

# Booklet 8

# Ecology and Health



# S4 – Concepts and Framework

Booklet (1) Personal development

Booklet (2) Health and well-being

## S4 – Holistic Health

Booklet (3) Physical

Booklet (4) Mental

Booklet (5) Social

## S5 – Macro Level

Health Management

Booklet (6) (8) (9) (10)

Social Care

Booklet (7) (11)

Round-up : Booklet(13) Health and Social Care Policies

# Macro Level

**Health Management**

**Social Care**

**Disease Prevention / Medical Care**

**Health Promotion**

**Booklet 7  
Caring Community**

**Booklet 11  
Social Welfare System**

**Booklet 6  
Healthy Community**

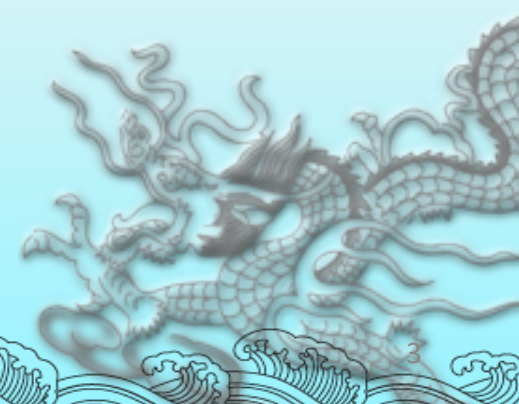
**Booklet 10  
Healthcare System**

**Booklet 8  
Ecology and Health**

**Booklet 9  
Building a Healthy City**

**ILL BEING**

**WELL BEING**



# Learning Targets

## Value and Attitude

- Appreciate the importance of a healthy ecology
- Appreciate equity and equality
- Appreciate national and international social justice

## Knowledge 8.1

- Analyse interrelationships between ecology and health from the ecological perspective

## Knowledge 8.2

- Recognize ecological factors that influence personal and social health



# Learning Targets

## Knowledge

8.3

- Identify the relationships between the developed and developing countries

## Knowledge

8.4

- Explore interventions required to minimize the effects of the adverse ecological factors

## Knowledge

8.5

- Analyze the impact of public health policies and government regulations on environmental health and community health

