

Human Health & Well-being KEY INSIGHTS

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WHO Climate Change Response since early 90's

A recent study by the World Health Organization (WHO) estimated that climate change directly or indirectly contributes to about 77 000 deaths annually in Asia and the Pacific — about half of the world's total deaths attributed to climate change



Dr Shigeru Omi,

World Health Organization Regional Director for the Western Pacific, warned:

“We have now reached a critical stage in which global warming has already seriously impacted lives and health, and this problem will pose an even greater threat to mankind in coming decades if we fail to act now.”

Among the potential effects of global warming would be the appearance of mosquitoes where they were previously absent, with the accompanying threat of malaria and dengue fever. Some regions might be at risk of reduced rainfall, causing a shortage of fresh water and introducing the danger of waterborne diseases. Millions of people could be at risk of malnutrition and hunger if arable lands become unworkable.



Climate Change and Human Health

Climate change is a significant and emerging threat to public health, and changes the way we must look at protecting vulnerable populations.

<http://www.who.int/globalchange/climate/en/>

Climate change and infectious diseases

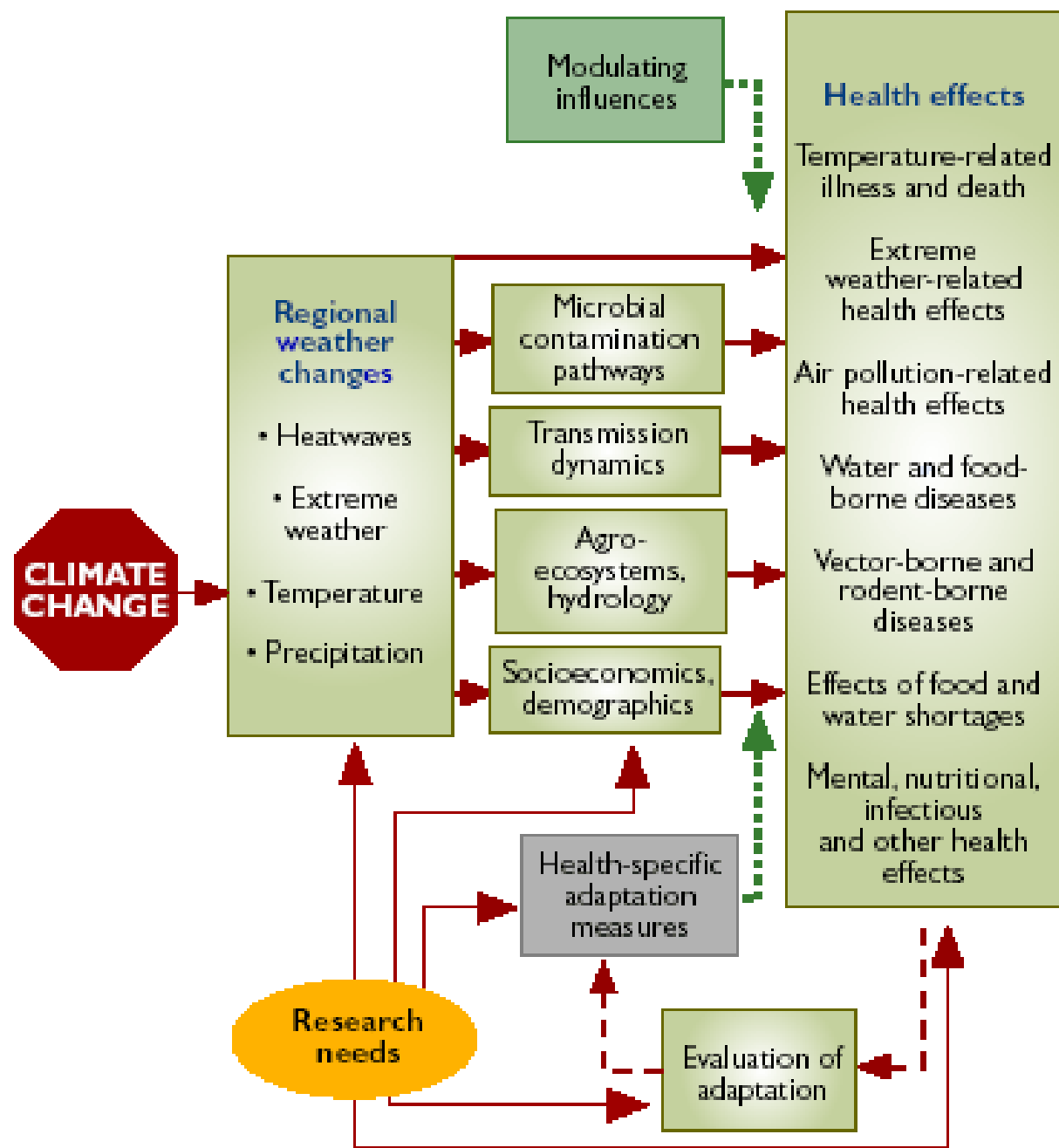
- Today, worldwide, there is an apparent increase in many infectious diseases, including some newly-circulating ones (HIV/AIDS, hantavirus, hepatitis C, SARS, etc.).
- This reflects the combined impacts of rapid demographic, environmental, social, technological and other changes in our ways-of-living.
- Climate change will also affect infectious disease occurrence

