

Global Climate Change Alliance  
Support Facility

## Module 1

### Understanding climate change – development linkages

Training workshops on  
mainstreaming climate change

---

---

---


---

---

---

---

---



## Adaptation, mitigation and vulnerability

2

---

---

---

---


---

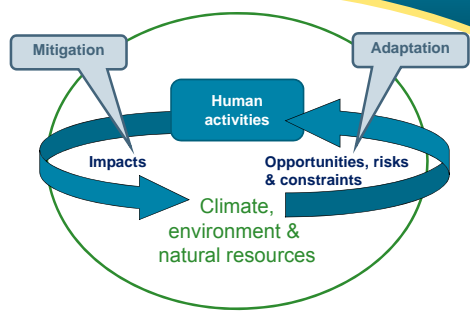
---

---

---

## Adaptation and mitigation





3

---

---

---

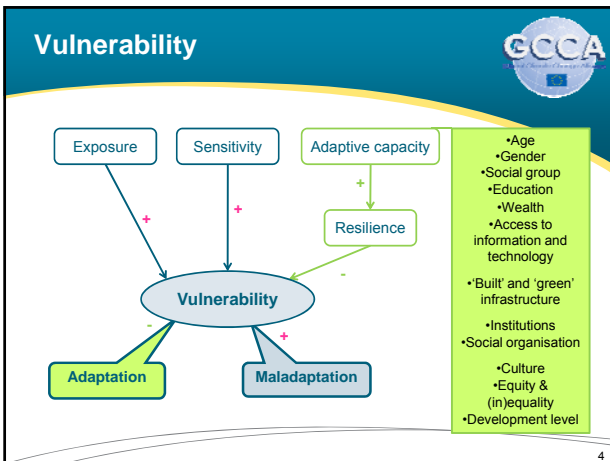
---

---

---

---

---




---

---

---

---

---

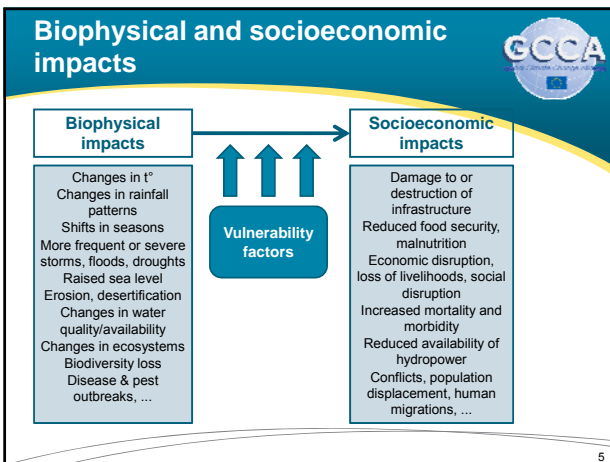
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

### Illustration: Possible climate change impacts in Africa

- Areas suitable for agriculture, length of growing seasons and yields expected to decrease
  - margins of semi-arid and arid areas particularly at risk
- 75 to 250m people projected to be exposed to increased water stress by 2020 – and 350-600m by 2050
  - northern and southern Africa particularly concerned
- Significant impacts of sea level rise on coastal areas
  - e.g. 17 to 30% of Guinea's rice field area threatened by 2050
- Changes in areas suitable for malaria transmission
  - e.g. western Sahel and southern-central Africa less exposed, highlands of Ethiopia/Kenya/Rwanda/Burundi more exposed

Source: OECD (2009a), Table 3.1 p. 44

---

---

---

---

---

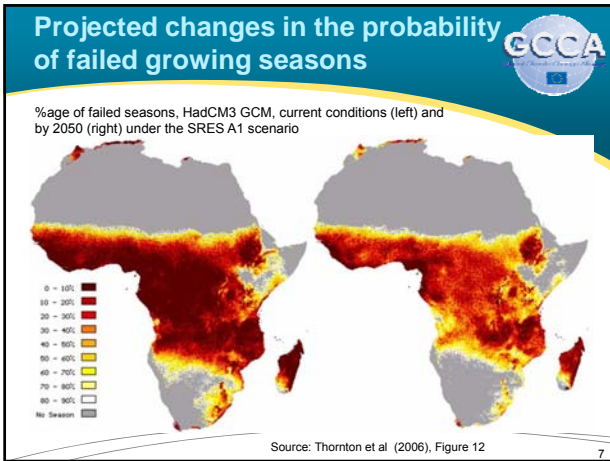
---

---

---

---

---




---

---

---

---

---

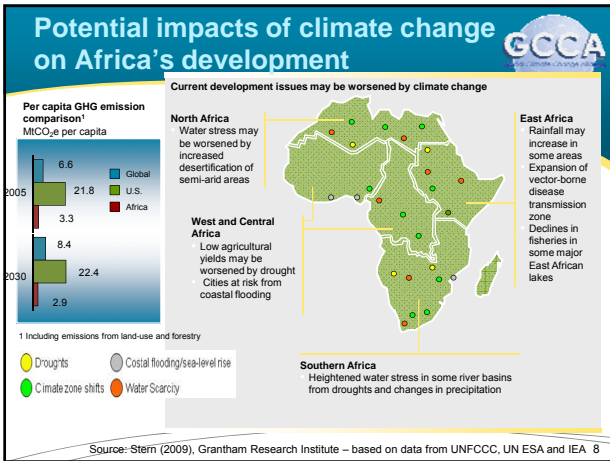
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---




