

CONCEPTUAL BASIS FOR ADAPTATION TECHNOLOGIES

Presented to

**Workshop on Technology Needs
Assessment and Technology Information
for the Caribbean Region**

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Outline

- Definition of adaptation technologies
- What technologies are reasonable for climate change
- Timing of investments
- Analysis of Needs
- Setting priorities
- Integration with sustainable development



What Do We Mean By “Adaptation?”

- Most adaptations will be done in reaction to climate change
 - e.g., farmer switches crops
 - “Autonomous” adaptation
- We’re focusing on “anticipatory” or “purposeful” adaptation
 - Deliberately done to anticipate effects of climate change;
 - may also be to address current needs

What Are Adaptation Technologies?

- **Hard technologies**
 - What we traditionally think of as technologies, e.g., equipment, structures



What Are Adaptation Technologies?

- **Soft technologies**
 - Soft technologies enable hard technologies to be applied
 - Analogous to “adaptive capacity”
 - Includes such elements as education, training
 - Can also include approaches to overcome barriers to adoption of technologies, e.g.,
 - Institutional
 - Cultural



Do We Invest Now In Technologies To Anticipate Climate Change?

- No, does not make sense to deploy them now
 - Benefits are too far in future to justify large investment *solely for climate change*
 - Too many uncertainties about local climate change
- However, R&D may make sense

Then What Adaptation Technologies Do We Invest In?

- Basically, ones that are needed for today's needs and are further justified by consideration of climate change
 - Means that technologies do not address climate change alone.



Timing

- Should consider when adaptations will be needed
- Because of barriers or length of investments, some adaptations could take many years to implement
 - May make sense to address barriers for long-term adaptations now so implementation is shortened

Differences In Timing And Needs For Technologies

- **Agriculture vs. water**

- Many agriculture investments take 5 to 30 years
- Water investments such as supply can take 50 to 100 years

