

# Climate Change and Adaptation

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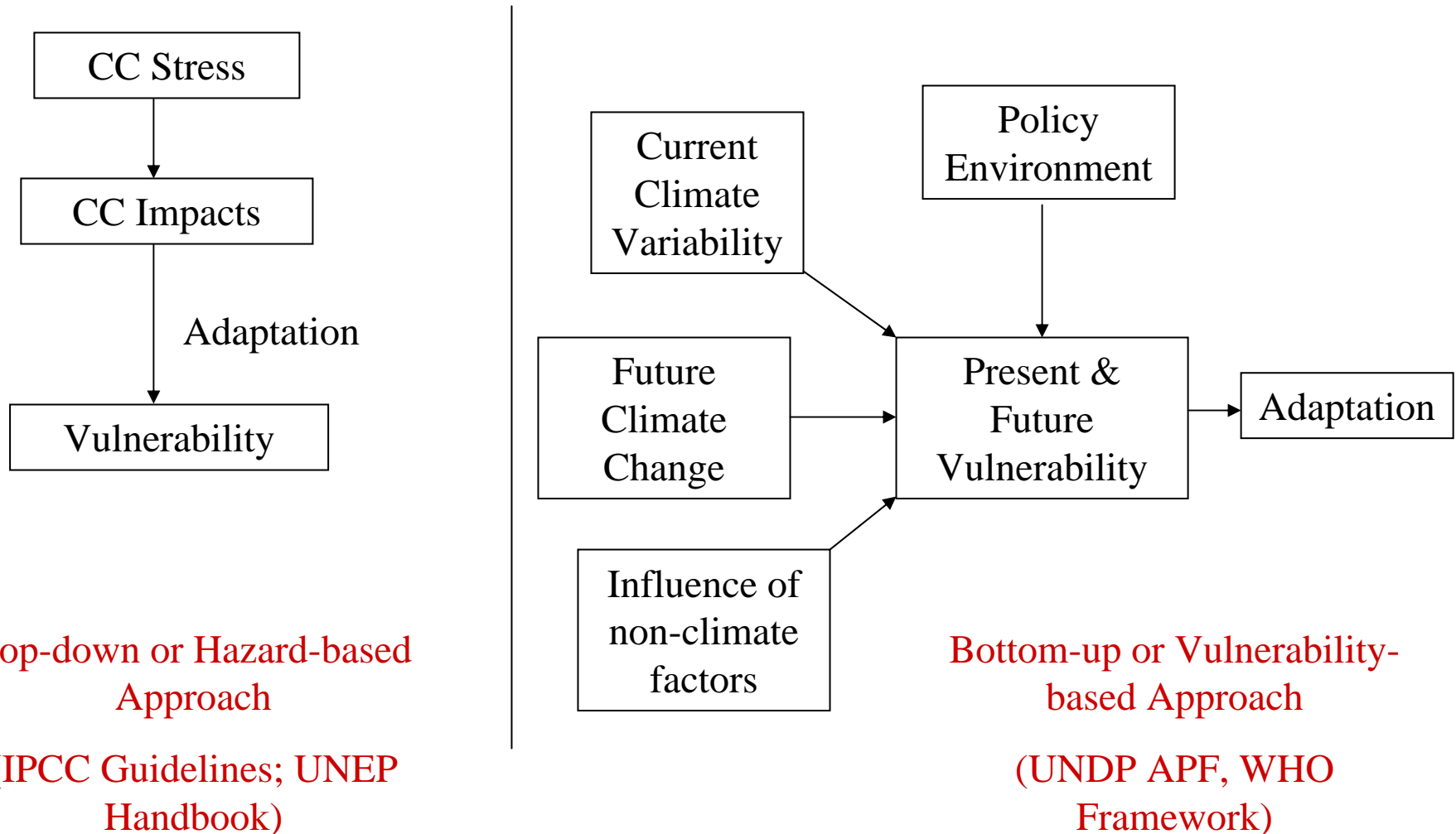
# Structure

- Context
- Adaptation – Climate Regime
- Available Funds – Macro Estimates of Adaptation Costs
- ‘Mainstreaming’ Adaptation
- Concluding Remarks

# Adaptation in Climate Policy

- Received much less attention so far
  - “..(adaptation represents) kind of laziness, an arrogant faith in our ability to react in time to save our skins” – Al Gore, 1992
- Adaptation however seems crucial
  - Due to ‘Committed’ Climate Change
  - Vulnerability to ‘Climate’ impacts is increasing (e.g., Orissa Super Cyclone, Hurricane Katrina)
  - Growing demand for increasing resilience of vulnerable societies (e.g., Delhi Declaration)

