Consequences for Sustainable Economic Development

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Uneven Development and Multidimensional Inequalities

Differences in vulnerability and exposure arise from non-climatic factors and from multi-dimensional inequalities often produced by uneven development processes.

These differences shape differential risks from climate change.

People who are socially, economically, culturally, politically, institutionally or otherwise marginalized are especially vulnerable to climate change and also to some adaptation & mitigation responses.
Inequalities

WGII, Fig 13.5 and Box TS 4 Fig 1
Impacts of Climate-Related Hazards

Exacerbate other stressors

Negative impacts for people and livelihoods

WGII, Fig 13.3
Future Risks

Climate change will amplify existing risks and create new risks for natural and human systems.

Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development.

Increasing magnitudes of warming increase the likelihood of severe, pervasive, and irreversible impacts for people, species and ecosystems.
Representative key risks for each region for human and managed systems:

**Physical Systems**
- Glaciers, snow, ice, and/or permafrost
- Rivers, lakes, floods, and/or drought
- Coastal erosion and/or sea level effects

**Biological Systems**
- Terrestrial ecosystems
- Wildfire
- Marine ecosystems

**Human & Managed Systems**
- Food production
- Livelihoods, health, and/or economics

**Polar Regions (Arctic and Antarctic)**
- Risks for health and well-being

**Europe**
- Increased damages from extreme heat events and wildfires

**Asia**
- Increased flood damage to infrastructure, livelihoods, and settlements

**North America**
- Heat-related human mortality

**Central and South America**
- Reduced food production and quality
- Vector- and water-borne diseases

**Africa**
- Reduced crop productivity and livelihood and food security

**Small Islands**
- Loss of livelihoods, settlements, infrastructure, ecosystem services, and economic stability

**Australasia**
- Increased flood damage to infrastructure and settlements
Reasons for Concern

Indigenous and other unique communities/social systems:

Arctic communities + N Europe:
Livelihoods of indigenous peoples (e.g. Inuit, Sámi)
Increased shipping traffic (Bering Street)

High mountain communities:
Declining livelihood trajectories (Aymara)
Indigenous and other unique communities/social systems:

Loss of land, cultural and natural heritage disrupting cultural practices embedded in livelihoods

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<td>Present</td>
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WGII, Fig 12.1
Reasons for Concern

Megacities – urban heat island effect, air pollution, and differential vulnerabilities

Urban housing and human health

Displacement and permanent migration

Livelihood struggles and conflict in resource-dependent livelihoods (agriculture, pastoralism)

High livelihood vs monetary damage
Reasons for Concern

WGII, Fig 12.1
Reasons for Concern

Increasingly unevenly distributed risks
- low-latitudes, low-income countries
- crop yields, water availability
- inequalities

Shifts from transient to chronic poverty
(social marginalization & food insecurity)

Elderly, children, the socially marginalized,
and outdoor workers disproportionally at risk from heat stress
Aggregate economic damages moderate up to 2-2.5°C warming (~0.2-2% of income), but accelerate with increasing temperature. Aggregate economic damages (esp. GDP) mask impacts across sectors, regions, poor. Asset losses can tip livelihoods of the poor. Current evaluations incomplete.
Reasons for Concern

Limits to adaptation for urban water supply systems, heat-sensitive people, productivity, food security, and cultural identity (loss)

Declining adaption potential for conflict over land acquisition (M) and displacement

Few estimates of economic costs of ≥3°C
The Long-Term Goal and Sustainable Development

- Climate change is a threat to equitable and sustainable development
- Averages and aggregates mask disproportional impacts and risks
- Critical thresholds for communities and society NOT from a global average
- Critical thresholds of climate stressors in combination with other stressors – exacerbate livelihood struggles, especially among disadvantaged people
- Yardstick: transition from acceptable to unacceptable at the local level
- Limiting the effects of climate change is necessary to achieve sustainable development and equity, including eradication of poverty
Climate-Resilient Development Pathways

• Current global development pathways contribute to climate risk/vulnerability

• Reducing vulnerability = prerequisite for adaptation, sustainable development

• Adaptation and mitigation while improving livelihoods, well-being, and equity

• Consideration of co-benefits, adverse side-effects, and risks from mitigation and adaptation options, even if difficult to quantify (no “silver bullet”)

• Countries’ visions for transformation and sustainable development

• Sustainable development and equity – basis for climate policies.
Global mean surface temperature increase, RCPs and total anthropogenic warming, by 2100
Development, RCPs and global mean temperature (2100), and emission reductions (2050)