<http://www.who.int/globalchange/climate/summary/en/index5.html>

Examples of how diverse environmental changes affect the occurrence of various infectious diseases in humans

Environmental changes	Example diseases	Pathway of effect
Dams, canals, irrigation	Schistosomiasis	▲ Snail host habitat, human contact
	Malaria	▲ Breeding sites for mosquitoes
	Helminthiasis	▲ Larval contact due to moist soil
	River blindness	▼ Blackfly breeding, ▼ disease
Agricultural intensification	Malaria	Crop insecticides and ▲ vector resistance
	Venezuelan haemorrhagic fever	▲ rodent abundance, contact
Urbanization, urban crowding	Cholera	▼ sanitation, hygiene; ▲ water contamination
	Dengue	Water-collecting trash, ▲ <i>Aedes aegypti</i> mosquito breeding sites
	Cutaneous leishmaniasis	▲ proximity, sandfly vectors
Deforestation and new habitation	Malaria	▲ Breeding sites and vectors, immigration of susceptible people
	Oropouche	▲ contact, breeding of vectors
	Visceral leishmaniasis	▲ contact with sandfly vectors
Reforestation	Lyme disease	▲ tick hosts, outdoor exposure
Ocean warming	Red tide	▲ Toxic algal blooms
Elevated precipitation	Rift valley fever	▲ Pools for mosquito breeding
	Hantavirus pulmonary syndrome	▲ Rodent food, habitat, abundance

▲ increase ▼ reduction



UNFCCC - The Bali Breakthrough

The global consensus in Bali:

- ✿ Bali Action Plan
- ✿ REDD demonstration projects
- ✿ Adaptation fund mechanism
- ✿ Technology transfer and its finance mechanism







Bali Roadmap Challenges

- ✱ Maintaining high level of enthusiasm from now until Copenhagen in December 2009.
- ✱ Upholding and translating the principle of common but differentiated responsibilities into realities.
- ✱ Elaborating mitigation targets for countries with different abilities.
- ✱ Supporting vulnerable countries and communities to cope with worsening impacts of climate change.
- ✱ Translating words into actions.

REDD

- While deforestation accounts for about one fifth of global emissions of the greenhouse gas carbon dioxide, only afforestation and reforestation activities are included under the Kyoto Protocol – no policies aimed at avoiding further deforestation.
- This particularly penalises developing countries. Papua New Guinea, like many other countries, has therefore been working to secure approaches to reducing emissions from deforestation in developing countries (known as REDD),
- Under the international climate change regime. This matter has become an important part of current climate change negotiations

IPCC - Inter- Govt Panel on Climate Change - Fourth Assessment Report (AR4)

Mandate to assess scientific information related to climate change, to evaluate the environmental and socio-economic consequences of climate change, and to formulate realistic response strategies.

Recall that the U.N. climate change panel working group initially had three parts, the task is to "prove" that most of the recent climate change is man-made: -

