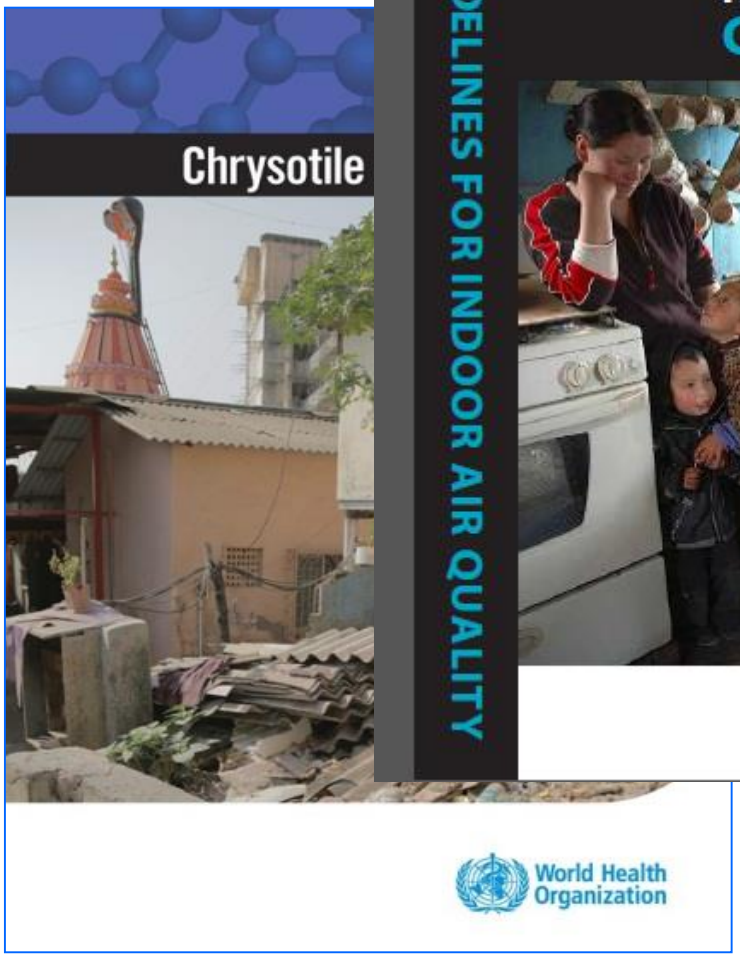
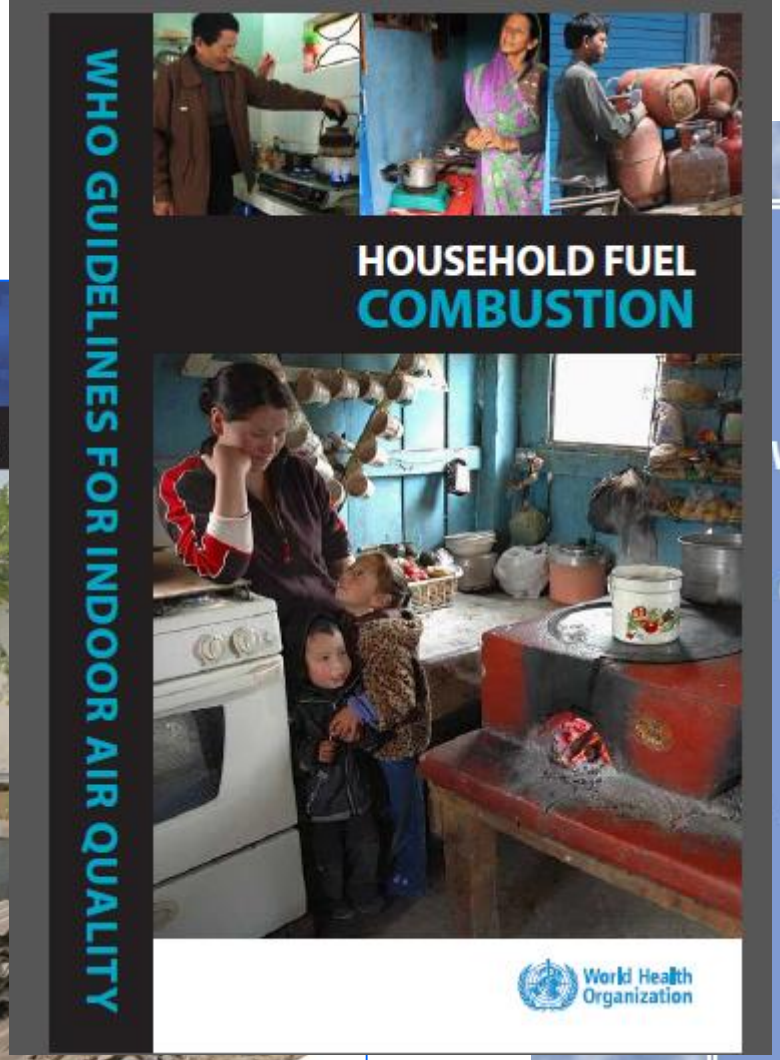