Source: IPCC, 1995

- Different timing of investments may be justified

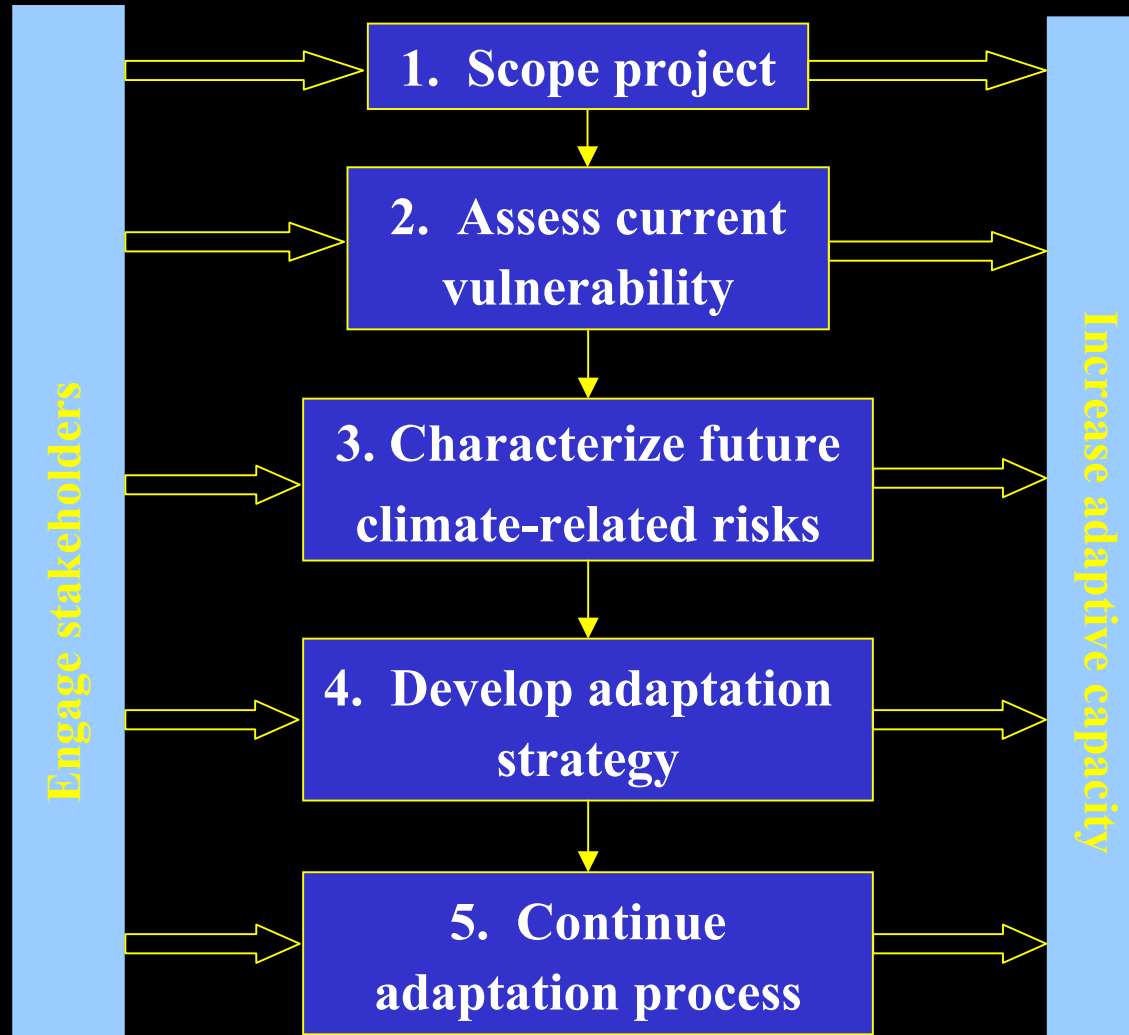


Analyze Vulnerability And Adaptation Needs

- Need to understand vulnerability to
 - Current climate; and
 - Climate change
- Need to address climate change adaptation needs



UNDP Adaptation Policy Framework



Challenges of Assessing Vulnerability

- Uncertainties about climate change
- Time frame
- Difficulty in comparing across sectors because of differences in impacts
 - Human life
 - Income
 - Well being
 - Ecological impacts
 - Adaptation does not have equivalent of \$/TC

Identify Broad Adaptation Needs First

- What is really needed?
 - Set priorities
 - Policy reforms may be most important
- Don't assume technology is the answer
use it as needed
- Recognize that many adaptations are on an *ad hoc* basis
 - Don't ignore these opportunities



Priority Setting

- It is important to rank technologies in terms of priorities
- No right or wrong way to do it
 - Be consistent and transparent
- NAPA process suggests priority setting involve stakeholders and be comprehensive
- Can consider criteria such as most cost-effectively reducing current risks
 - Or addressing urgent climate change needs (e.g., where vulnerability or costs of response could increase if not addressed)

One (simple) approach for evaluating priorities

Options	Effectiveness	Low Cost	Low Barriers	Total
A	2	4	4	10
B	4	2	2	8
C	3	3	1	7

Integration With Sustainable Development

- Address current problems that can be made worse by climate change
- Consider future development paths
 - Identify where these paths:
 - Exacerbates existing problems
 - Eases existing problems
 - Creates new problems
 - Identify linkages with climate change

Water Supply Example

- Limited water supply
 - Already a problem because of overuse, pollution
 - Higher population, economic growth *could* exacerbate problem by increasing demand
 - Climate change risks reducing supply:
 - Salt water intrusion from sea level rise
 - Reduced runoff/infiltration
- Identify technologies that address water supply needs e.g.,
 - Increase efficiency of use
 - Reduce losses
 - Increase supply

Hermosillo, Mexico

Example of Stakeholder Involvement

- USEPA/INE project
- Worked with researchers and stakeholders in Hermosillo to address water supply issues
- Considered adaptations to warmer/wetter and warmer drier
- Identified three adaptations:
 - More efficient water use technologies, e.g., shower heads
 - Capture runoff
 - Building materials to result in cooler homes
- Ranked the three, but the rankings changed when stakeholders considered climate change

Final Thoughts

- Need to begin with present-day needs
- Consider development paths
 - What problems are made worse, eased or introduced
- Add in climate change as a consideration
- Technology can be an answer but is not always the answer