WG1: physical processes

WG2: impact on life and societies

WG3: how to cool down Earth

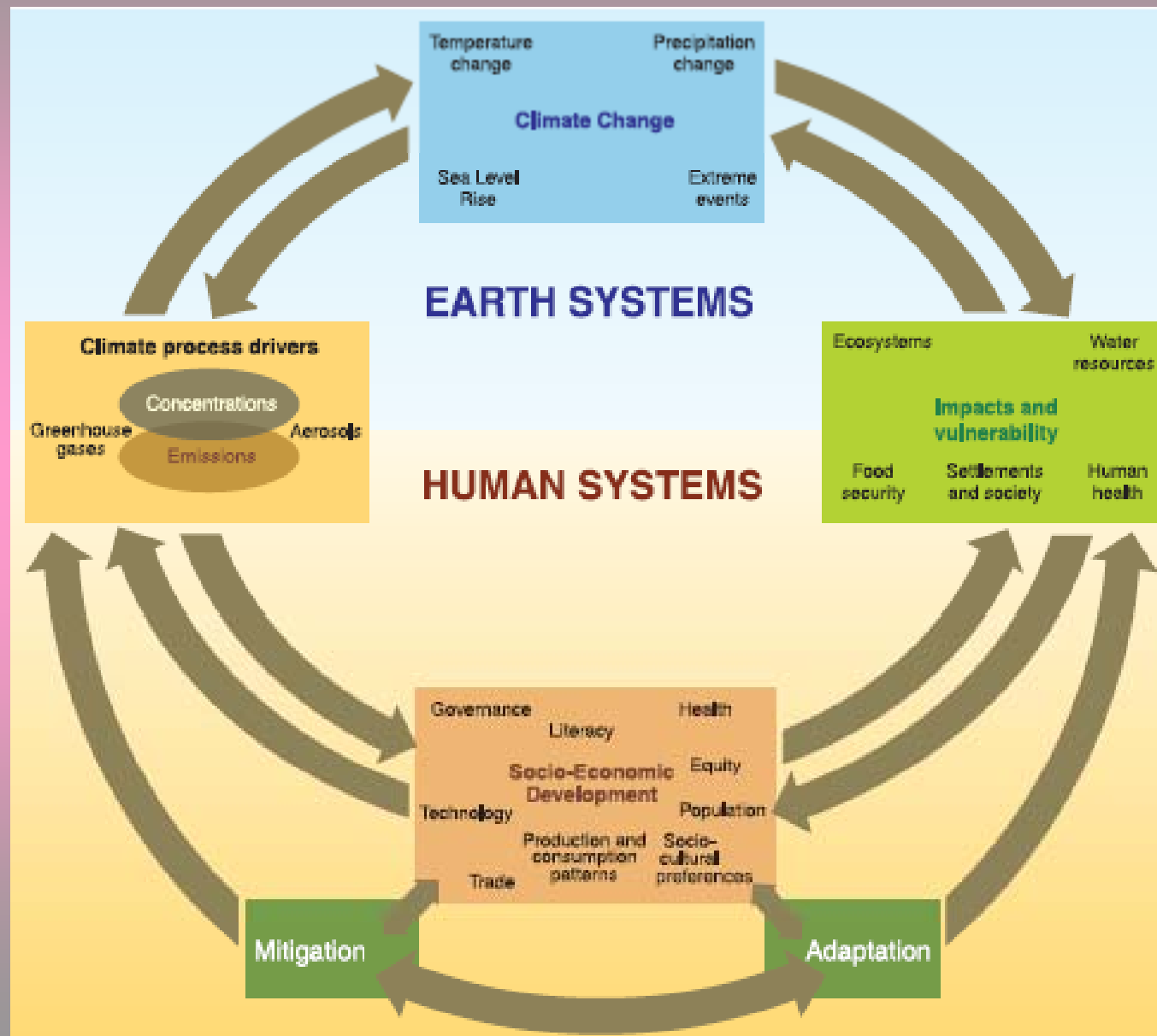
Now IPCC Forth Assessment Report AR4

(see <http://www.ipcc.ch/>)

- The most recent report of the Intergovernmental Panel on Climate Change confirmed that there is overwhelming evidence that humans are affecting the global climate, and highlighted a wide range of implications for human health. Climate variability and change cause death and disease through natural disasters, such as heatwaves, floods and droughts.
- In addition, many important diseases are highly sensitive to changing temperatures and precipitation. These include common vector-borne diseases such as malaria and dengue; as well as other major killers such as malnutrition and diarrhoea. Climate change already contributes to the global burden of disease, and this contribution is expected to grow in the future.