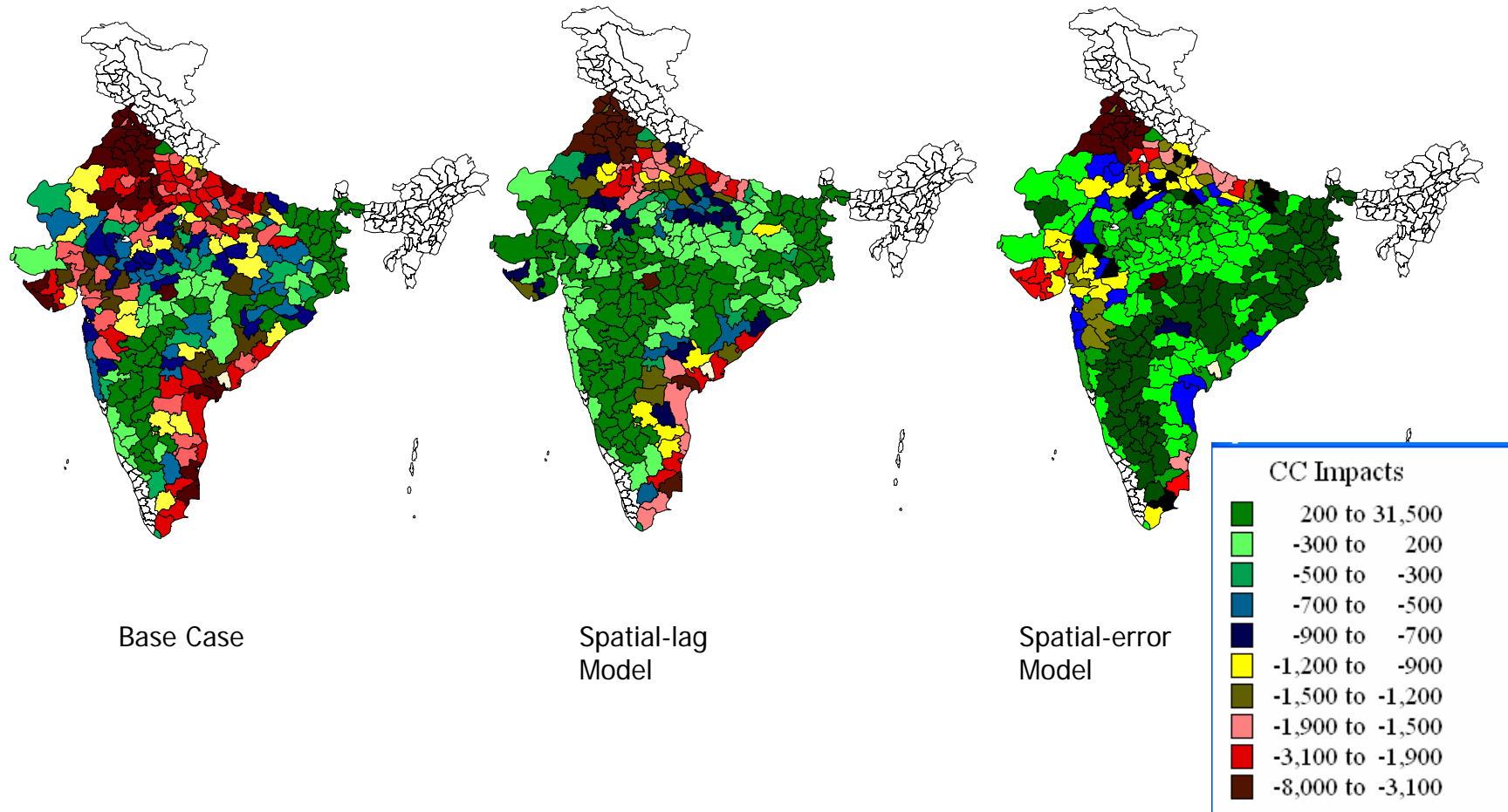
# Adaptation Assessment



# Typical Questions

- Will climate change affect agriculture adversely? If so, what is the extent of impact?
  - » Impact Assessment; inputs for **mitigation policy**
- How to characterize the vulnerability of a farmer to climate change and climate variability? Which regions are more vulnerable and why?
  - » Vulnerability Assessment; inputs for **resource allocation & adaptation**
- How to assess effectiveness of adaptation options in ameliorating the present and future vulnerability?
  - » Adaptation Assessment; inputs for **adaptation policy**

# CC Impacts with Explicit Adaptation



Source: Kumar (2009a)