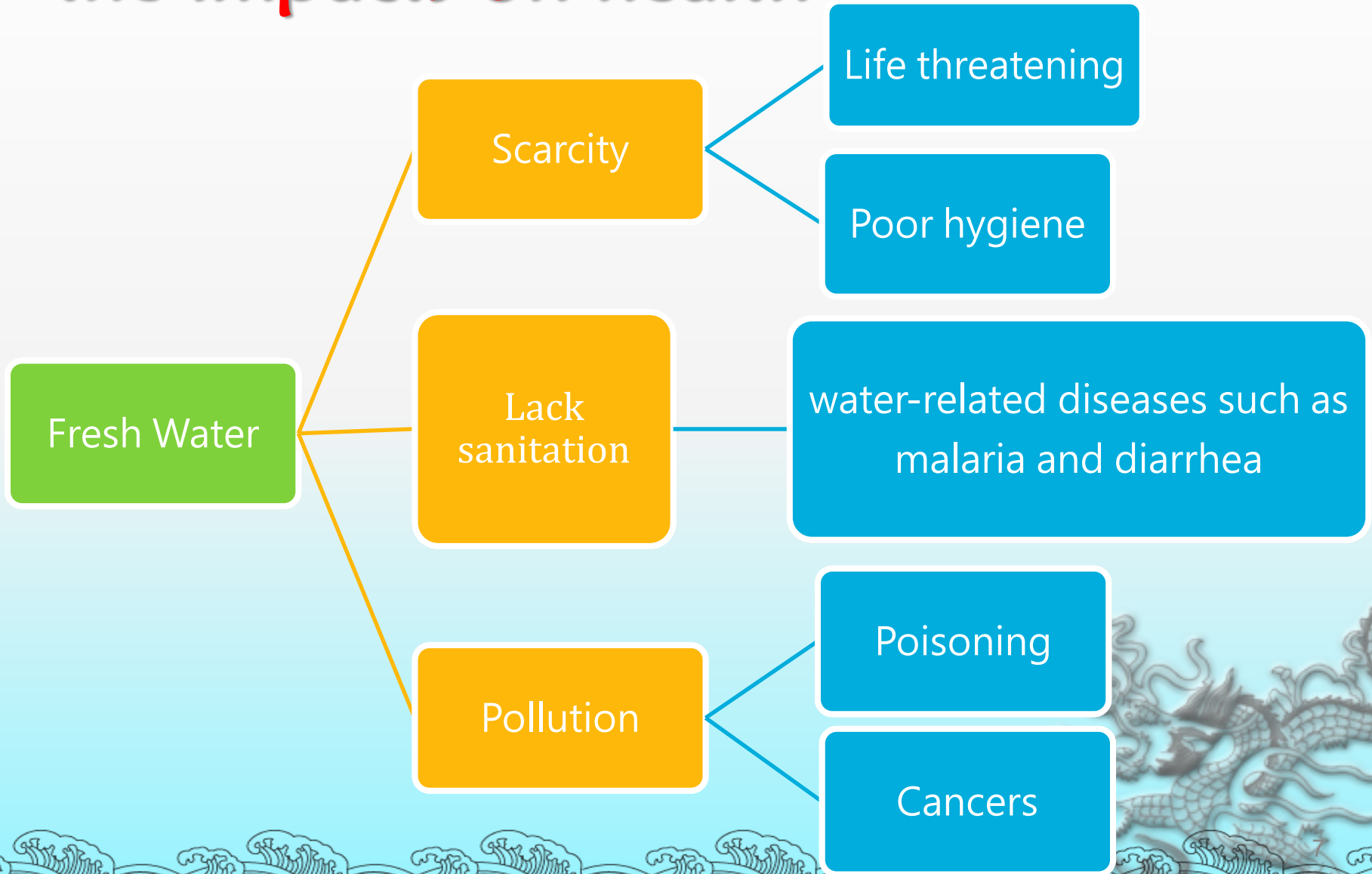


# 8.1 Ecology and Health

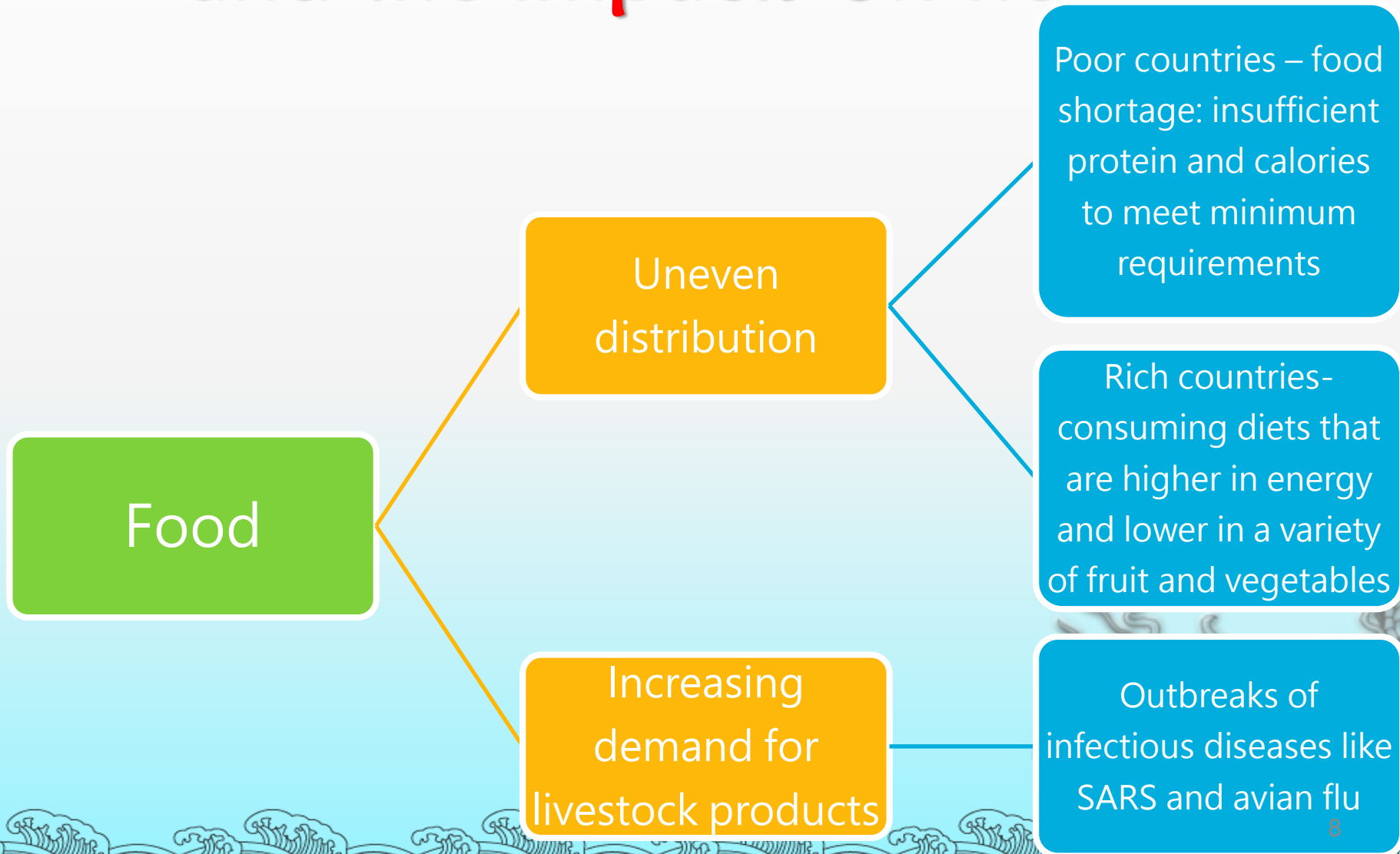
- ◆ Topic 1 - Personal Development, Social Care and Health Across the Lifespan
- ◆ *1A Biological, social, psychological, spiritual, ecological and cultural perspectives and dimensions*
- ◆ 1A6 Ecological perspective
  - ◆ Exhaustion of natural resources e.g. water, land, food
  - ◆ Global warming
  - *To understand that health can be examined by ecological perspective*
- ◆ *1D Factors affecting our health / illness experiences and personal and social well-being*
- ◆ 1D5 Ecological factors
  - ◆ Human activities: pollution, climate changes (e.g. global warming), genetic modification of foodstuff
  - ◆ Natural disasters: how natural disasters affect health and well-being
  - *To realise that knowledge of the determinants of health serve to deepen our understanding of not just the problems but the interventions needed to address them*



