Assessing technologies for adaptation

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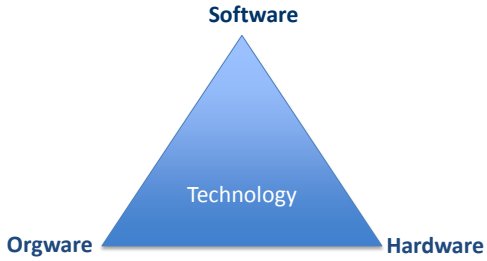
Technologies for Adaptation - some definitions

'A piece of equipment, technique, practical knowledge or skills for performing a particular activity' *(IPCC 2010)*

'The application of technology in order to reduce the vulnerability, or enhance the resilience, of a natural or human system to the impacts of climate change' *(UNFCCC 2010)*

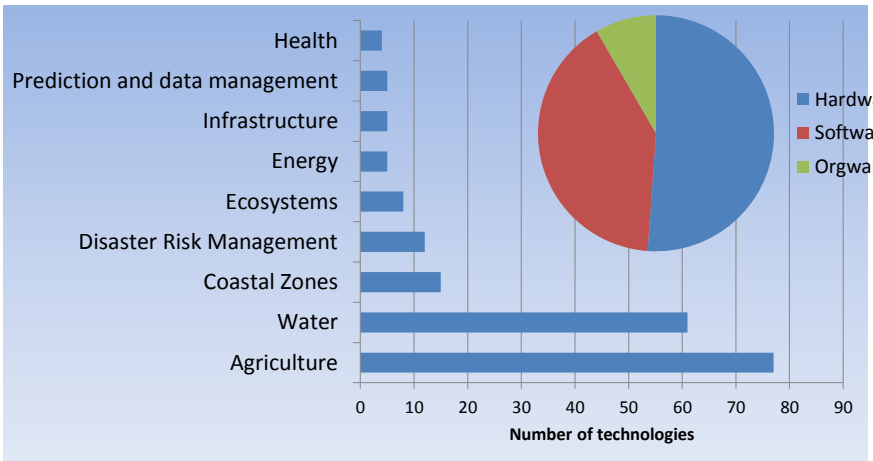


Example: Irrigation system

- *Hardware*: pipes, pumps, Sprinklers, water-emitting devices,
- *Software*: Knowledge, skills, know-how (to design, install, O&M)
- *Orgware:* Ownership of system (private user, cooperative, regulatory framework)

Photo credit: Georgina Smith/CIAT

Identified technology needs



Source: Based on data collected from 25 TNA reports available at: www.tech-action.org

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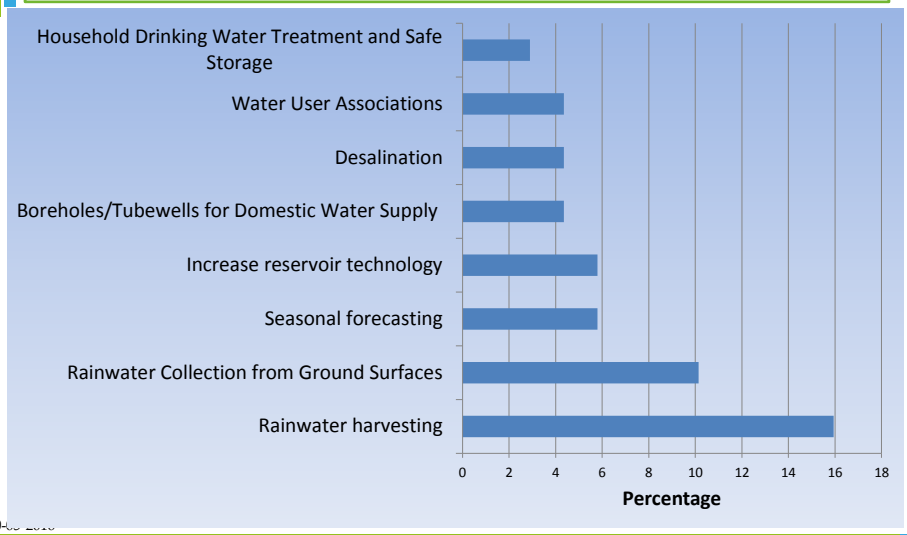
Distribution of priority technology needs, water sector



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Technology Needs Assessments (TNAs)

Step 1

- ***Identification and Prioritisation of Technologies (TNA)***
  - Multi criteria analysis, development priorities, marginal abatement costs, local employment, etc.

