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Environmental Health in the Western Pacific Region

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Issues, Challenges and Future Directions

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Regional Coordinator

Health and the Environment (HAE)

Division of NCD and Health through Life-Course (DNH)



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**

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**

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;

Relative importance of factors shaping health



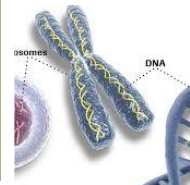
Behaviour
• 30-40%

**Socio-economic
conditions**



Environment
• 10 – 20 %

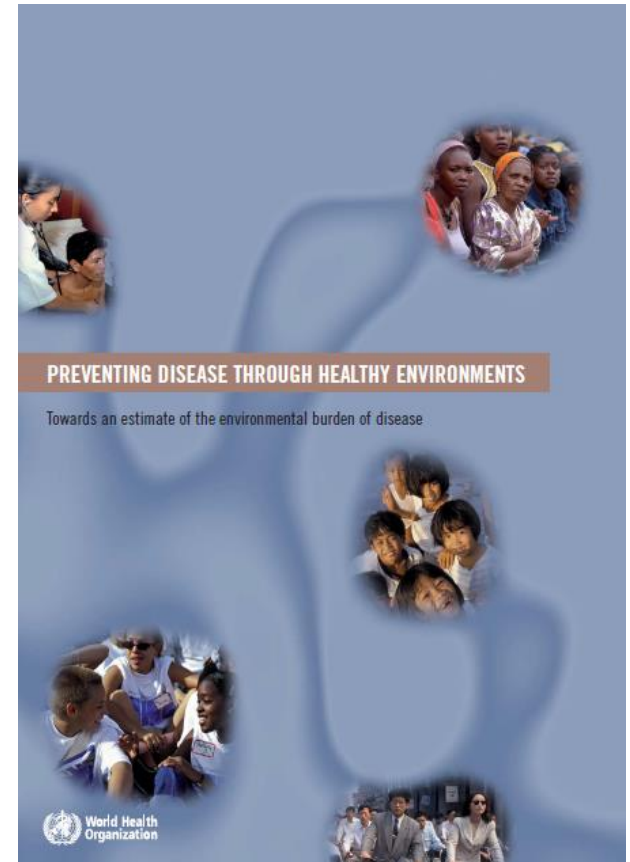
Genetic
15 – 30 %



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/

Environmental Burdens of Diseases



ENVIRONMENTAL HEALTH RISK

Traditional Risk

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

Unfinished Agenda

Modern Risk

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

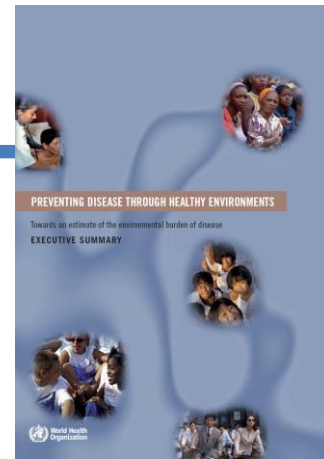
Emerging Agenda



Consequences

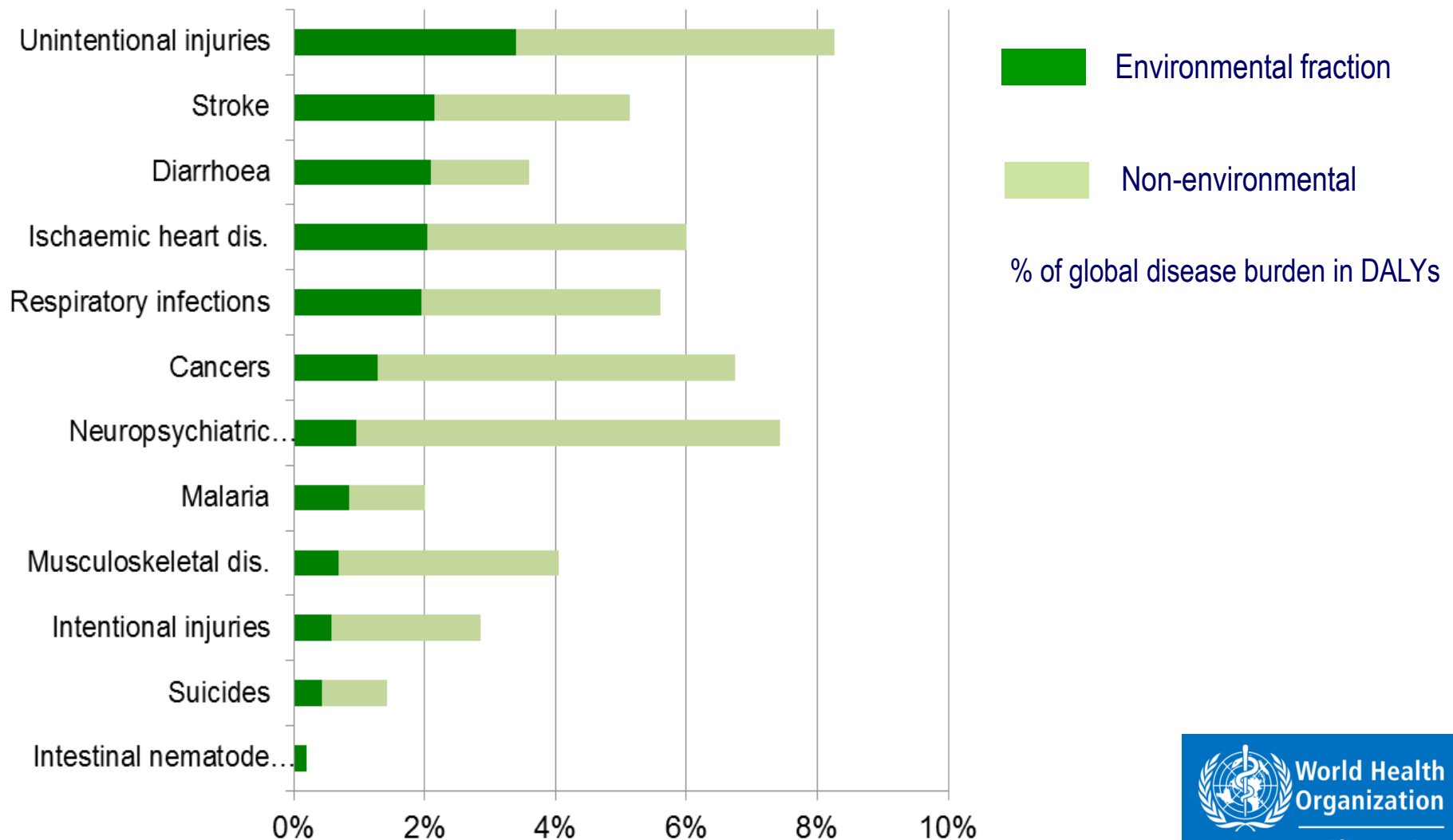
Southeast and the Western Pacific (2006)

- 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

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





EARLY ENVIRONMENTAL ORIGINS OF DISEASE

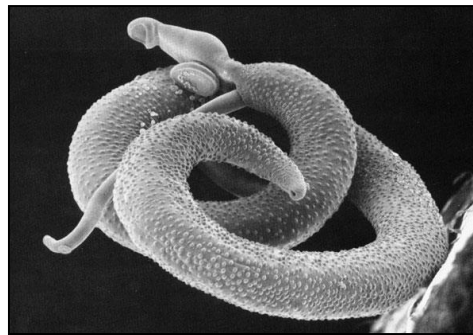


**WE ARE BEGINNING TO UNDERSTAND THE IMPORTANT
AND DIFFERING ROLES ENVIRONMENTAL HAZARDS PLAY
THROUGHOUT THE LIFE COURSE**