<http://www.who.int/globalchange/climate/en/>

Schematic framework of anthropogenic climate change drivers, impacts and responses

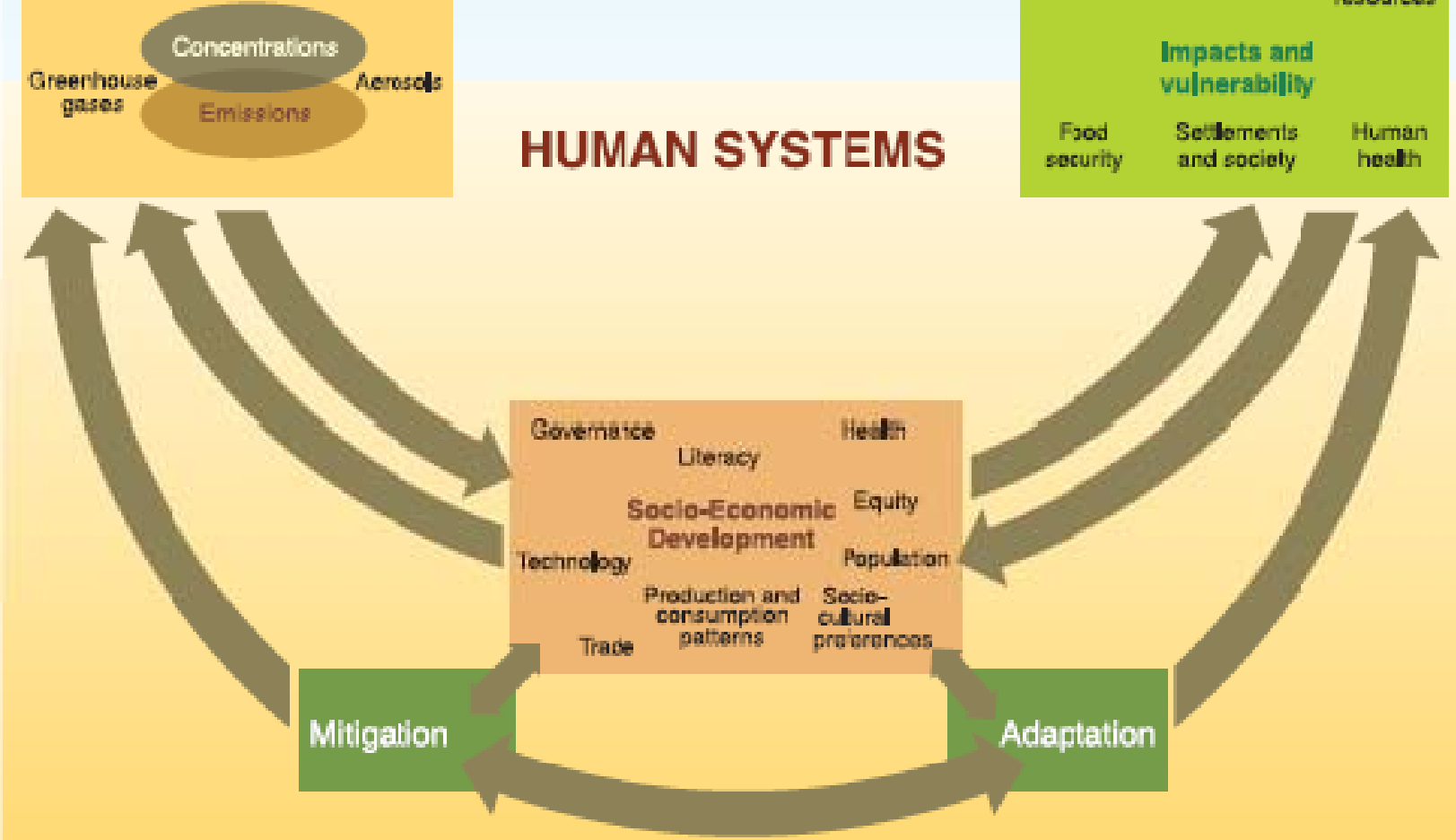


Synthesis Report 2007

An Assessment of the Intergovernmental Panel on Climate Change

<http://www.ipcc.ch/>

Schematic framework of anthropogenic climate change drivers, impacts and responses



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What does Climate Change mean for SEQ in 2026 and Challenges on getting there?