Step 2

- ***Barrier Analysis and Enabling Framework (BA & EF)***
  - Legal, institutional, social, knowledge
  - Policy options for creating an Enabling Framework
  - Legal, institutional, financial, etc.

Step 3

- ***Technology Action Plan (TAP)***
  - Prioritised policy options
  - Project ideas

Overall goal of technologies for adaptation

Increase resilience to climate change by integrating technologies for adaptation in development policies, plans, programs, projects and actions

Impact: Reduce and prevent economic, social and environmental losses due to climate change

- assessing the impacts
  - Baselines
  - Timing
  - **Indicators as proxies - the lack of a standard adaptation metric**
  - Attribution
  - Dealing with uncertainties

Proxy indicators

- an indication that progress is made towards achieving increased resilience to climate change, not an accurate measurement of actual resilience improvement in itself.

Coastal Zone example - Samoa

- Technology: Sea wall of 900mts made of rocks with a lifespan of 25 years
  - » Replanting of salt tolerant coastal plants
  - » Capacity building and awareness raising workshops.
  - » Regulation to manage the water resources

Benefit	Benefit Type	Indicator
Avoided coastal erosion	Direct monetary	Expected value of area and land loss
Avoided loss of infrastructure	Direct monetary	Expected value of infrastructure loss avoided
Decreased damages to infrastructure	Direct monetary	Expected value of damages to infrastructure
Decreased sea surge cleaning up costs	Indirect monetary	Total wages for the labour hours spent
Reduced stress and trauma	Indirect monetary	Willingness to pay of stakeholders

*Only direct monetary benefits accounted in valuation.

Source: PACC, 2013

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Technology Needs Assessment- Mauritius

Technology	Benefit Indicators	Ancillary Benefits
Micro-irrigation	» Additional benefit from yield increase » Benefit from water savings » Benefit from labour savings	» Water savings for additional irrigation » Job creation » Improved food and livelihood security » Reduction in nutrient leaching and water contamination risks
Rainwater Harvesting	» Volume of water saved per year » Savings in water bills	» Job creation for workers » Additional water savings because of lifestyle and behavioural changes » Decrease in costs of RWH as manufacturers are encouraged

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Technology Needs Assessment - Lebanon

Technology	Benefit Indicators	Ancillary Benefits
Conservation Agriculture	» Additional yields	» Reduced GHG emissions » Preserved food quality
Selection of Adapted Varieties and Rootstocks	» Additional yields	» Positive externalities (less use of chemicals) » Preserved food security (including availability and quality
Water Users Association	» Reduced water losses » Additional yields » Enabled use of drip irrigation	» Positive water balance: water available for additional production » Increased crop resilience to Climate Change » Increased food security and volume of exports

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Current practice

- In practice, the metric issue is generally addressed by development institutions and governments by using output and outcome indicators as proxies for impacts
- Multiple impact proxy indicators to validate their conclusions.
- Perception indicators: survey among target groups before and after implementation
  - perception of risk may change
  - may not be directly related to the technology

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The challenge

- The challenge: quantify impacts which go beyond direct project activities (e.g. distribution of drought resistant seeds) to capture derived impacts of activities (e.g., reduced risk of crop loss due to drought)

Photo credit: Annie Bungeroth/CAFOD

Thank you

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References

Intergovernmental Panel on Climate Change, IPCC (2000). *Special report on methodological and technological issues in technology transfer*. A special report of IPCC Working Group III, published for the Intergovernmental Panel on Climate Change.

United Nations Framework Convention on Climate Change, UNFCCC (2010). *Report of the Conference of the Parties on its Sixteenth Session*, held at Cancun from 29 November to 10 December 2010, Addendum, Part Two: Action taken by the Conference of the Parties.

Technology Needs Assessment available at www.tech-action.org