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

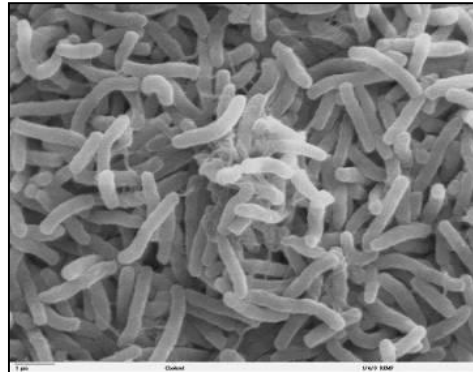
Water and Sanitation



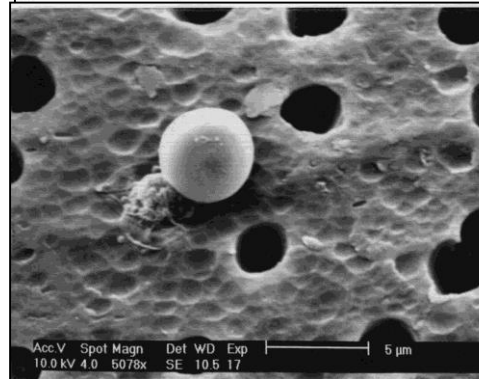


Electron microscope image of a pair of *Schistosoma mansoni*

(Credit: Davies Laboratory, Uniformed Services University)



Cholera



Electron microscope image of a single *Cryptosporidium* oocyst

(Credit: Australian Flow Cytometry Group and Macquarie University)



Arsenicosis

Global Burden of Diarrhoeal Disease from Water, Sanitation and Hygiene

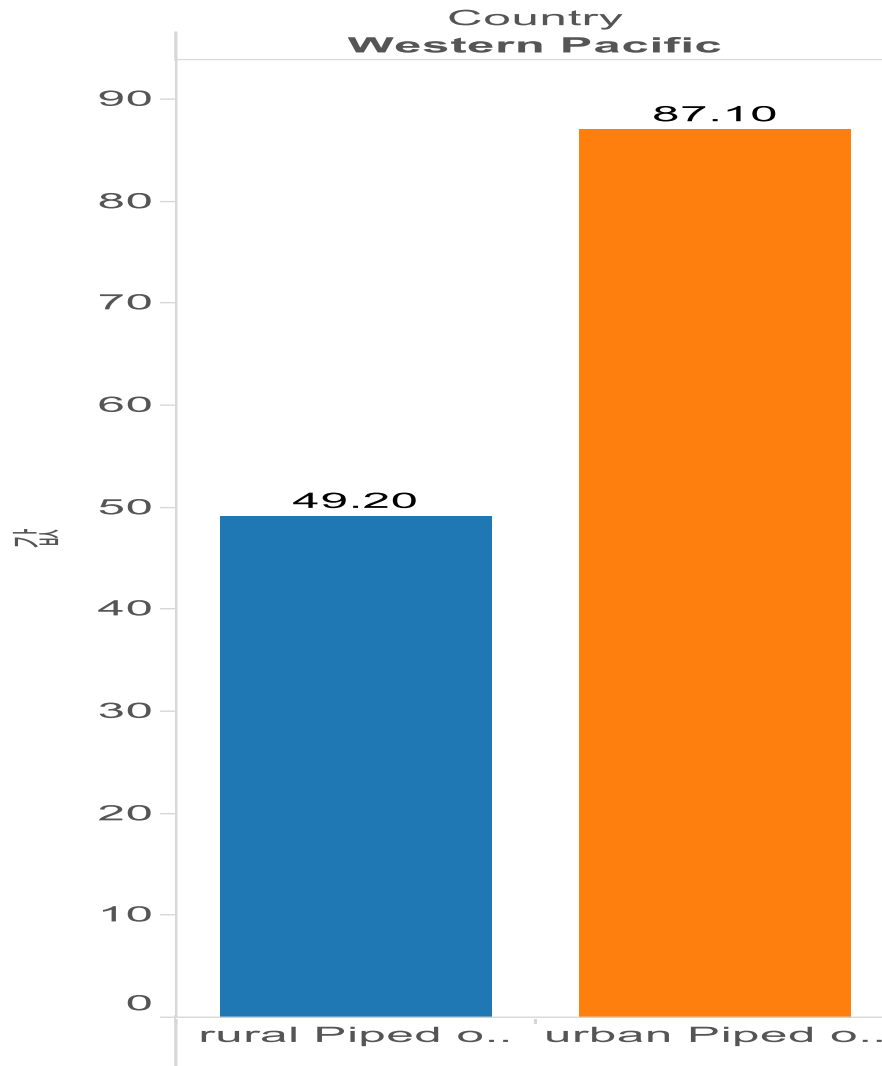
- Studies done on 145 low- and middle-income countries (2012 data and using new global estimates of total mortality):
 - ~ **only 19%** of the world's population washes hands with soap after contact with excreta;
 - **10-15 %** reduction in diarrhoea (e.g. 10-15%) through use of basic improved water 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;

Also, there are large difference between urban and rural areas

시트 3



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

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



**World Health
Organization**

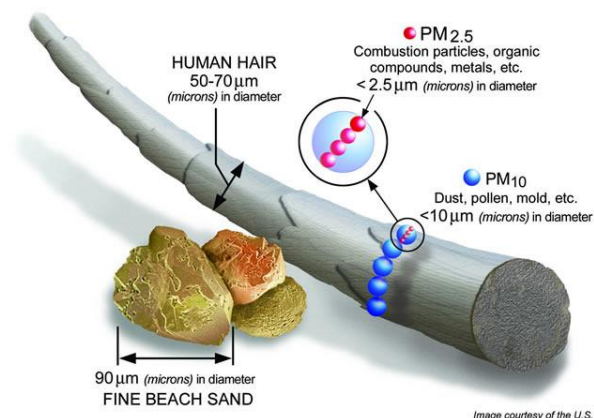


Air pollution



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



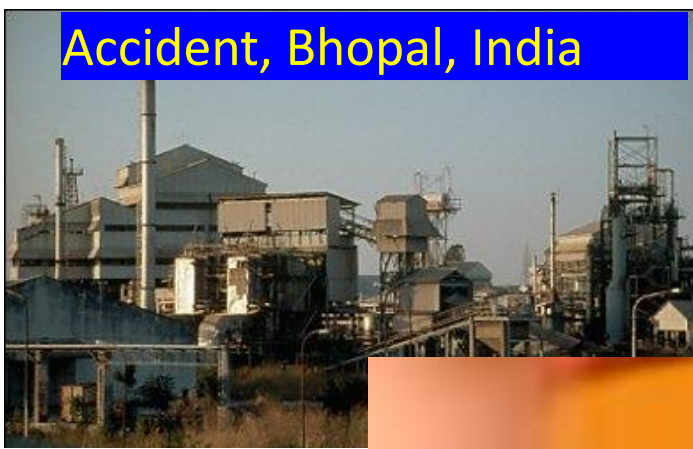
Air Pollution



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**.