Economic Dislocation & Population Displacement

Increasing sea levels and the impact on waterfront development

‘Climate change refugees’ - Small Pacific Island States – dislocation & impacts on wellbeing and mental health

The productivity of local agro-ecosystems

The range and seasonality of infectious diseases & particular health outcomes

- Surprising shifts in disease patterns.
- Changing diseases patterns e.g. asthma, tuberculosis and mosquito-borne; malaria, dengue in tropical and subtropical regions
- Climate induced changes in the frequency or severity of familiar health risks – eg, floods storms and fires
- Mortality toll of heat waves / heat stress on aging populations
- Altered drinking water supplies and quality

Availability and security of food & water resources (economics/health)

- **Predicted decrease in crop yields for grains and forestry in Aus (fires also linked to reduced forest productivity)**
- **Lower rainfalls / drought /increased temp and evaporation – impacts on agriculture, potable water supplies and subsequent economics**
- **Cost of transporting produce large distances and cost of animal products (especially for lower income and regional Aust)**

Leisure and lifestyle, social structure changes

- Travel costs (fuel) reduced trips, change in family visitation patterns and frequency and distance of 'holidays'
- Loss of or degradation of significantly valued built and natural resources (eg. GBR (oceanic acidification), coastal wetlands, beaches and recreation areas, Gold Coast)
- Impact on global tourism market – potential for less local and international visitors due to loss of key valued resources as mentioned above and cost of travel – currently a huge tourism industry could lead to loss of jobs and economic stress
- Cost of housing materials and insurance costs increasing
- Opportunity for sustainable development

Mitigation and adaptation

- Can we adapt to life with climate change? (capacity for change – change management – cultural shift – is it fast enough? What can we do?)
- What are the key threats for society/culture/planning/work/cities, etc
- Best Practice mitigation/adaptation strategies? Planning? Local govt response, department roles eg EH vs Community Development vs HPromotion
- Australia is likely to be less affected in areas such as security and social dysfunction due to our affluence as a nation – however we need to be prepared for the global ramifications as well as the local.
- Key areas for knowledge, research, policy and action

Examples of Key objectives for Environmental Practitioners to address

SEQ 2026

Develop an inter-sectorial (local and regional) approach to managing Climate Change refugees

Influence regional planning in SEQ to include the impacts of Climate Change on human health & wellbeing particularly infectious diseases

To map the shifts in disease patterns to improve decision making

- Evidence or research-based decision making

**Most of the expected health impacts will be adverse,
– a few will be beneficial.**

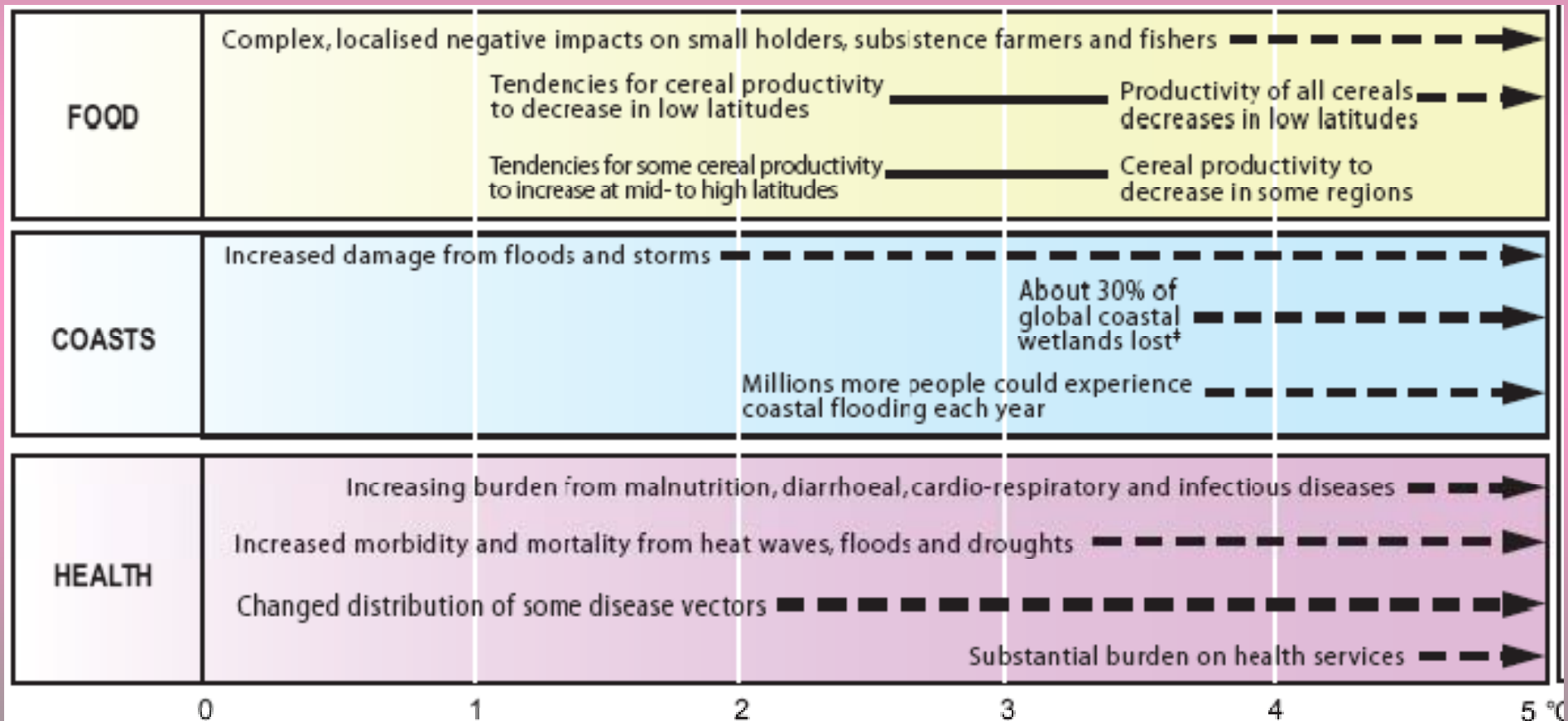
**Societies can respond to climate change by
adapting to its impacts through mitigation processes,
- thereby reducing the rate and magnitude of change.**

