WORKSHOP: CLIMATE CHANGE AND BIODIVERSITY FOR FOOD AND AGRICULTURE
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Biodiversity in the IPCC

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General

The Agro-biodiversity is not ddressed/mentioned in the IPCC reports –term not used

- There is much about biodiversity
- According to the definition “Agro biodiversity comprises all of the components of biological diversity relevant to food and agriculture present in agro-ecosystems, including microbes, insect pollinators, and the hedgerows that support soil stability and provide a home to wildlife. It holds the key to enhancing food security and improving human well-being ”
- It is covered under ecosystem, biodiversity, forestry etc..

Chapter 4 (Ecosystems)-WG2

- **“Projected impacts on biodiversity are significant and of key relevance, since global losses in biodiversity are irreversible (very high confidence)”**
- **“Approximately one fifth to one third of species assessed so far are likely to be at increased risk of extinction if global mean temperatures exceed a warming of 2 to 3℃ above pre-industrial levels** (medium confidence)”.

Chapter 4 WG2

- **“Ecosystems are increasingly subjected to other human induced pressures, such as extractive use of goods, and increasing fragmentation and degradation of natural habitats”**
- **“In the medium term (*i.e.* decades) especially, climate change will increasingly exacerbate these human-induced pressures, causing a progressive decline in biodiversity. However, this is likely to be a complex relationship that may also include some region-specific reductions in land-use pressures on ecosystems”**

Chapter 4 WG2

- increased frequency of extremes is likely to exacerbate overall biodiversity losses
- Land use change and related habitat loss and fragmentation have long been recognized as important drivers of past and present ecosystem change, particularly of biodiversity
- Invasive alien species represent a major threat to endemic or native biodiversity in terrestrial and aquatic systems
- desert biodiversity is likely to be vulnerable to climate change with winter-rainfall desert vegetation, and plant and animal species especially vulnerable to drier and warmer conditions

Chapter 4 WG2

- **Desert biodiversity is likely to be vulnerable to climate change especially in the so called “biodiversity hotspots**
- **“Overall, climate change has been estimated to be a major driver of biodiversity loss in cool conifer forests, savannas, Mediterranean-climate systems, tropical forests, in the Arctic tundra, and in coral reefs”.**

Chapter5 (food, fibres and forest products)- WG2

- "Natural land resources are being degraded through **soil erosion; salinisation of irrigated areas; dryland degradation from overgrazing; over-extraction of ground water; growing susceptibility to disease and build-up of pest resistance favoured by the spread of monocultures and the use of pesticides; and loss of biodiversity and erosion of the genetic resource base when modern varieties displace traditional ones**"

Chapter5 WG2

- “Many of the regions characterized by subsistence and smallholder agriculture are storehouses of unexplored biodiversity”.
- “Pressure to cultivate marginal land or to adopt unsustainable cultivation practices as yields drop, and the break down of food systems more generally may endanger biodiversity of both wild and domestic species”.
- “Smallholder and subsistence farming areas are often also environmentally marginal (which does not necessarily conflict with biodiversity) and at risk of land degradation as a result of climate trends, but mediated by farming and livestock-production systems”.

Chapter9 (Africa)- WG2

- **“The rich biodiversity in Africa, which occurs principally outside formally conserved areas, is under threat from climate variability and change and other stresses “.**

Ch.10 Asia- WG2

- *"South Asia* is physiographically diverse and ecologically rich in natural and crop-related biodiversity"

Ch18- inter-relationship bet adaptation and mitigation-WG2

- "The most important indirect link from mitigation to adaptation is through biodiversity, an important factor influencing human well-being in general and the coping options in particular"
- "The Convention on Biological Diversity has acknowledged the potential win-win opportunities between biodiversity management on the one hand and adaptation and mitigation to climate change on the other".

Linking conservation to adaptation

- **Conservation of biodiversity and maintenance of ecosystem structure and function are important for climate change adaptation strategies, due to the protection of genetically-diverse populations and species-rich ecosystems necessary for sustaining local livelihoods**
- **Agrobiodiversity conservation should be made a basic component of CC adaptation strategies**

Synergies bet. MEAs

- **Stronger coordination is needed between main global programmes such as the United Nations Framework Convention on Climate Change, the Convention of Biodiversity and the International Treaty on Plant Genetic Resources for Food and Agriculture.**

Main challenges

- **To consider agrobiodiversity as key for conservation of biodiversity and for mitigating GHG emissions**
- **the global shift towards bio-energy which raises concerns for food security, as land and other productive resources are taken from food production (Tradeoff)**

Priority actions (1)

- **Find answers to the following questions:**
- **What are the projected impact of climate changes on agrobiodiversity?**
- **Which of the agrobiodiversity systems are most sensitive to climatic stresses??**
- **What are the other important factors threatening agrobiodiversity systems??**
- **What is the current contribution of agrobiodiversity to food security in developing countries ??**

Priority actions (2)

- **identify multiple stresses affecting agro-ecosystems and determine the most vulnerable agro-ecosystems (climate change sensitive spots)**
- **Assess adaptation options current and future ones that could enable species to cope with climate variability and change.**

Priority actions (3)

- **assessing the viability of traditional knowledge on conserving agrobiodiversity and means by which it could be promoted and scaled up to improve community's livelihoods**
- **Identify win-win options that provide triple dividends i.e. improve livelihoods and resilience to climate change while maintaining and conserving the resource base and mitigate the climate change**


Thanks