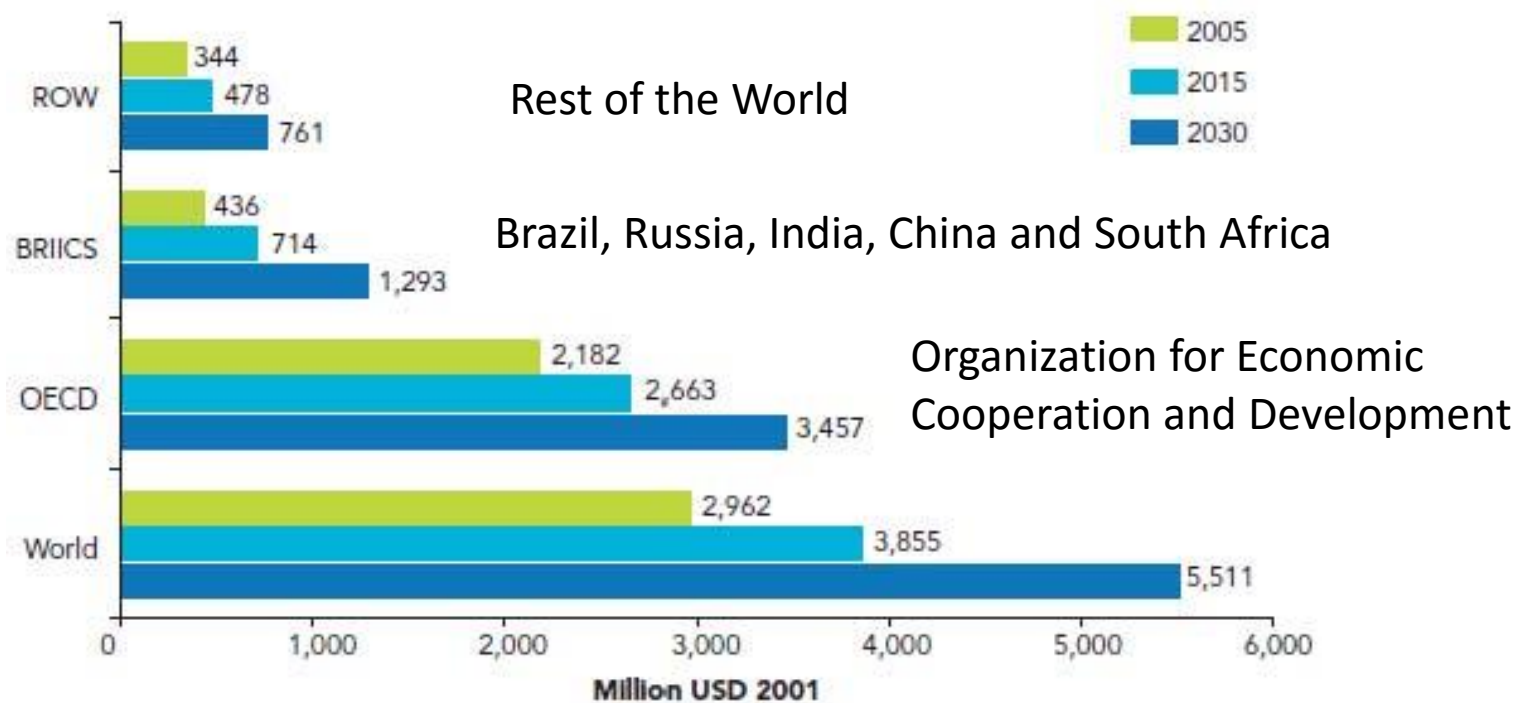
Accident, Bhopal, India



CHEMICALS

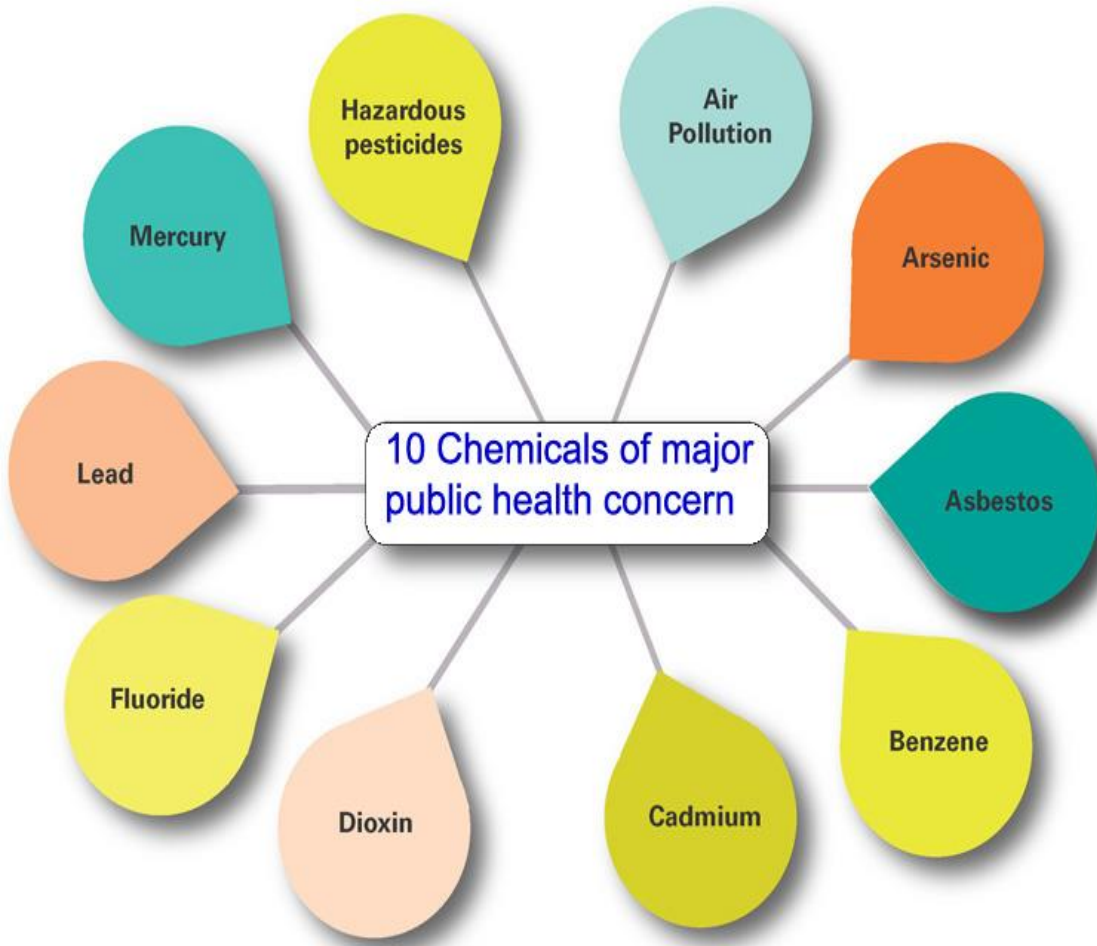


Outlook - World chemical production due to double between 2005 and 2030



Source: OECD, 2008b³

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



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.



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**



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

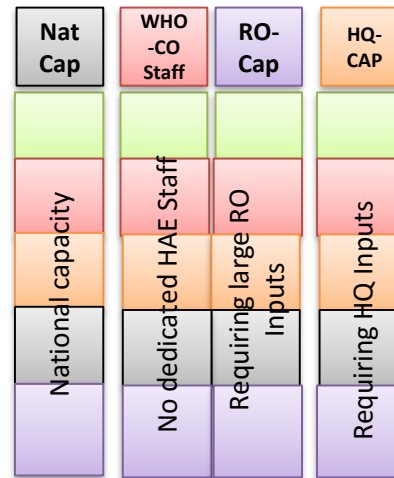
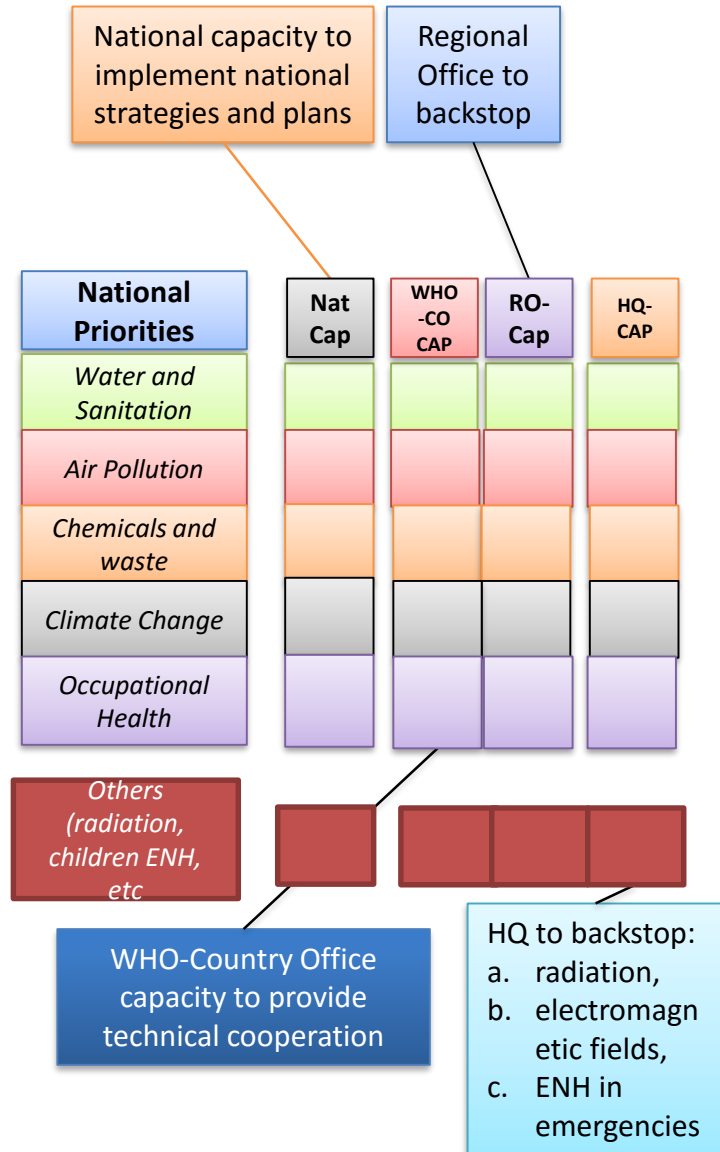
- Providing leadership on matters critical to health and engaging in partnerships where joint action is needed;
 - **Country capacity strengthened** to assess health risks, develop and implement policies, strategies or regulations for the prevention, mitigation and management of the health impacts of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