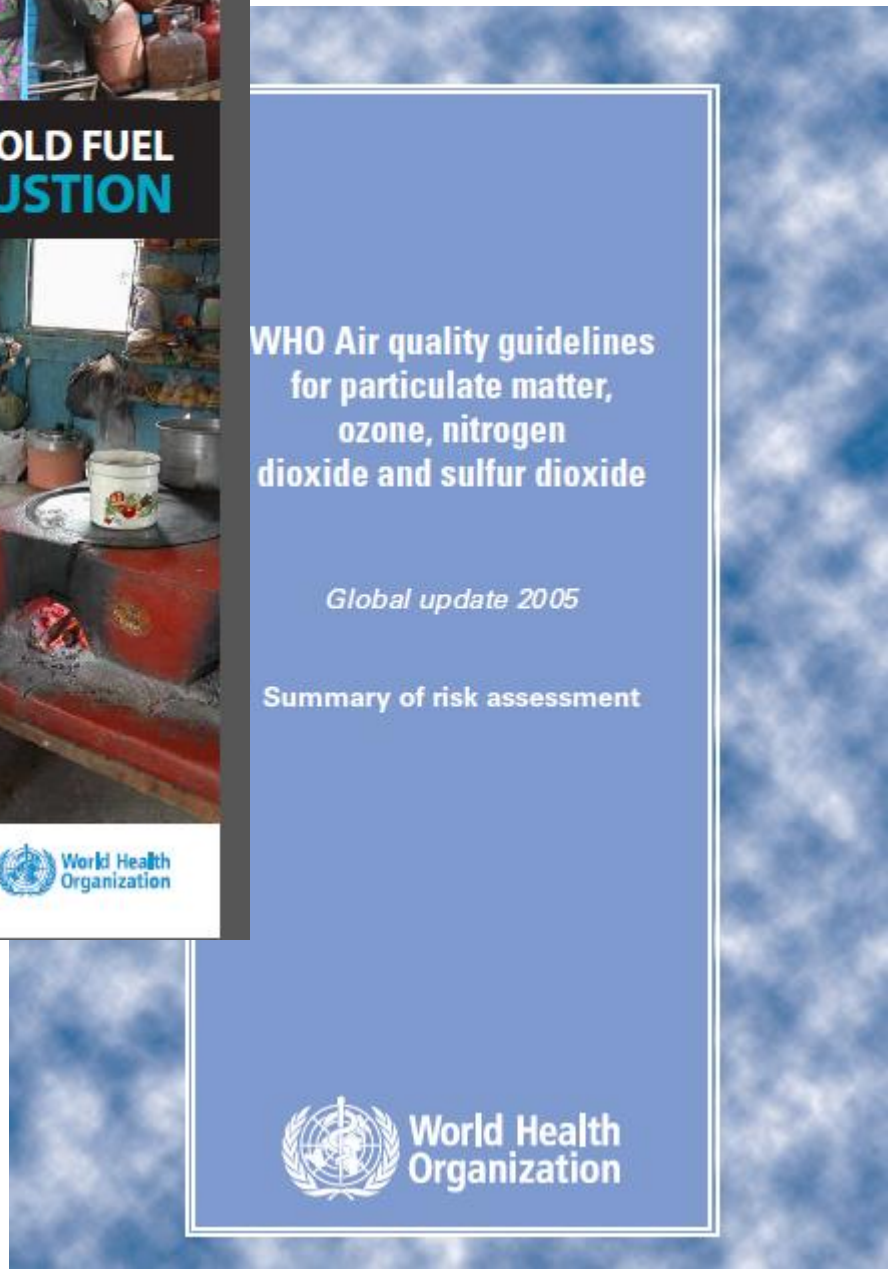
Environmental Health Laws and MOH's Role