# Adaptation Funding

<b>Fund</b>	<b>Created Through Decision At</b>	<b>Objective</b>	<b>Available Amount (in million US\$)</b>
GEF – Stage I	COP-1	To provide support for first and second national communications	<b>130</b>
GEF – Stage II	COP-1	To provide support for capacity building for adaptation	<b>60</b>
GEF – Stage III	COP-1	To support demonstration projects	<b>50</b>
SCCF	COP-7	To support activities, programmes and measures in adaptation, technology transfer, economic diversification	<b>32</b>
LDCF	COP-7	To support urgent adaptation projects in LDCs	<b>41</b>
Adaptation Fund	COP-7	TO support real adaptation projects and programmes in developing countries	<b>2% of CDM revenue: \$270 to 600 M*</b>

\* The range is based on low and high estimate of CER price estimate in 2012

# Adaptation Cost – Macro Estimates

Assessment	Cost of Adaptation (USD billion per year)	Time Frame	Countries Included	Sectors
World Bank (2006)	<b>9-41</b>	Present	Developing countries	Unspecified
Stern (2006)	<b>4-37</b>	Present	Developing countries	Unspecified
Oxfam (2007)	<b>At least 50</b>	Present	Developing Countries	Unspecified
UNDP (2007)	<b>86-109</b>	2015	Developing countries	Unspecified
UNFCCC (2007)	<b>28-67</b>	2030	Developing countries	Agriculture, forestry, fisheries, water supply, human health, coastal zones, infrastructure
UNFCCC (2007)	<b>44-166</b>	2030	Global	Agriculture, forestry, fisheries, water supply, human health, coastal zones, infrastructure

Source: Agrawala et al. (2008)

# Vulnerability – Example

Consider a motorcyclist on a narrow, winding mountain road, with the mountain to his left and a deep valley to his right. Unbeknownst to the motorcyclist an oil spill covers the road ahead of him, just behind a left-hand curve.

- Oil spill represents a hazard and motorcyclist is at risk of falling down the cliff and being killed: **Natural language**
- Motorcyclist is vulnerable to the oil spill with respect to the prospect of an accident: **Climate change literature**
- Motorcyclist is vulnerable to the threat of an accident, possibly caused among other things by the oil spill on the road: **Poverty literature**

