Climate Change – An integrated framework

Climate Change
- Temperature rise
- Sea-level rise
- Precipitation change
- Droughts and floods

Adaptation

Impacts on human and natural systems
- Food and water resources
- Ecosystem and biodiversity
- Human settlements
- Human health

Mitigation

Emissions and concentrations
- Greenhouse gases
- Aerosols

Socio-economic development paths
- Economic growth
- Technology
- Population
- Governance

Adaptation
What is Dangerous Anthropogenic Interference with the Climate System?

• Deciding what constitutes “dangerous anthropogenic interference to the climate system” is a value judgment determined through socio-political processes informed by scientific, technical and socio-economic information.

• The basis for determining what constitutes “dangerous anthropogenic interference” varies by region and sector and depends upon:
  — the impacts of climate change, which depends on the rate and magnitude of climate change, and
  — adaptive and mitigative capacity
What is Dangerous Anthropogenic Interference with the Climate System….

• Climate change decision-making is a sequential process under general uncertainty

• Climate change is part of the larger challenge of sustainable development
Human activities have changed the composition of the atmosphere since the pre-industrial era.
Greenhouse gas emissions and concentrations, temperature and sea level are projected to change.
Stabilization of atmospheric concentrations of CO$_2$ will require emissions reductions globally.

<table>
<thead>
<tr>
<th>Stabilization Level (ppm)</th>
<th>Date for Global emissions to peak</th>
<th>Date for global emissions to fall below current levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td>2005-2015</td>
<td>2000-2040</td>
</tr>
<tr>
<td>550</td>
<td>2020-2030</td>
<td>2030-2100</td>
</tr>
<tr>
<td>650</td>
<td>2030-2045</td>
<td>2055-2145</td>
</tr>
<tr>
<td>750</td>
<td>2050-2060</td>
<td>2080-2180</td>
</tr>
<tr>
<td>1000</td>
<td>2065-2090</td>
<td>2135-2270</td>
</tr>
</tbody>
</table>

These dates are associated with CO$_2$ stabilization alone – stabilization of CO$_2$ equivalent concentrations need to occur even earlier because of the contribution of the non- CO$_2$ greenhouse gases.
There is a wide band of uncertainty in the amount of warming that would result from any stabilised concentration of greenhouse gases.
More adverse than beneficial impacts on biological and socioeconomic systems are projected.