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



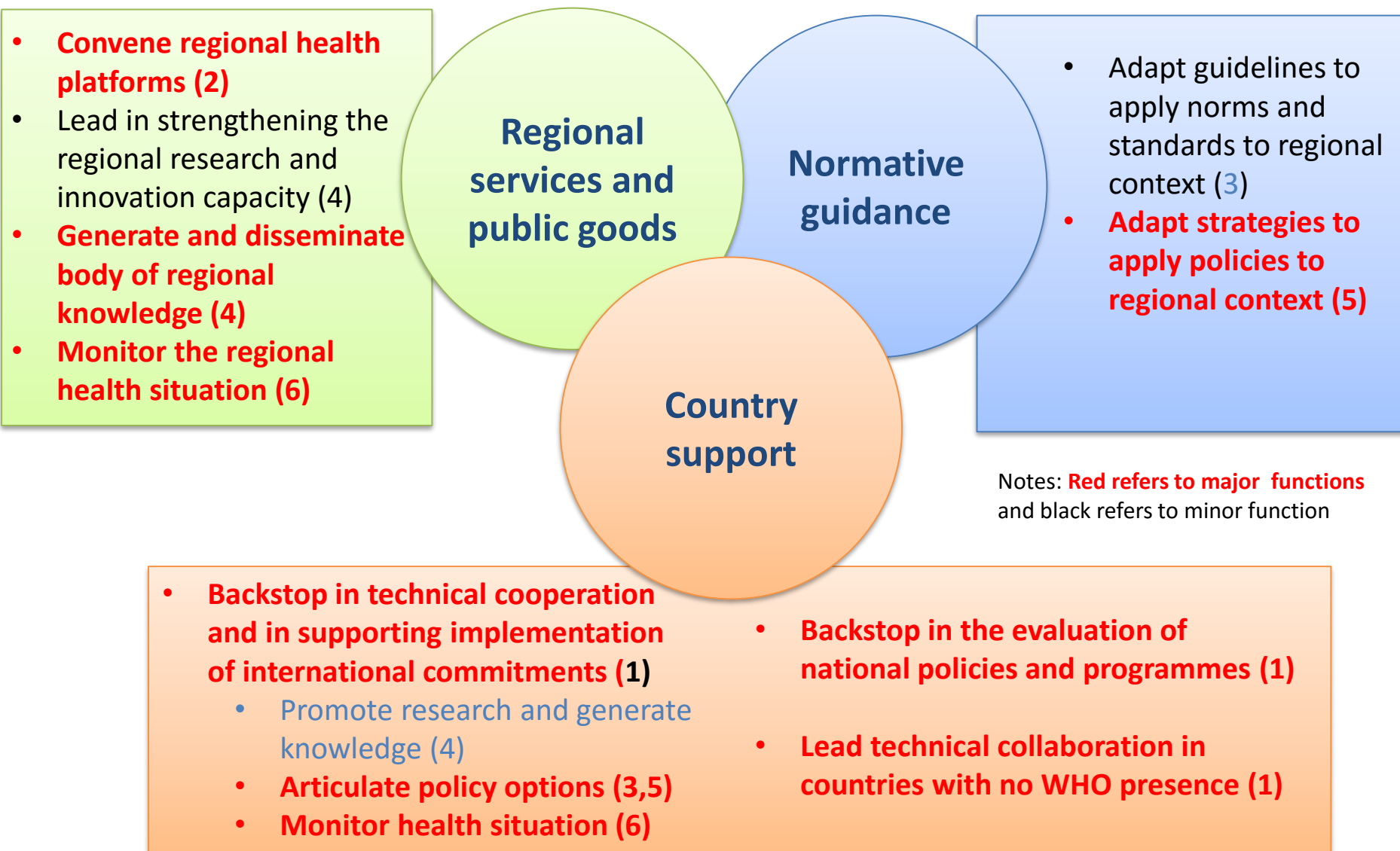
A country with a dedicated WHO technical staff and requiring relatively small WHO input



A country without WHO office and requiring a small WHO input

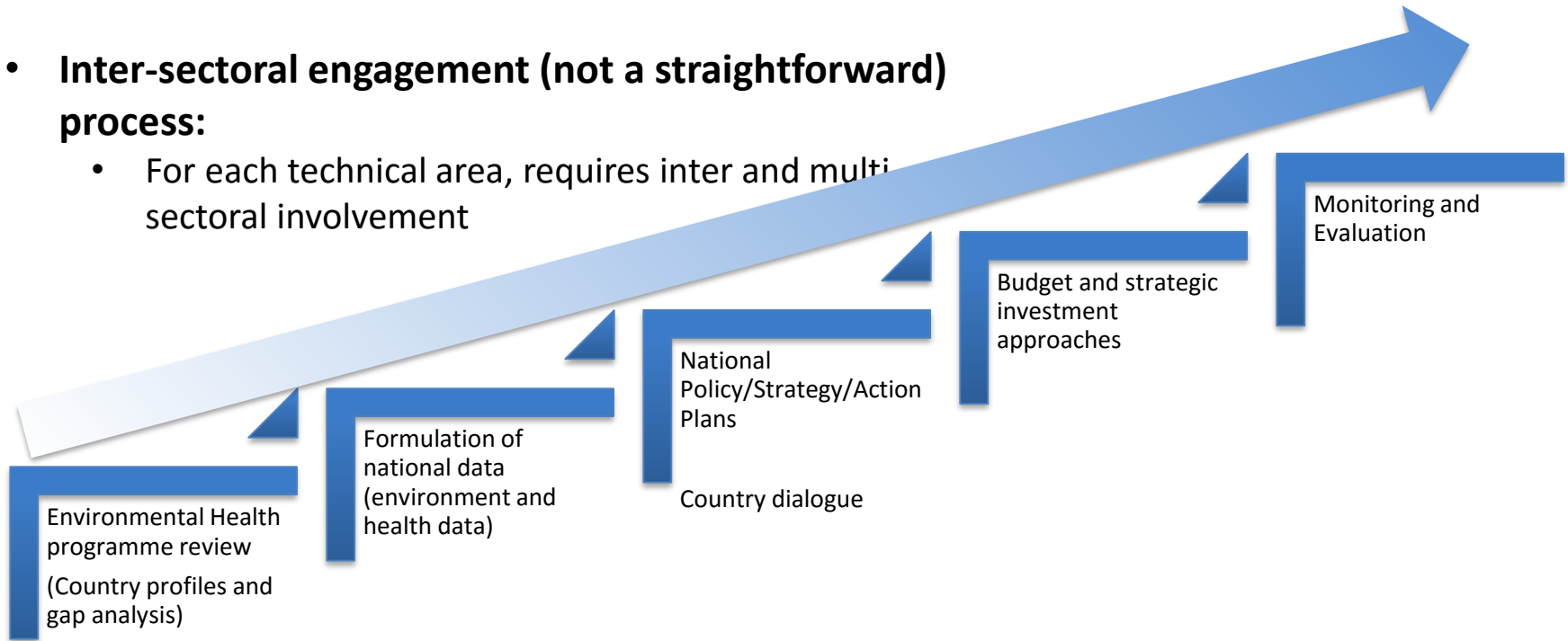
- WHO's technical cooperation to compliment national capacity
- Full alignment with national strategies and plans
- CO capacity– primary frontline force of WHO
- RO to compliment CO capacity (except the last case)