---

---

---

---

---

---

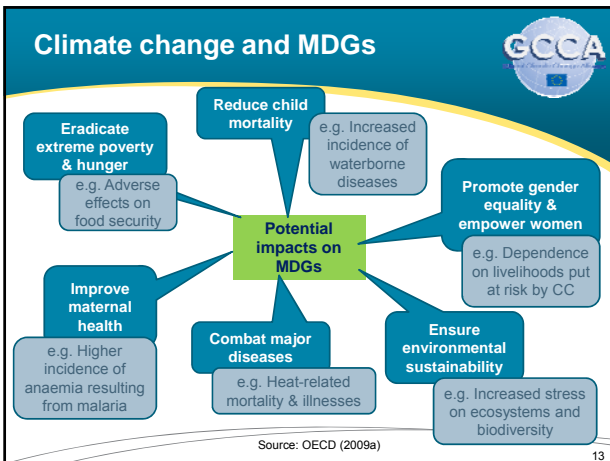
---

---

---

---






---

---

---

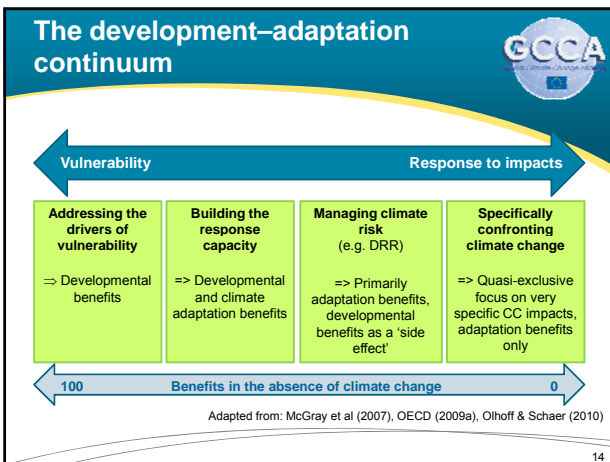
---

---

---

---

---




---

---

---

---

---

---

---

---

### Moving to climate-resilient, low-emission development

---

---

---

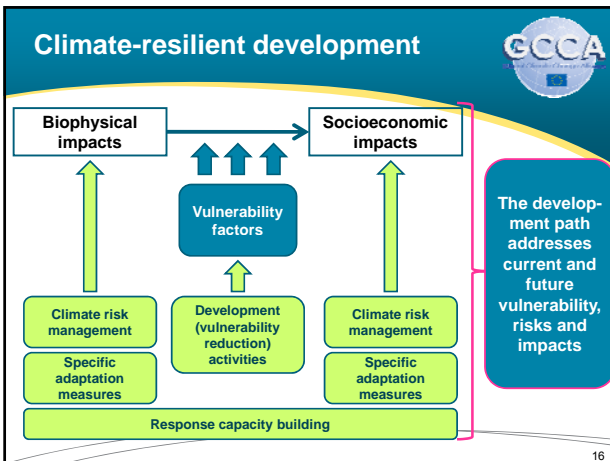
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

### Low-emission development

- Generally, the three 'sectors' that are the biggest contributors to GHG emissions are also the main targets for emission reductions:

Energy (fossil-fuel burning)

Agriculture

Land use change esp. deforestation

- Country-specific emission patterns and development objectives should be considered to determine national mitigation priorities

The development path addresses sources of emissions

---

---

---

---

---

---

---

---

---

---

### Building on NAPAs and NAMAs

- Many developing countries have now submitted their NAPAs (& NAMAs) to the UNFCCC
  - NAPAs = national adaptation programmes of action
    - Help LDCs build national capacities and identify priority adaptation projects with developmental benefits
  - NAMAS = nationally appropriate mitigation actions
    - These voluntary mitigation measures are consistent with a country's development strategy, and are meant to put it on a more sustainable development path
- These are a good starting point for addressing the climate challenge without compromising development objectives

---

---

---

---

---

---

---

---

---

---

## Adaptation and mitigation: seizing opportunities



- **Green growth**
  - ‘A way to pursue economic growth and development, while preventing environmental degradation, biodiversity loss and unsustainable natural resource use’
- **Green jobs**
- **Adaptation and mitigation as ‘opportunities’: development co-benefits**
  - e.g. renewable energy
  - e.g. clean technologies
  - e.g. forestry (REDD+)
  - e.g. agricultural productivity

Source: OECD (2010b)