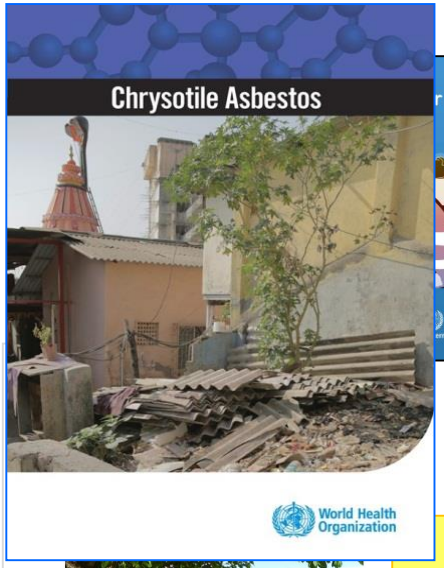


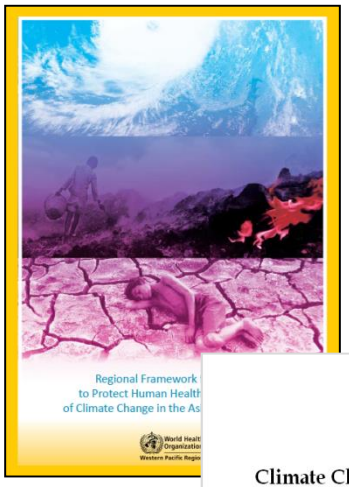

Chrysotile
World Health Organization

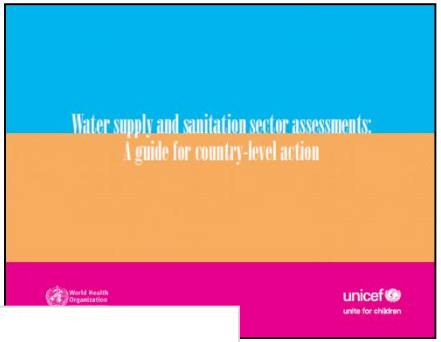

WHO GUIDELINES FOR INDOOR AIR QUALITY
HOUSEHOLD FUEL
COMBUSTION
World Health Organization

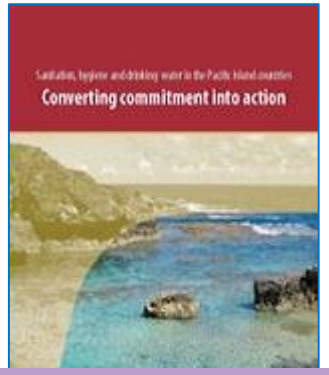

WHO Air quality guidelines
for particulate matter,
ozone, nitrogen
dioxide and sulfur dioxide
Global update 2005
Summary of risk assessment
World Health Organization