# Vulnerability – Example

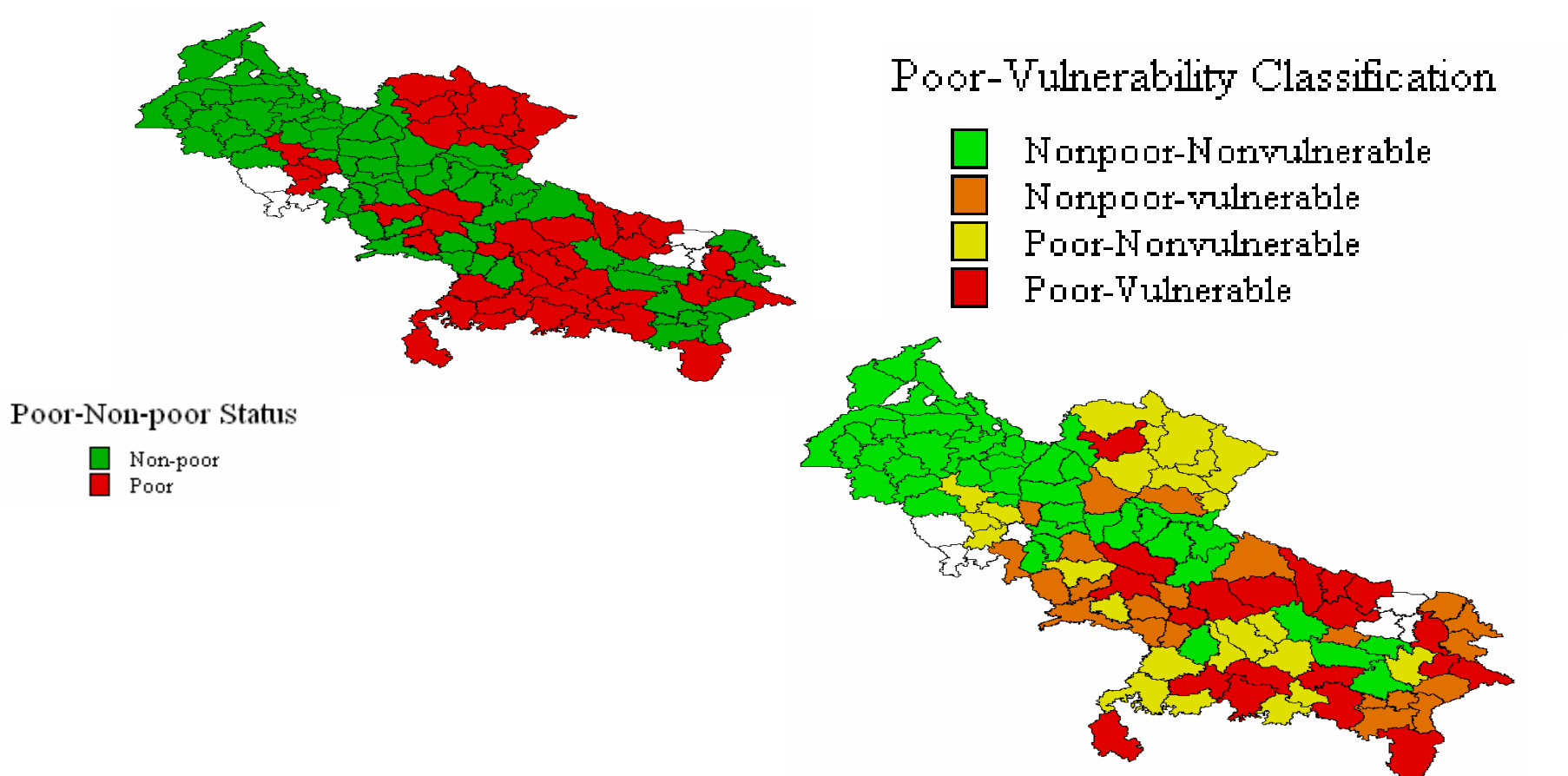
Consider four more motorcyclists

- A *second* motorcyclist who drives slowly and/or more carefully than the first one
- A *third* motorcyclist who is aware of the possibility of oil spill on the road and gears up for it (buys new tyres and improves his driving skills)
- A *fourth* motorcyclist who is also aware of the possibility of oil spill but is unable to take actions similar to those taken by the third motorcyclist
- A *fifth* motorcyclist confronted with a speeding truck in the opposite direction, and brake system failure besides the oil spill

# Vulnerability – Example

- How to account for comparative statements about same system but different attributes (*first* and *second* motorcyclists)?
- How to compare different systems exposed to *similar* risks (*first* and *second* motorcyclists vs *third* and *fourth* motorcyclists)?
- How to capture the ability of the vulnerable actor to act proactively to remove potential future hazards (for example to work towards relaying of road more frequently to reduce probability of oil spill; *mitigation* in the context of climate change)?
- **How to capture the ability of the vulnerable entity to deal with multiple exogenous shocks? (e.g., Use of helmet by the *fifth* motorcyclist could reduce the damage in general independent of cause of damage)**

# Vulnerability - Illustration



Districts that are presently 'poor' need not become 'vulnerable' – important for resource allocation

Source: Kumar (2009b)

# 'Mainstreaming' Adaptation

- Climate change concerns are **remote** and isolated for many developing countries, especially in the context of other pressing immediate development priorities
- However, it is important to put climate change in the development context, given the significantly large 'costs' currently incurred by developing countries due to climate disasters

# Is Adaptation to CC New?

- Human adaptation to climatic conditions is not new
- Most activities considered in adaptation to CC are not new either
- Adaptation planning for climate change often applies established methods and tools from risk management
- Non-climate factors are often far more important – Pielke *et al* (2007) argue that while global population at risk of malaria would increase by 100% by 2080 without considering climate change risk, it will increase by an additional 7% if climate change risk is also considered

# Is Adaptation to CC New?

- New Hazard – rate of global climate change is unprecedented in human history
- New uncertainties – past may not be a good guide for future
- New opportunities – knowledge about CC may allow planned adaptation
- New methodological challenges – how to consider a complex, uncertain, dynamically evolving hazard?
- New actors – people who may not have taken climate into consideration may now need to consider it
- New measures – development of crop seeds that can sustain rapid and wide fluctuations in climate

# Adaptation Dilemmas..

- Adapt to what?
  - Climate variability, climate change, Other stresses..
- When to adapt?
  - Now, in future, or continuum..
- How to adapt?
  - Through specific activities, or through ongoing development activities..



# Conclusions

UNFCCC defines adaptation in a very narrow sense

To define adaptation as a cost of failed mitigation is to expose millions of poor people in compromised ecosystems to the very dangers that climate policy seeks to avoid

At the same time attributing *all* actions/adaptations as part of climate change adaptation may also lead to making a complex problem further complicated

What to negotiate..

- Extend technology transfer to adaptation
- More substantial contribution to the adaptation fund

Thanks for your attention!

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