19

---

---

---

---

---

---

---

---

---

---

## Illustration: Key opportunities for Africa



Adaptation opportunities

Low-carbon growth opportunities

<b>Agriculture and forestry</b>	<ul style="list-style-type: none"> <li>• Climate-proof agricultural yields through funds incremental to ODA</li> <li>• Use funding for forest and land-based mitigation to capture agriculture and forestry-related co-benefits and raise value of forest/land</li> <li>• Develop bioenergy industry for local and export markets</li> </ul>
<b>Water</b>	<ul style="list-style-type: none"> <li>• Make strategic development choices that reflect water demand and supply</li> <li>• Factor climate change into design and planning of water efficiency across sectors</li> <li>• Climate-proof existing and new water supply infrastructure</li> <li>• Leap-frog to new water supply solutions that save both energy and carbon</li> </ul>
<b>Energy</b>	<ul style="list-style-type: none"> <li>• Deploy on-grid renewable technologies using climate change related funding to cover incremental costs</li> <li>• Develop off-grid renewable power and cooking/ heating technologies with co-benefits for development</li> <li>• Support energy efficiency programmes through capability building and knowledge sharing</li> </ul>
<b>Cities and infrastructure</b>	<ul style="list-style-type: none"> <li>• Orient transportation systems on a low-carbon pathway</li> <li>• Protect urban development and infrastructure through construction of sea-walls, dikes and flood-protection systems with specific adaptation funding</li> <li>• Strengthen disaster relief management capabilities and preparedness</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>• Build on efforts to strengthen public health and health systems so they can better cope with climate change impacts</li> <li>• Invest in climate data and track impact of climate change on health to allow for healthcare planning, improved early warning and faster response to crises</li> </ul>

Source: Stern (2009), Grantham Research Institute

20

---

---

---

---

---

---


---

---

---

---

## Adaptation and mitigation: developing synergies



- **Quite frequently adaptation and mitigation measures are congruent and can produce a double stream of benefits**
  - e.g. reduced tillage agriculture enhances carbon sequestration in soils while supporting soil moisture retention, thus increasing resilience to dry spells
  - e.g. sustainable reforestation may simultaneously enhance carbon stocks and, by offering new livelihood opportunities, enhance the adaptive capacity of local communities

21

---

---

---

---

---

---


---

---

---

---

## Adaptation and mitigation: ensuring complementarity



- Mitigation should :
  - Be compatible with adaptation policies and requirements
  - Rely on environmentally sustainable practices
    - e.g. unsustainable agrofuels may be a threat to food security, water availability and ecosystems
  - Not result in increased vulnerability to climate change
- Adaptation should :
  - Take emissions into account
    - e.g. agricultural intensification for improved food security may increase emissions from the use of fertilisers
    - e.g. the increased adoption of air conditioning to adapt to heat waves may result in increased emissions from fossil energy use

22

---

---

---

---

---

---



---

---

---

---

## Developing synergies in the Indian Ocean: IRACC regional project (1)

- IRACC: Initiative for smallholder agriculture adaptation to climate change in the Indian Ocean islands through the promotion of agroecology
- Promoters: Indian Ocean Commission / IFAD

Source and pictures: IOC/IFAD (2010) Presentation by R. Andriantahina, regional coordinator Workshop of 8-9 December 2010 in Mauritius (www.col-loc.org)

Madagasikara 23

---

---

---

---

---

---


---

---

---

---

## Developing synergies in the Indian Ocean: IRACC regional project (2)



- Project target: smallholders in IOC member states and Zanzibar

Climate constraints (\*)

Production constraints

Marketing & trade constraints

Demographic growth

Natural ecosystems

**Agriculture**

Socioeconomic activities

(\*) Shift in seasons, higher average temperatures, erratic rainfall, early and long drought periods, floods, storms and cyclones, ...

Fragile natural environment  
 Poor land use & planning practices  
 Unsuitable agricultural techniques  
 Fragile and vulnerable soils

**Response:**  
 -Agroecological techniques  
 -Notably permanent soil cover

24

---

---

---

---

---

---


---

---

---

---

### Developing synergies in the Indian Ocean: IRACC regional project (3)



- Benefits of permanent soil cover:
  - Increased resilience of agriculture to climate variability (notably through improved storage and retention of water and organic matter in soils) => **adaptation to CC**
  - Restoration and enhancement of soil fertility (independently from climate-related considerations)
  - Possibility of using non-cultivated or degraded land
  - Watershed protection
  - Carbon sequestration in soils => **contribution to CC mitigation**

Madagascar

---

---

---

---


---

---

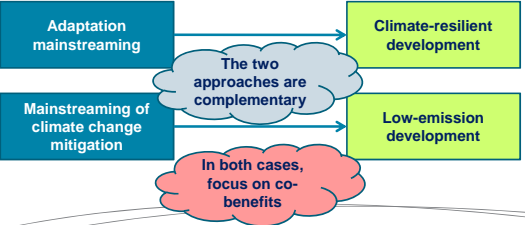
---

---

### Moving to climate-resilient, low-emission development



- Both climate-resilient development and low-emission development result from **mainstreaming climate change** in policymaking and planning



```

    graph LR
      A[Adaptation mainstreaming] --> C[Climate-resilient development]
      B[Mainstreaming of climate change mitigation] --> D[Low-emission development]
      C --- E((The two approaches are complementary))
      D --- E
      E --- F((In both cases, focus on co-benefits))
  
```

26

---

---

---

---

---

---

---

---