WHO's **Regional** core functions in Health and the Environment



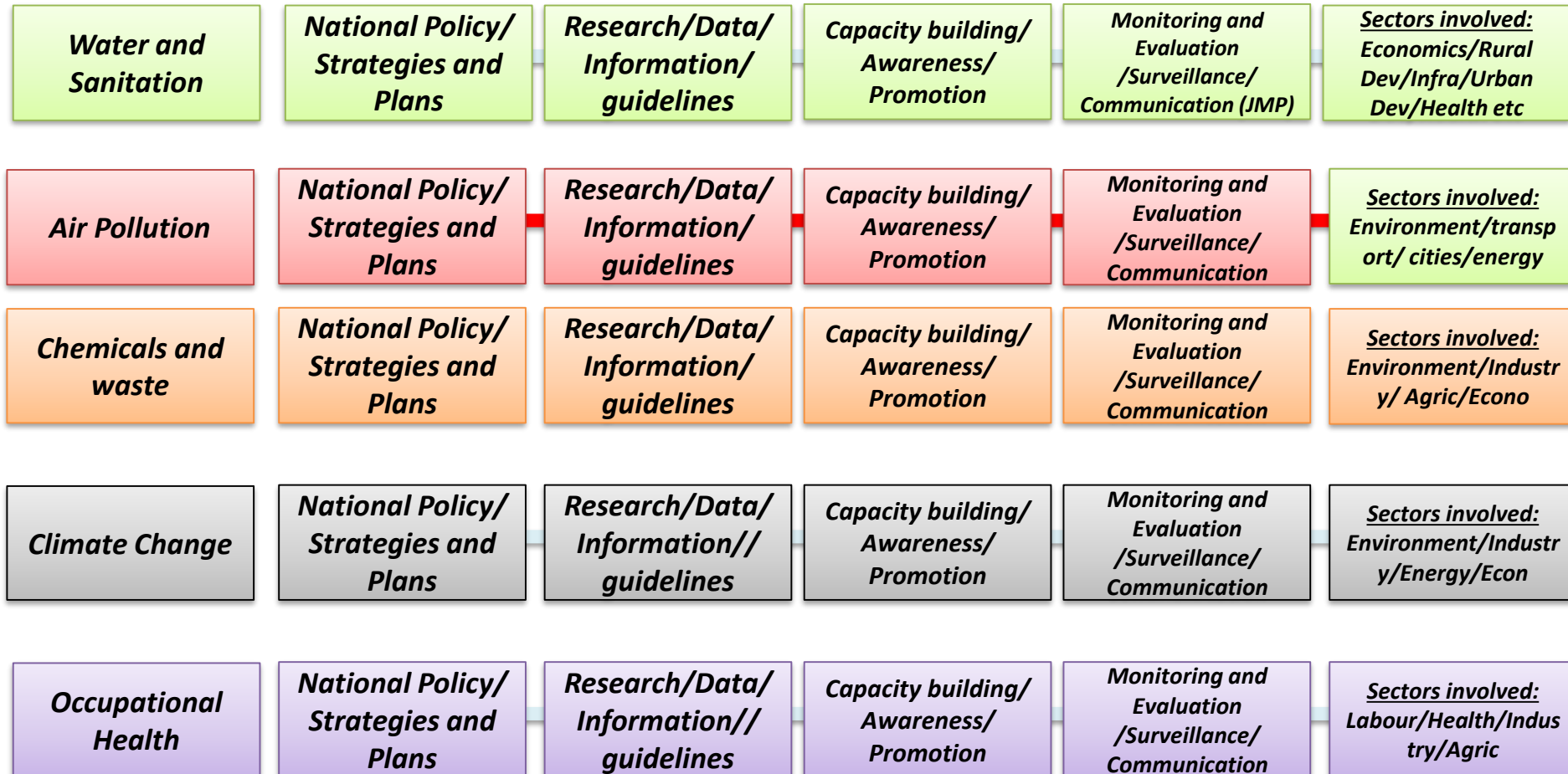
[Planning for policy formulation in Environmental Health]

- **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]

Process of policy to practice

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

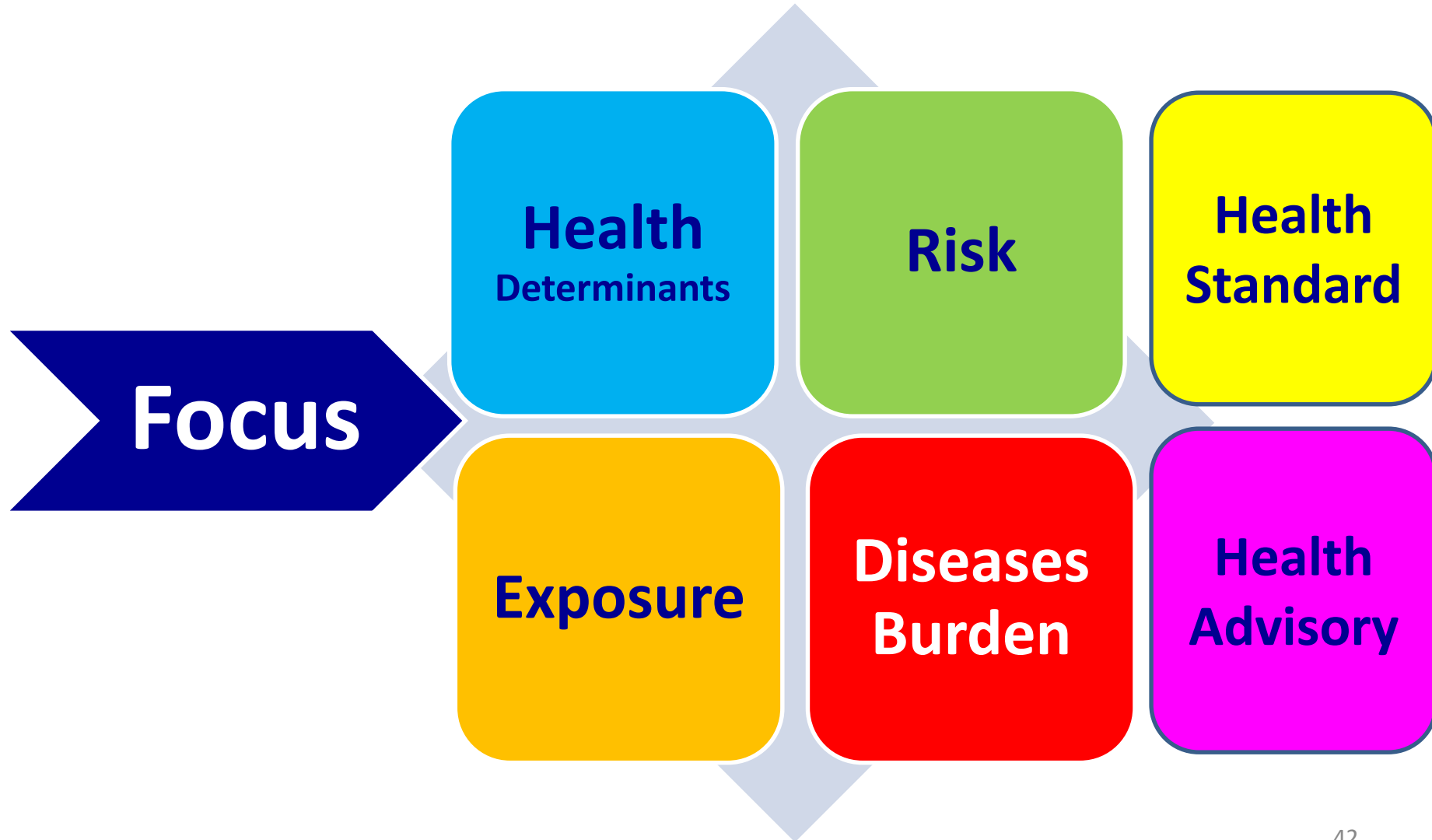
- Management of air pollution: MOE
- Motor vehicles: transport
- Power plants: energy
- Industries: Industries/Commerce/Economic