# Exhaustion of natural resources and the **impacts on health**

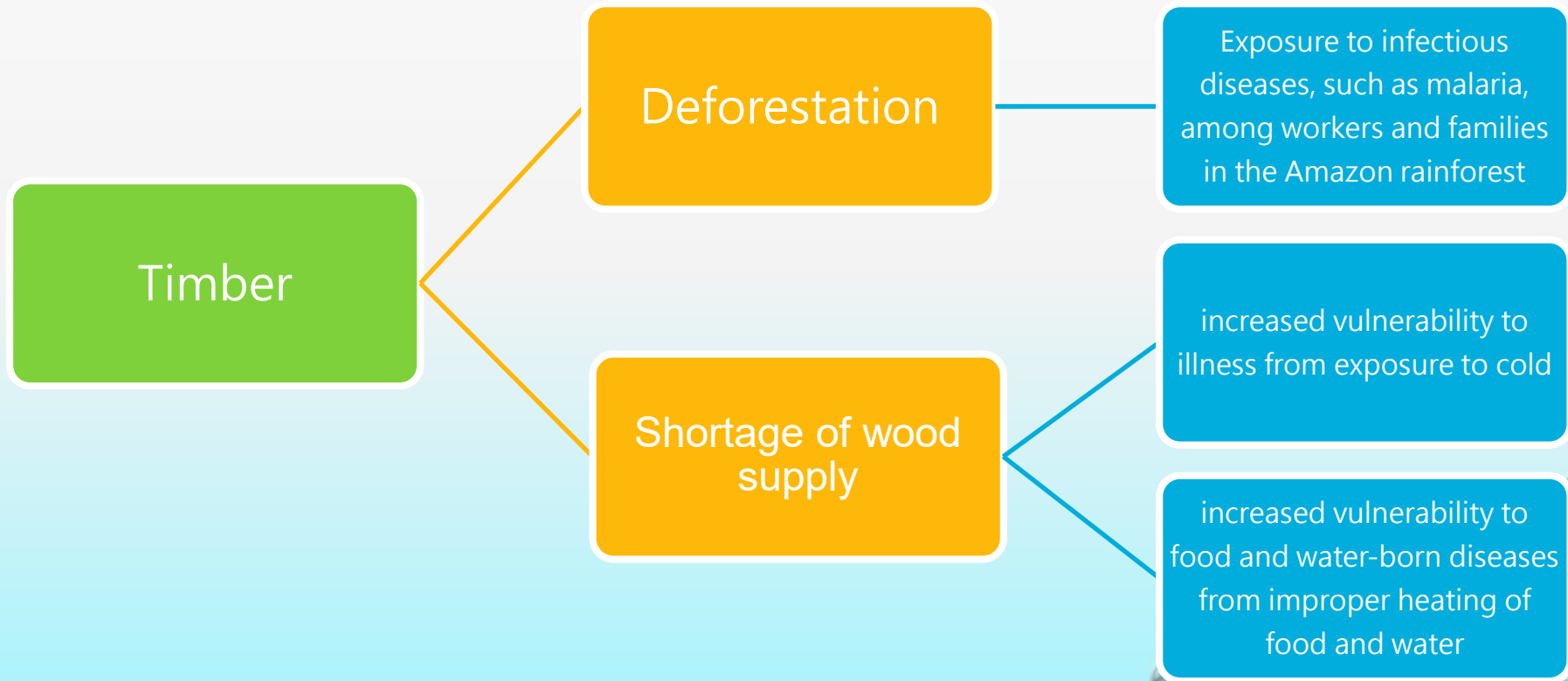


# Exhaustion of natural resources and the **impacts on health**





# Exhaustion of natural resources and the **impacts on health**



# Impacts on health - Climatic Changes

Rise in sea temperature

Induce water-borne infectious diseases

Extreme weather events ( such as heatwaves )

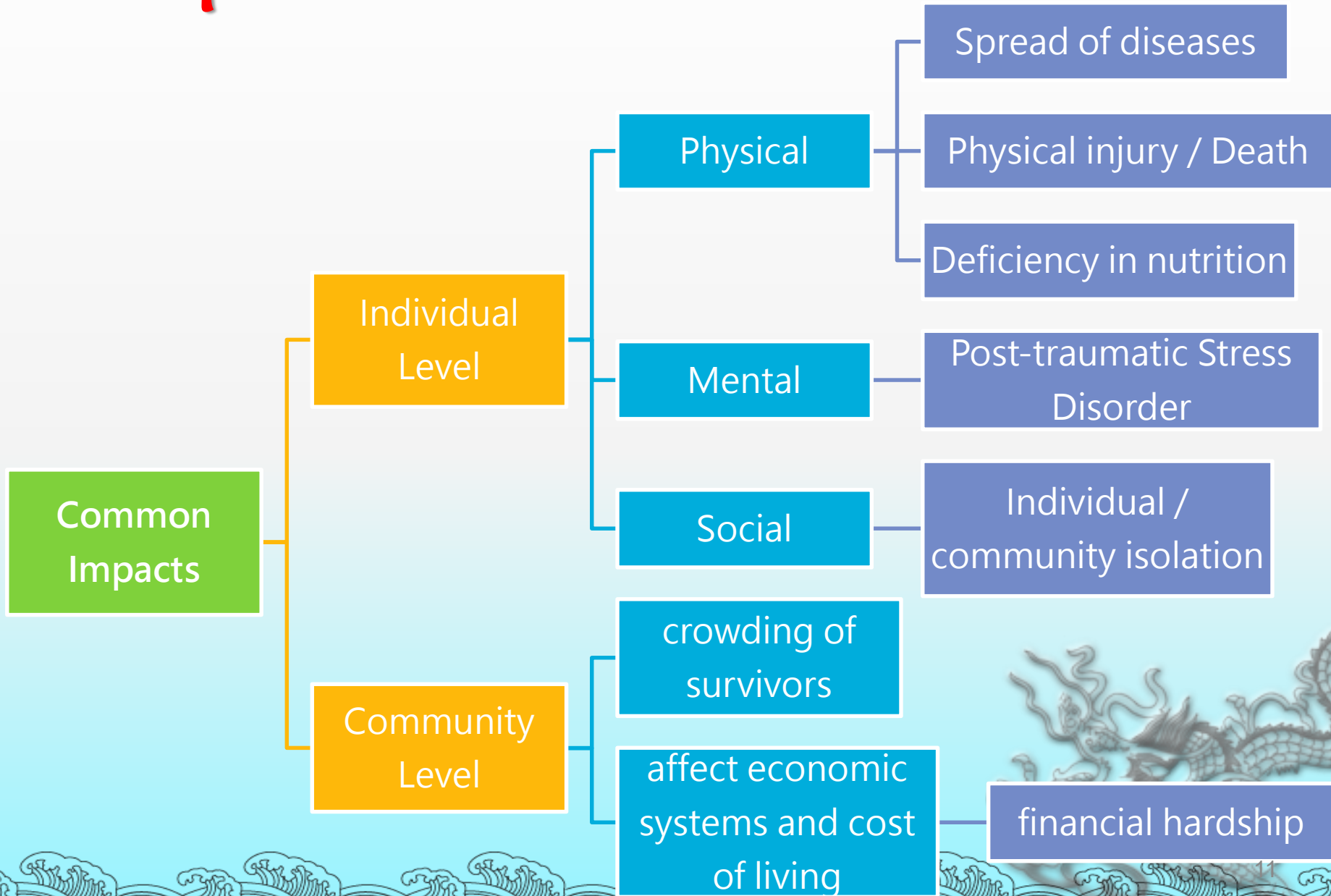
Risks from mild syncope to fatal heat stroke due to cardiovascular and respiratory conditions exacerbated by heat stress