THEME GROUPS SESSION:

Human Health & Well-being

Examples of impacts associated with global average temperature change

(Impacts will vary by extent of adaptation, rate of temperature change and socio-economic pathway)



Global average annual temperature change relative to 1980-1999 (°C)



- Climate change programs
- Business & industry
- Energy efficiency
- Government
- Households & community
- Renewable energy
- Related sites
- What can you do?
- Global Warming Cool It
- At Home
- At School
- At Work
- Consumers
- Rebates
- Transport

Your location: [Home](#) > [Climate change programs](#)

Climate change programs

Business & industry Energy efficiency Government Households & communities Renewable energy

Households & communities

Appliances & fittings

- [Lighting](#) - energy efficient lights, CFLs
- [Energy Rating](#)
- [Energy Star](#)
- [Water Efficiency Labelling and Standards \(WELS\) Scheme](#)
Department of the Environment, Water, Heritage and the Arts

Buildings & houses

- [Buildings](#) - energy standards
- [NatHERS](#) - house energy ratings
- [Your home](#) - for builders and renovators, environmentally sustainable homes
Department of the Environment, Water, Heritage and the Arts

Communities & local government

- [Local Greenhouse Action](#) - Cities for Climate Protection, Public lighting
- [Solar Cities](#) - trialing energy options
Department of the Environment, Water, Heritage and the Arts

Education

- [Climate change education](#) - energy saving tips, what can you do?

Energy saving tips

- [Global warming Cool it!](#) - A home guide to reducing energy costs and greenhouse gases

Australian Government Action on Climate Change

The Australian Government has embraced a comprehensive plan of action to reduce our national emissions. Key elements include:

- > **A commitment to reduce Australia's greenhouse gas emissions by 60 per cent on 2000 levels by 2050**
- > **Implementing a comprehensive emissions trading scheme by 2010 to deliver these targets**
- > **Investing in research and development on low emissions technologies**
 - Tackling climate change will require a wide range of appropriate technologies, including clean fossil fuels, biofuels, hydrogen and energy efficiency.
 - The Government is investing \$500 million in a Renewable Energy Fund; \$500 million for a National Clean Coal Fund; \$500 million for the Green Car Innovation fund; \$150 million for solar and clean energy research and \$240 million to establish Clean Business Australia, tackling climate change through projects with a focus on productivity and innovation.
- > **Helping households and businesses to use energy more wisely.**

Through direct financial incentives, strengthened energy efficiency regulations and targeted information, households will be helped to use less energy while saving money. Key measures include

 - \$10,000 **low interest loans** for Australian households to implement energy and water savings,
 - rebates for **energy-efficient insulation** for 300,000 rental homes,
 - \$8000 rebates for rooftop **solar power panels**,
 - \$1000 rebates for **solar hot water systems**,
 - \$500 rebates for **rainwater tanks and grey water recycling**,