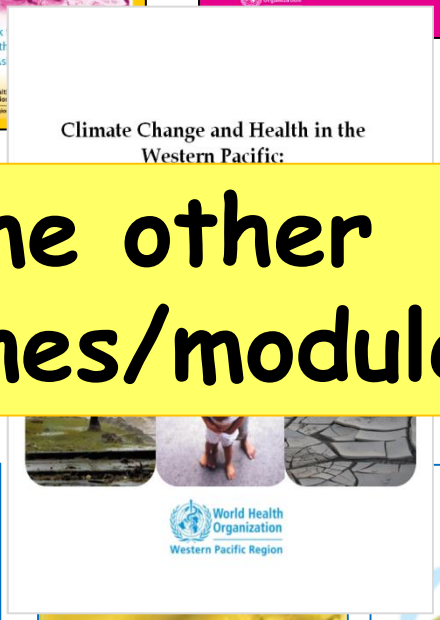
Examples



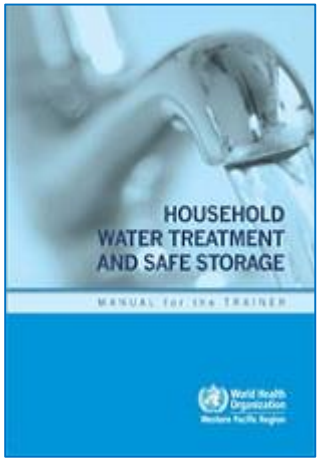


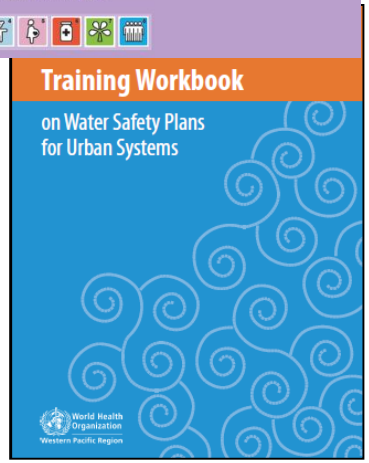






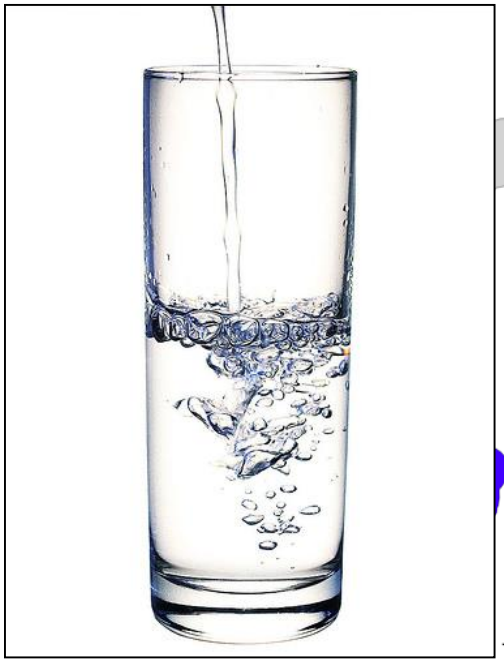
Some other guidelines/modules





Example of Successful Programme:

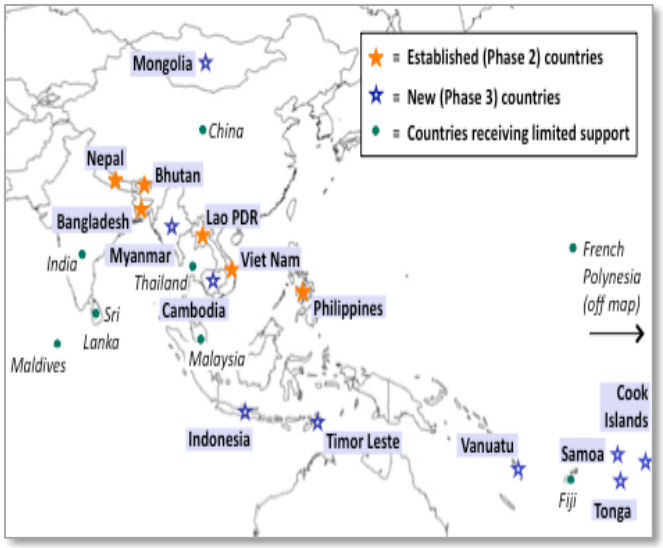
Drinking-water Quality



Water Safety Plan By 2016, a significant proportion of the populations of the South-East Asia and Western Pacific regions will have continuous access to the safest drinking-water attainable through the sustainable implementation of WSPs.

67 countries have WSP policies/regulations in place or under development

15 primary countries



Climate Change and Resilience of Hospitals and Health Care Facilities

Climate change and human health

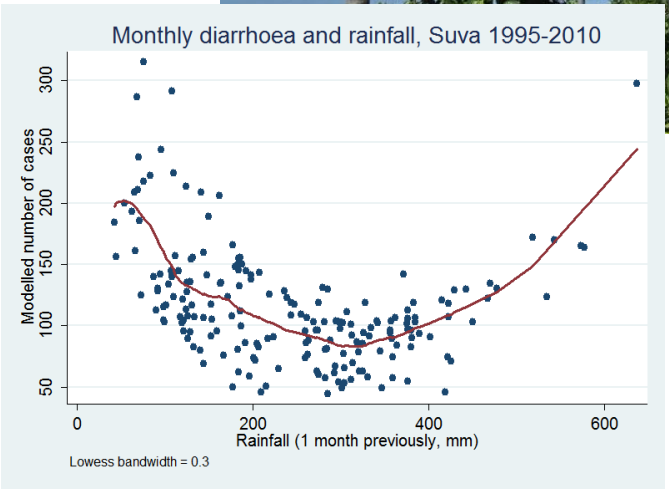
Tool to evaluate the resilience of health services and facilities to extreme events and emergencies: the Hospital Safety Index

The Hospital Safety Index (PAHO, 2010b) is used to assess the safety of health facilities and the overall probability that a hospital or health facility will continue to function in major emergencies. It evaluates structural, nonstructural, and functional factors, including the environment and the health services network to which the facility belongs.