Global warming

Those transmitted by vectors dependent for their survival on tropical or subtropical environments would spread

Exposure of malaria and dengue fever in both summer and winter

# Impacts on health - Disasters

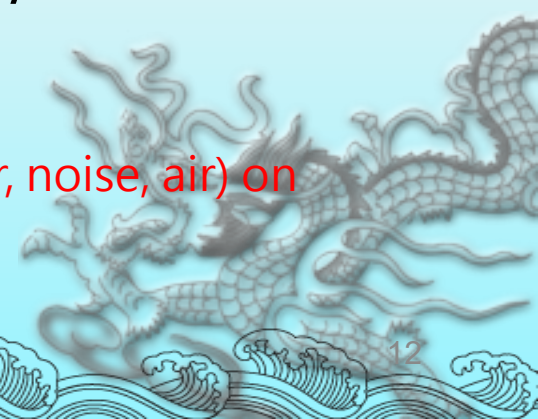


# 8.2 Environmental Hazards to Health

- ◆ Topic 1 - Personal Development, Social Care and Health Across the Lifespan
- ◆ *1A Biological, social, psychological, spiritual, ecological and cultural perspectives and dimensions*
  - ◆ 1A6 Ecological perspective
    - Forms of Pollution and their impact on health
    - *To understand that health can be examined by ecological perspective*

## Topic 4 - Promotion and Maintenance of Health and Social Care in the Community

- ◆ *4C Aspects of risk assessment and health management*
  - 4C3 Environmental health
    - Effects of pollutions (e.g. chemicals, radiation, water, noise, air) on health and social well-being



## 8.2 Environmental Hazards to Health

# Chemical Pollution

### Sources

- Food
- Vegetables with pesticide residue
- Pesticides sprayed on crops
- Chemicals for use in industry
- Chemicals contained in commonly used household products

### Paths

- Respiratory system
- Digestive system
- Skin
- Penetrate into the blood of the fetus through the placenta

### Impacts on Health

- Accumulation in various tissues and organs may cause cancers
- Excretion : Some excreted through the kidneys, digestive tract and respiratory tract. Some through secretions such as sweat, milk and saliva. Others leave the human body through the hair or during the metabolism of skin

# 8.2 Environmental Hazards to Health

## Radiation

### Source

- Natural Radiation - everywhere in the universe
- In a nuclear accident: ionizing Radiation, x-rays and radionuclides

### Paths

- Plume exposure pathway - inhalation
- Ingestion pathway - intake of contaminated water or ingestion of contaminated food