SECTOR

Water
{WGII, 5.5, 16.4;
Tables 3.5, 11.6,17.1}

Agriculture
{WGII 10.5, 13.5;
Table 10.8}

**Infrastructure/
settlement (including
coastal zones)**
{WGII 3.6, 11.4; Tables
6.11, 17.1}

Human health
{WGII 14.5, Table 10.8}

Tourism
{WGII 12.5, 15.5, 17.5;
Table 17.1}

Transport
{WGII 7.6, 17.2}

Energy
{WGII 7.4, 16.2}

Adaptation option/strategy

Expanded rainwater harvesting; water storage and conservation techniques; water reuse; desalination; water-use and irrigation efficiency

Adjustment of planting dates and crop variety; crop relocation; improved land management, e.g. erosion control and soil protection through tree planting

Relocation; seawalls and storm surge barriers; dune reinforcement; land acquisition and creation of marshlands/wetlands as buffer against sea level rise and flooding; protection of existing natural barriers

Heat-health action plans; emergency medical services; improved climate-sensitive disease surveillance and control; safe water and improved sanitation

Diversification of tourism attractions and revenues; shifting ski slopes to higher altitudes and glaciers; artificial snow-making

Realignment/relocation; design standards and planning for roads, rail and other infrastructure to cope with warming and drainage

Strengthening of overhead transmission and distribution infrastructure; underground cabling for utilities; energy efficiency; use of renewable sources; reduced dependence on single sources of energy

Underlying policy framework

National water policies and integrated water resources management; water-related hazards management

R&D policies; institutional reform; land tenure and land reform; training; capacity building; crop insurance; financial incentives, e.g. subsidies and tax credits

Standards and regulations that integrate climate change considerations into design; land-use policies; building codes; insurance

Public health policies that recognise climate risk; strengthen health services; regional and international cooperation

Integrated planning (e.g. carrying capacity; linkages with other sectors); financial incentives, e.g. subsidies and tax credits

Integrating climate change considerations into national transport policy; investment in R&D for special situations, e.g. permafrost areas

National energy policies, regulations, and fiscal and financial incentives to encourage use of alternative sources; incorporating climate change in design standards

Synthesis Report 2007

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Intergovernmental
Panel on Climate
Change

<http://www.ipcc.ch/>

Key constraints and opportunities to implementation (Normal font = constraints; *italics* = opportunities)

Financial, human resources and physical barriers; *integrated water resources management; synergies with other sectors*

Technological and financial constraints; access to new varieties; markets; *longer growing season in higher latitudes; revenues from 'new' products*

Financial and technological barriers; availability of relocation space; *integrated policies and management; synergies with sustainable development goals*

Limits to human tolerance (vulnerable groups); knowledge limitations; financial capacity; *upgraded health services; improved quality of life*

Appeal/marketing of new attractions; financial and logistical challenges; potential adverse impact on other sectors (e.g. artificial snow-making may increase energy use); *revenues from 'new' attractions; involvement of wider group of stakeholders*

Financial and technological barriers; availability of less vulnerable routes; *improved technologies and integration with key sectors (e.g. energy)*

Access to viable alternatives; financial and technological barriers; acceptance of new technologies; *stimulation of new technologies; use of local resources*

**Adaptation
mitigation options
responses,**

**and the inter-relationship with sustainable
development, at global and regional levels**

SECTOR

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Energy Supply {WGIII 4.3, 4.4}

Key mitigation technologies and practices currently commercially available
Key mitigation technologies and practices projected to be commercialised before 2030 shown in italics

Improved supply and distribution efficiency; fuel switching from coal to gas; nuclear power; renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power; early applications of carbon dioxide capture and storage (CCS) (e.g. storage of removed CO₂ from natural gas); *CCS for gas, biomass and coal-fired electricity generating facilities; advanced nuclear power; advanced renewable energy, including tidal and wave energy, concentrating solar, and solar photovoltaics*

Transport {WGIII 5.4}

More fuel-efficient vehicles; hybrid vehicles; cleaner diesel vehicles; biofuels; modal shifts from road transport to rail and public transport systems; non-motorised transport (cycling, walking); land-use and transport planning; *second generation biofuels; higher efficiency aircraft; advanced electric and hybrid vehicles with more powerful and reliable batteries*

Buildings {WGIII 6.5}

Efficient lighting and daylighting; more efficient electrical appliances and heating and cooling devices; improved cook stoves; improved insulation; passive and active solar design for heating and cooling; alternative refrigeration fluids, recovery and recycling of fluorinated gases; *integrated design of commercial buildings including technologies, such as intelligent meters that provide feedback and control; solar photovoltaics integrated in buildings*