World Health
Organization

Western Pacific Region

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



Malaysia's Perspective: Role of Health Sector

Risk Communication



**Healthier
Policy**

**Better EH
Standard**

**Healthier
setting**

**Well
informed
community**

Role of health sector: Provide Evidence

**Look for
Evidences**

- Research
- Disease monitoring
- Conduct Review

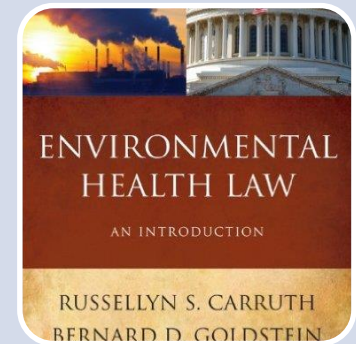
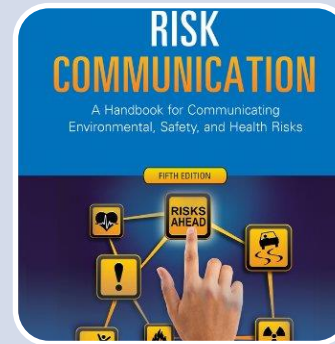
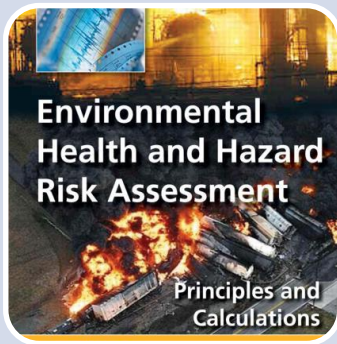
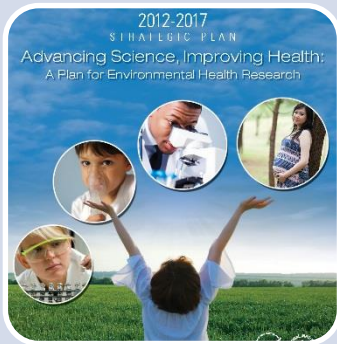
**Translate
Knowledge
to**

- 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**

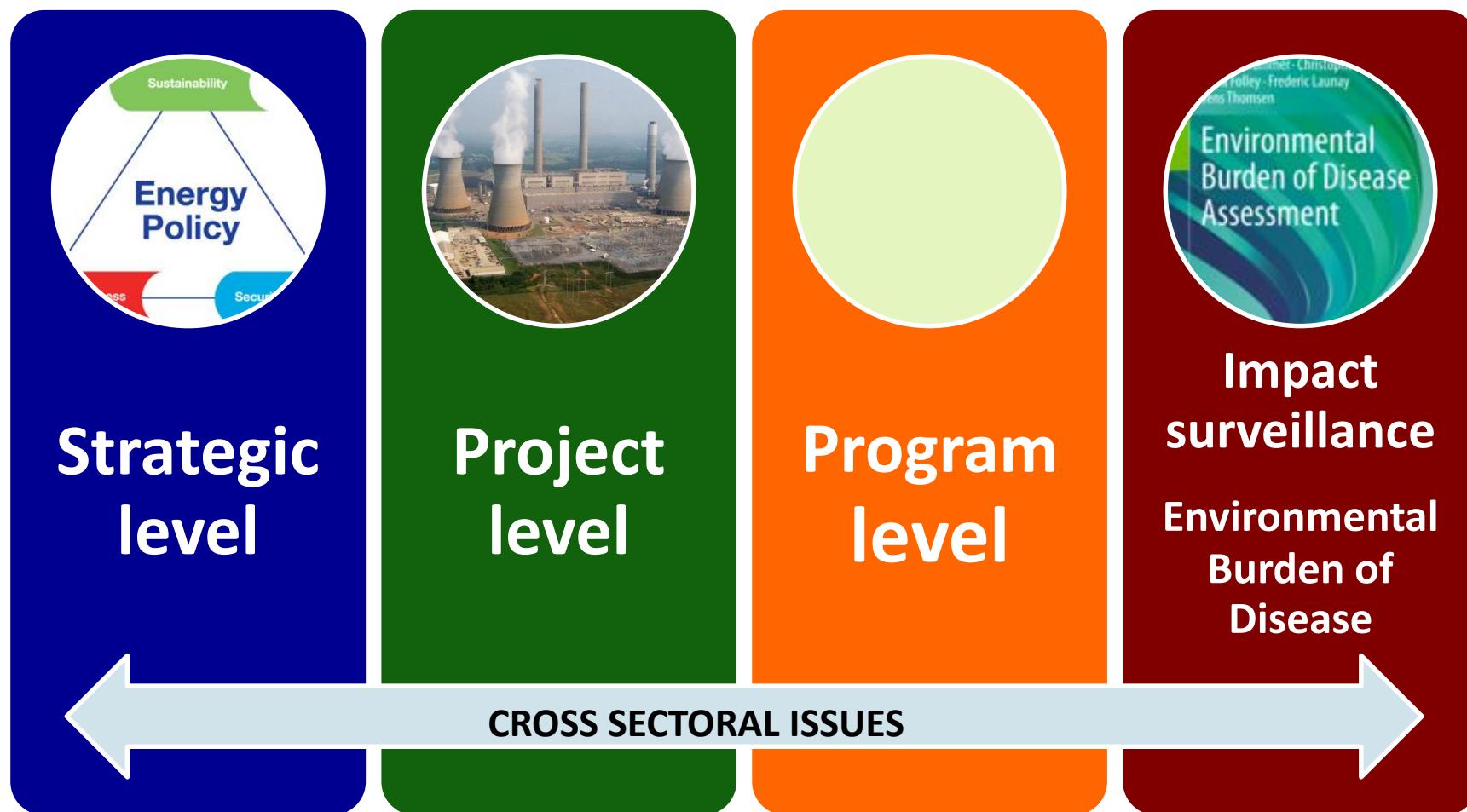
**Quality of evidences
for impact prediction,
Methodology,
complex exposure**