### Impacts on Health

- if the absorbed dose is not high - human cells can repair the damage through natural metabolic processes
- exposed to a high-enough dosage – leading to cancers

## 8.2 Environmental Hazards to Health

# Water Pollution

### Sources

- Industrial waste water contaminates underground water
- Oil slicks killing the fish
- Directly discharge waste water after domestic use
- Animal waste

### Paths

- Contamination in food chain

### Impacts on Health

- Nervous system disorder, Cancer, Vascular disease, Food poisoning such as ciguatera fish poisoning
- Typhoid fever, dysentery, cholera and parasitic worms



## 8.2 Environmental Hazards to Health

# Noise Pollution

### Sources

- Transportation (cars, trains, buses and subways)
- Manufacturing or industry

### Paths

- continued exposure to noise

### Impacts on Health

- neurasthenia
- rapid heartbeat, hypertension
- gastrointestinal ulcers, problems in digestion
- annoying, not be able to concentrate



## 8.2 Environmental Hazards to Health

# Air pollution

### Sources

- Local street-level pollution from motor vehicles
- Industry and power plants

### Paths

- Inhalation of air pollutants

### Impacts on health

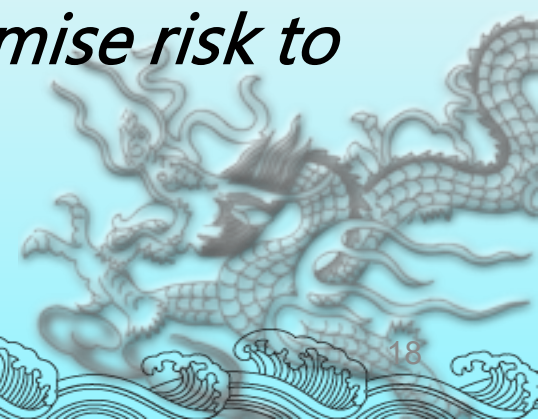
- Higher risk in respiratory illnesses such as coughs, colds, asthma, pneumonia, and bronchitis



# 8.4 Environmental Protection for Health

## Topic 4 - Promotion and Maintenance of Health and Social Care in the Community

- ◆ *4C Aspects of risk assessment and health management*
  - 4C3 Environmental health
  - ◆ Personal roles in protecting the environment (e.g. resource conservation, 3R - reduce, reuse and recycle)
  - *To explore the ways to manage personal and community health*
  - *To demonstrate behaviours that minimise risk to oneself and others*



# Individual Level

	Water	Timber	Food	Others
<b>Reduce</b>	➤ Use a container for washing, brushing teeth or shaving		➤ No waste to treat	➤ Use or buy only what we really need
<b>Reuse</b>	➤ Water can be used again. Save your bath water to wash the floor			
<b>Recycle</b>	➤ Use waste water instead of drinking water to flush the toilet			➤ Give items you don't need to people in need
<b>Replace</b>		➤ using handkerchiefs instead of tissues		

# 8.4 Environmental Protection for Health

## Topic 4 - Promotion and Maintenance of Health and Social Care in the Community

- ◆ *4C Aspects of risk assessment and health management*
  - 4C3 Environmental health
    - ◆ Government roles in the protecting the environment (e.g. legislation, promotion such as campaigns related to cleanliness and hygiene)

## Topic 3 – Responding to the Needs in the Areas of Health (care, promotion and maintenance) and Social Care

- ◆ *3B Developing health and social care / welfare policies*
  - 3B6 Linkages between ecology and health
    - ◆ Ecology and health - Control of pollutants, industrial waste, food safety, etc.
- *To analyse the impact of public health policies and government regulations on environmental health*