Industry {WGIII 7.5}

More efficient end-use electrical equipment; heat and power recovery; material recycling and substitution; control of non-CO₂ gas emissions; and a wide array of process-specific technologies; *advanced energy efficiency; CCS for cement, ammonia, and iron manufacture; inert electrodes for aluminium manufacture*

Agriculture {WGIII 8.4}

Improved crop and grazing land management to increase soil carbon storage; restoration of cultivated peaty soils and degraded lands; improved rice cultivation techniques and livestock and manure management to reduce CH₄ emissions; improved nitrogen fertiliser application techniques to reduce N₂O emissions; dedicated energy crops to replace fossil fuel use; improved energy efficiency; *improvements of crop yields*

Forestry/forests {WGIII 9.4}

Afforestation; reforestation; forest management; reduced deforestation; harvested wood product management; use of forestry products for bioenergy to replace fossil fuel use; *tree species improvement to increase biomass productivity and carbon sequestration; improved remote sensing technologies for analysis of vegetation/soil carbon sequestration potential and mapping land-use change*

Waste {WGIII 10.4}

Landfill CH₄ recovery; waste incineration with energy recovery; composting of organic waste; controlled wastewater treatment; recycling and waste minimisation; *biocovers and biofilters to optimise CH₄ oxidation*

Policies, measures and instruments shown to be environmentally effective

Reduction of fossil fuel subsidies; taxes or carbon charges on fossil fuels

Feed-in tariffs for renewable energy technologies; renewable energy obligations; producer subsidies

Mandatory fuel economy; biofuel blending and CO₂ standards for road transport

Taxes on vehicle purchase, registration, use and motor fuels; road and parking pricing

Influence mobility needs through land-use regulations and infrastructure planning; investment in attractive public transport facilities and non-motorised forms of transport

Appliance standards and labelling

Building codes and certification

Demand-side management programmes

Public sector leadership programmes, including procurement

Incentives for energy service companies (ESCOs)

Provision of benchmark information; performance standards; subsidies; tax credits

Tradable permits

Voluntary agreements

Financial incentives and regulations for improved land management; maintaining soil carbon content; efficient use of fertilisers and irrigation

Financial incentives (national and international) to increase forest area, to reduce deforestation and to maintain and manage forests; land-use regulation and enforcement

Financial incentives for improved waste and wastewater management

Renewable energy incentives or obligations

Waste management regulations

Key constraints and opportunities to implementation
(Normal font = constraints; italics = opportunities)

Resistance by vested interests may make them difficult to implement

May be appropriate to create markets for low-emissions technologies

Partial coverage of vehicle fleet may limit effectiveness

Effectiveness may drop with higher incomes

Particularly appropriate for countries that are building up their transportation systems

Periodic revision of standards needed

Attractive for new buildings. Enforcement can be difficult

Need for regulations so that utilities may profit

Government purchasing can expand demand for energy-efficient products

Success factor: Access to third party financing

May be appropriate to stimulate technology uptake. Stability of national policy important in view of international competitiveness

Predictable allocation mechanisms and stable price signals important for investments

Success factors include: clear targets, a baseline scenario, third-party involvement in design and review and formal provisions of monitoring, close cooperation between government and industry

May encourage synergy with sustainable development and with reducing vulnerability to climate change, thereby overcoming barriers to implementation

Constraints include lack of investment capital and land tenure issues. *Can help poverty alleviation.*

May stimulate technology diffusion

Local availability of low-cost fuel

Most effectively applied at national level with enforcement strategies

Tools/Mechanisms

What tools should we equip practitioners with to assist in meeting these objectives??

- Improved environmental & social planning mechanisms to cater for the needs of climate change refugees and local dislocation of human populations
- Better understanding of human disease impacts e.g. epidemiological data
- Informed & ethical land use policy and planning
- Government & community participation techniques
- Improved modelling & access to tools e.g. Spatial mapping.
- Influence political decision making

Human health and well-being themes (building capacity of practitioners)

Capacity – skills, competencies and leadership

Resources – targets, outcomes, rewards and incentives

Evidence – an evidence base, impact assessment, costed options

Engagement- at individual, community, institutional and governmental levels

Collaboration – greater integration between policies, programs and organisations

???