The Hospital Safety Index is a rapid, reliable, and low-cost diagnostic tool. It is easy to apply by a trained team of engineers, architects, and health professionals. It can help countries begin to prioritize investments in hospital safety to address growing risks from climate change.

The Hospital Safety Index includes a guide for evaluators and a Safe Hospitals Checklist that is used to assess the level of safety in 145 areas of the hospital. For example, one functional factor that is assessed is if a committee has been formally established to respond to major disasters.

Evaluation teams have used the results of hospital safety studies to encourage risk managers from other sectors to contribute to disaster reduction actions,



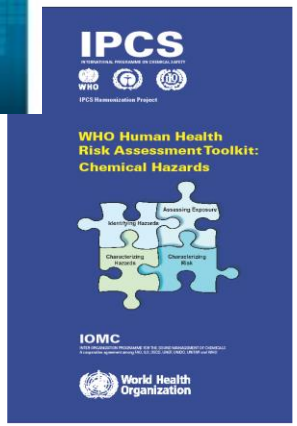
Island Countries in the Region are extremely vulnerable to climate change

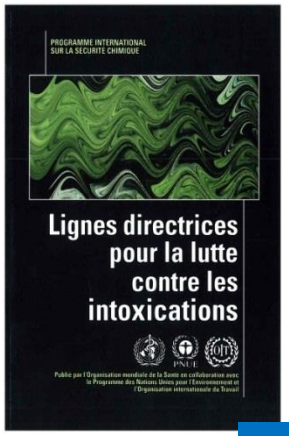
WHO Support for preparedness, prevention & response to chemical and radiation incidents

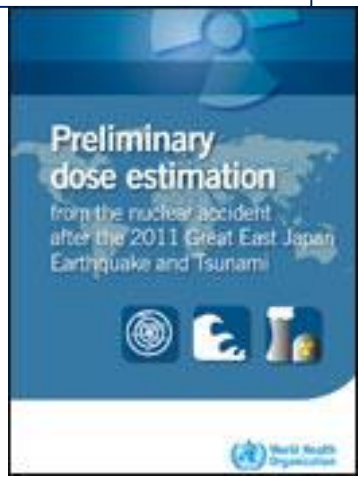
CAPACITY AND RESOURCES FOR RADIATION AND CHEMICAL EMERGENCY RESPONSE

Fukushima disaster and recently the super-typhoon Haiyan or Yolanda

- Websites: http://www.who.int/ipcs/en/
- http://who.int/environmental_health_emergencies/en







World Health Organization
Western Pacific Region

Policy direction in the Western Pacific Region (The Proposed Regional Strategy on Health and Environment)

- Strengthen the integration of health and environment
- Linking NEHAP to Sustainable Development Goals (SDG)
- National data for environmental burden of disease assessment – crucial to establish relevant policies
- Strengthen capacity of national health authorities in effectively advocating health with non-health sectors
- Setting approach – urban, work-place, school
- New Structure of Regional Forum

World Health Organization
Western Pacific Region

Regional Forum

http://www.wpro.who.int/rfeh/en/

World Health Organization
Western Pacific Region

Conclusion

- Calling for all to act on the constitution of WHO:

principle that health ~ a state of complete physical, mental, and social well-being and not merely the absence of disease

- Human health and well-being and the environment are inextricably linked;
- Environmental risks are major determinants of morbidity and mortality in many countries of the Region
- WHO's role is to support Member States in improving health outcomes linked to environmental risks.
  - strengthening the capacity of Member States to undertake environmental health risk assessments; and
  - enact appropriate multisectoral responses (e.g. laws, regulations, policies, plans and programmes).
- Let us move on for SDGs

World Health Organization
Western Pacific Region

Thank You

World Health Organization
Western Pacific Region