**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

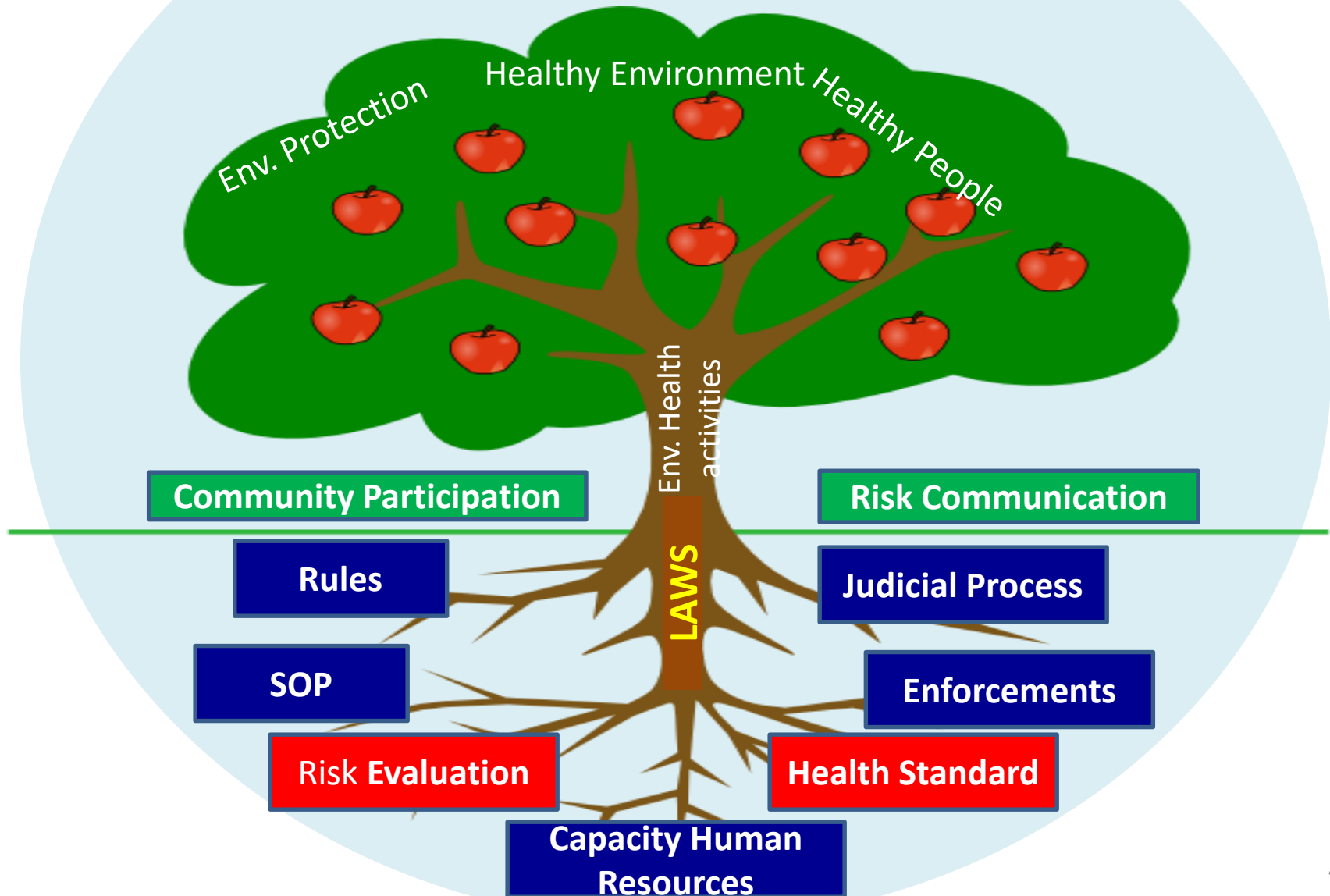
“to communicate with evidence”,
knowledge on:

- 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**

Environmental Health Laws and MOH's Role





Examples

WHO GUIDELINES FOR INDOOR AIR QUALITY



HOUSEHOLD FUEL COMBUSTION



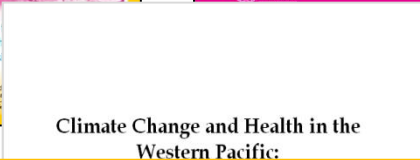
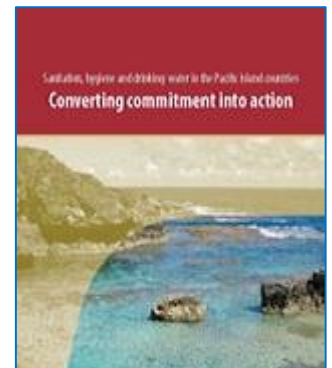
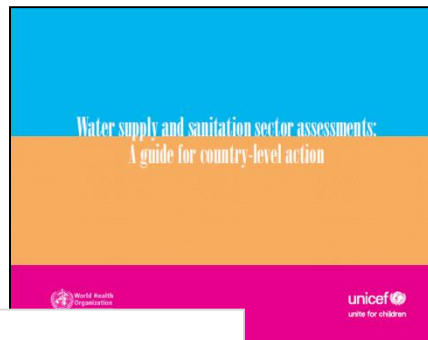
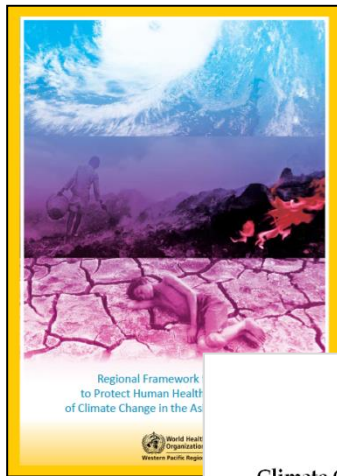
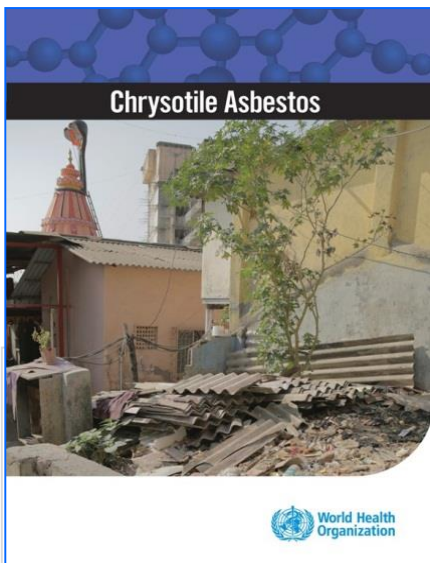
WHO Air quality guidelines
for particulate matter,
ozone, nitrogen
dioxide and sulfur dioxide

Global update 2005

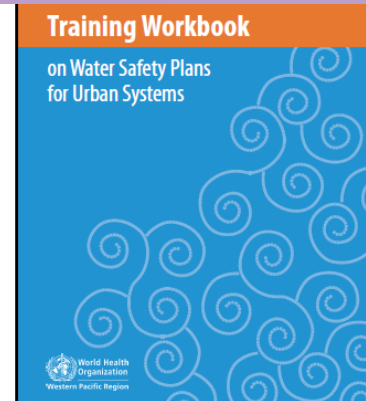
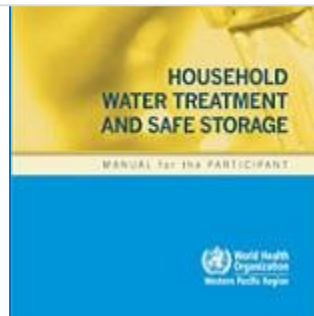
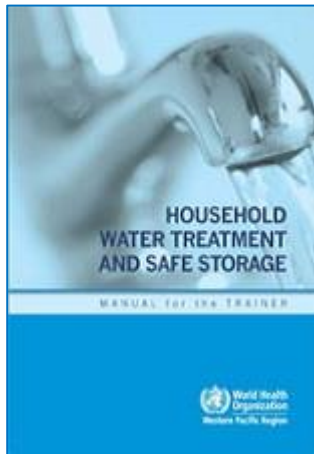
Summary of risk assessment



World Health
Organization

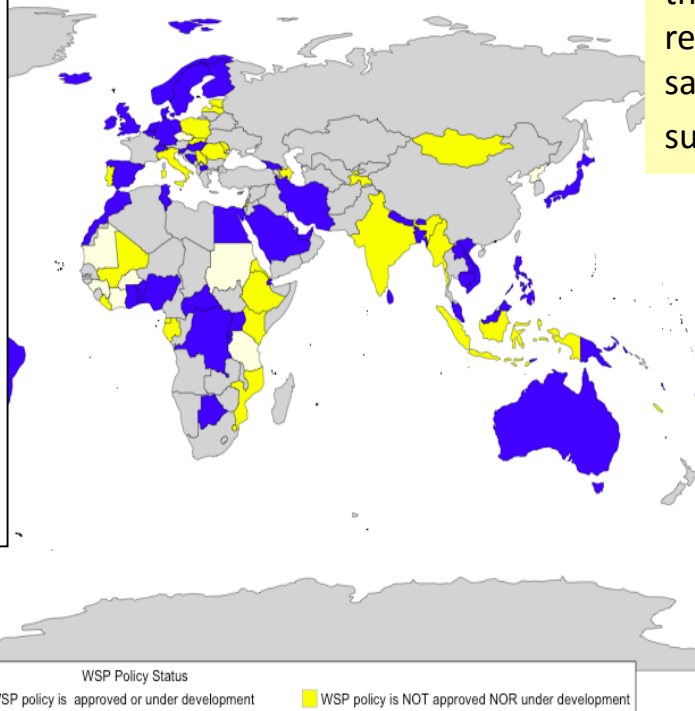
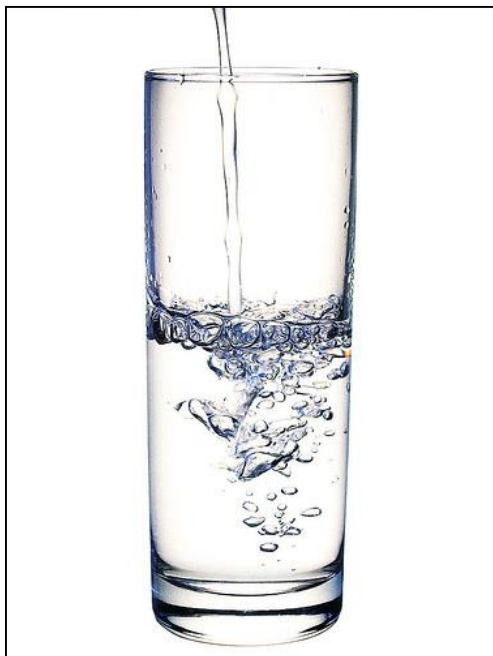