# Society Level

Pollution	Ordinance	Management
<b>Chemical</b>	Waste Disposal (Chemical Waste) (General) Regulation	<ul style="list-style-type: none"> <li>• <b>Legislation to control</b> the possession, storage, collection, transport and disposal of chemical waste</li> </ul>
<b>Radiation</b>		<ul style="list-style-type: none"> <li>• Hong Kong Observatory monitoring:               <ul style="list-style-type: none"> <li>➤ radioactivity in the atmosphere, rain and drinking water</li> <li>➤ measuring the environmental radiation levels in Hong Kong prior to and after the operation of the Guangdong Nuclear Power Plant at Daya Bay</li> </ul> </li> <li>• Low-level Radioactive Waste Storage Facility</li> </ul>
<b>Water</b>	Water Pollution Control Ordinance	<ul style="list-style-type: none"> <li>• <b>Legislation to control</b> waste water discharge</li> <li>• Environmental Protection Department (EPD)               <ul style="list-style-type: none"> <li>➤ to extend the public sewer networks in the NT and new development areas</li> <li>➤ collecting and treating sewage from both sides of Victoria Harbour / Tolo Harbour for chemical treatment, disinfection in and biological treatment</li> </ul> </li> <li>• Drainage Services Department               <ul style="list-style-type: none"> <li>➤ Carry out the sewerage master plans and the works</li> </ul> </li> </ul>

# Society Level

Pollution	Ordinance	Management
<b>Noise</b>	Noise Control Ordinance	<ul style="list-style-type: none"><li>• <b>Legislation to</b> control the construction noise piling is limited to three to five hours a day in built-up areas and quieter piling equipment must be used</li><li>• EPD<ul style="list-style-type: none"><li>➤ Barriers and screens are erected along roads</li></ul></li></ul>
<b>Air</b>	Air Pollution Control Ordinance	<ul style="list-style-type: none"><li>• <b>Legislation</b><ul style="list-style-type: none"><li>➤ the emissions from vehicles, power plants, industrial and commercial sources, construction activities, open burning, asbestos</li><li>➤ Volatile Organic Compound (VOC) content in architectural paints/coatings, printing inks and six broad categories of consumer products (i.e. air fresheners, hairsprays, multi-purpose lubricants, floor wax strippers, insecticides and insect repellents)</li></ul></li><li>• Working with the Pearl River Delta region on a joint plan to reduce the total amount of emissions from vehicles, industry and power plants</li></ul>

# Healthy Ecology

## Global Level

Community Level

Society Level

Individual Level



# 8.3 Developed and Developing Countries

- ◆ **Topic 2 - Health and Social Care in the Local and the Global Contexts**
- ◆ *2A Structural issues related to health, social care and personal and social well-being*
- ◆ **2A6 Inequalities**
  - ◆ Concepts of equality
  - ◆ Inequalities in social, national and global context
- ◆ **2A8 International social justice**
  - ◆ Relationships between developed and developing nations and societies
- To appreciate equality and the value of international social justice





# International Justice

## Example(1): Emission of Carbon Dioxide

### Event

- Excessive emissions of carbon dioxide in developed countries such as the United States

### Impact (1)

- Global warming that increases the risk of heat stroke / outbreak of diseases

### Impact (2)

- Decreased agriculture production which may lead to malnutrition of people in developing countries

# International Justice

## Example(2): Electronic Wastes

### Event

- Some developed countries have exported electronic waste to developing countries

### Impact

- Lead to heavy metal poisoning / increase risk of cancer

# 8.5 WHO Ecological Approach to Health Promotion

- ◆ **Topic 3 – Responding to the Needs in the Areas of Health (care, promotion and maintenance) and Social Care**
- ◆ *3B Developing health and social care / welfare policies*
- ◆ **3B6 Linkages between ecology and health**
  - ◆ The WHO approach to health promotion and illness prevention
- To analyse the impact of public health policies on environmental health



# Advocacy of WHO

**Health for  
All**

- Attainment of the highest possible level of health by societies as a basic human right
- Formulation of policies and strategies should be guided by principles of equity and solidarity

**Ottawa  
Charter**

- Fundamental conditions and resources for health are peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity
- To achieve equity in health, health promotion action aims at reducing differences in current health status and ensuring opportunities and resources to enable all people to achieve their fullest health potential



# WHO Approach to Health Promotion

- ◆ Health promotion strategies are not limited to a specific health problem, nor to a specific set of behaviours. WHO as a whole applies the principles of, and strategies for, health promotion to a variety of population groups, risk factors, diseases, and in various settings
- ◆ Health promotion, and the associated efforts put into education, community development, policy, legislation and regulation, are equally valid for prevention of communicable diseases, injury and violence, and mental problems, as they are for prevention of noncommunicable diseases

*(Source: WHO - <http://www.who.int/healthpromotion>)*