Some other guidelines/modules



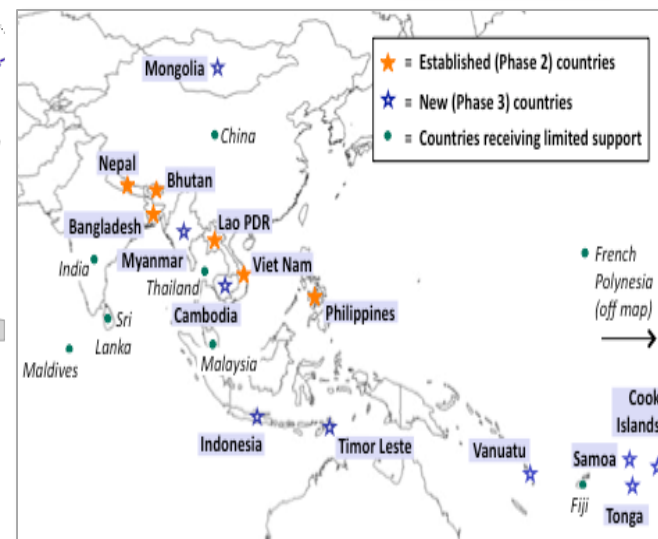
Example of Successful Programme:

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.

15 primary countries



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

Climate Change and Resilience of Hospitals and Health Care Facilities

Climate change and human health

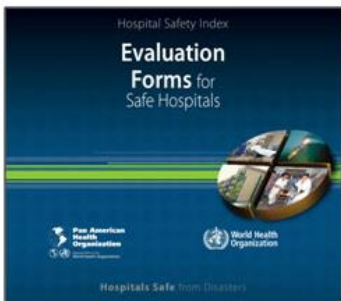
Tool to evaluate the resilience of health services and facilities to extreme events and emergencies: the Hospital Safety Index

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.

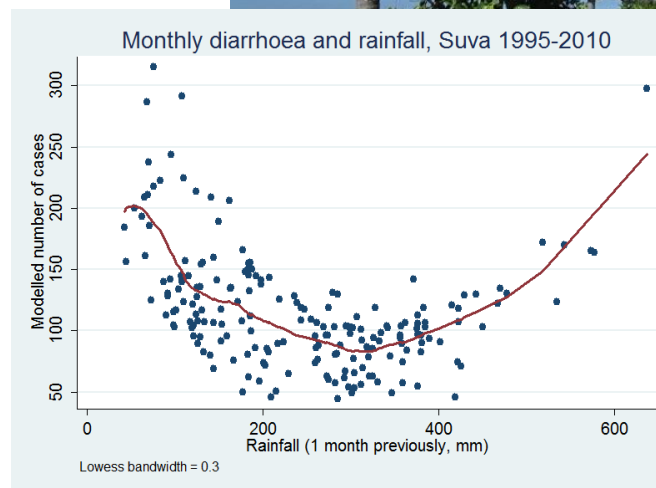


The Hospital Safety Index is a rapid, reliable, and low-cost diagnostic tool. It is easy to apply by a trained team of engineers, architects, and health professionals. It can help countries begin to prioritize investments in hospital safety to address growing risks from climate change.

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.



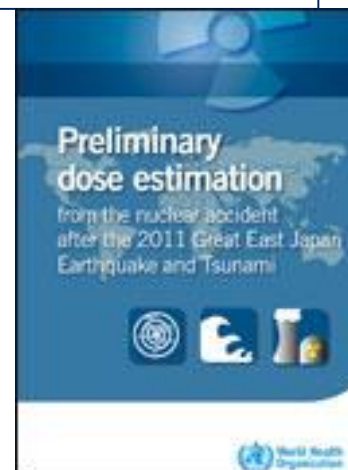
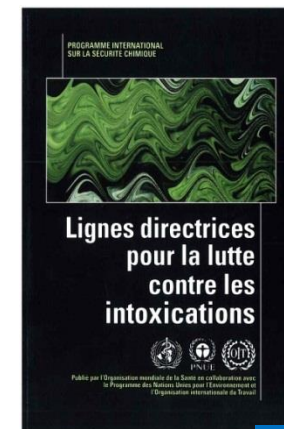
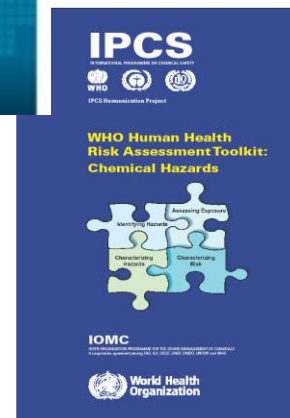
Island Countries in the Region are extremely vulnerable to climate change

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



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



Regional Forum

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



**World Health Organization**

REGIONAL FORUM ON ENVIRONMENT AND HEALTH
IN SOUTHEAST AND EAST ASIAN COUNTRIES



 [Vision/Objectives](#) [Governance](#) [Member Countries](#) [Scientific Panel](#) [Thematic Working Groups](#) [Knowledge Network](#) [News and Events](#) [Links](#)

Regional Forum on Environment and Health

Regional effort towards better environment and health

About one quarter of the total deaths in the Western Pacific Region are attributable to environmental risks. Some of these risks are long-standing, such as unsafe drinking water, poor sanitation and lack of appropriate waste management systems. Emerging threats are increasing, such as air pollution, exposure to toxic and hazardous chemicals, climate change and poor occupational conditions. In March 2014, WHO reported that air pollution is now the world's largest single environmental health risk. Air pollution is estimated to cause 16% of lung cancer deaths, 11% of deaths due to chronic obstructive pulmonary disease (COPD) and more than 20% of ischaemic heart disease and stroke. Other environmental chemicals, such as persistent organic pollutants, are linked to the increase in type 2 diabetes. An estimated 41% of deaths in the world due to indoor and outdoor air pollution occur in the Western Pacific Region.

Many environmental health risks are linked to economic development, rapid and unplanned urbanization and industrialization. Most governments are unprepared to address these threats to health that require close collaboration between health and environment ministries and policy measures involving other sectors (such as transport, energy, housing, agriculture and trade).

The WHO Regional Committee for the Western Pacific adopted a resolution on environmental health in 2005 (WPR/RC56.R7), encouraging Member States to participate actively in a platform for dialogue and action by health and environment ministries through the Regional Forum on Health and Environment in Southeast and

Latest News and Events

[Eighth High Level Officials' Meeting on Environment and Health in Southeast and East Asian countries](#)
10-11 November 2015, Jakarta, Indonesia

[Radiological and Nuclear Emergency Preparedness and Response – the IAEA conference EPR-2015](#) 
It is co-organized by the WHO among several other international organizations and will take place in Vienna, Austria on 19-23 October 2015.

[2 weeks Research Methods Course on 'Climate Change and Health'](#) 
Umeå University, Umeå, Sweden from 1st to 12th June 2015

Secretariat

United Nations Environment Programme
Mr Jonathan Gilman



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

Thank You

