

# Technology Needs Assessments

## SENEGAL

Experiences and lessons learned

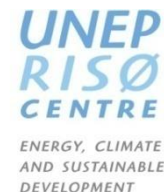
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# SENEGAL

Sub-Saharan African country  
Coastal country  
Least Developed Country  
Member of ECOWAS  
Member of WAEMO (UEMOA)



# Sectors selection / National development priorities

- Review of national and sectoral policies and plans:
  - 1<sup>st</sup> and 2<sup>nd</sup> National communication
  - National Adaptation Program of Actions (NAPA)
  - MDG and PRSPS (Poverty Reduction Strategy Program of Senegal)
  - 1<sup>st</sup> TNA
  - Sectoral plans and programs
- Definition of most vulnerable sectors and scenario analysis:
  - Agriculture,
  - Energy
  - health,
  - water resources,
  - coastal erosion
  - Fishing;
  - tourism, ,
  - infrastructure,

## **Sectors selection / National development priorities**

- Definition of sectors with most GES emissions and projection of futures emissions:
  - Energy
  - Agriculture
  - Waste
  - Industrial processes
- Organization of a national workshop for sectors selection :
  - UNEP /RISOE center
  - ENDA : regional center
  - Regional institution : CRAT, OMVS, OMVG
  - All relevant stakeholders

# OUTCOMES FROM THE NATIONAL INCEPTION WORKSHOP

- Hold national Inception Workshop
  - Launch the project
  - Finalize workplan with all stakeholders
  - Identification and prioritization of sectors (based on national development priorities, vulnerability and emissions of sectors)
- Outcomes :
  - Choice of sectors to be studied in the areas of mitigation and adaptation to climate change:
    - Energy (renewable energies, energy efficiency in buildings and industries) for mitigation
    - Agriculture and Water Resource for adaptation
  - constitution of the National TNA Committee of Senegal
  - Proposal of member of the Steering committee
  - update of the working groups on mitigation and adaptation

# • PRIORITIZATION OF TECHNOLOGIES FOR MITIGATION AND ADAPTATION

- identification of technology needs in the sectors identified and preparation of the technologies specification sheets by consultants:
  - Technology options in the NAPA and NC
  - Status of adaptation and mitigation technologies within the country
  - Data bases (Techwiki, help desk, etc..)
  - Technical guidebooks and journals
  - Familiarization by the members of the working groups
- Workshop to amend and validate those technologies by stakeholders before prioritization of technologies for each sector:
  - Methodology for technologies identification
  - List of technologies identified
  - Methodology for technology selection :
    - Multi-criteria analysis:
      - ❖ Definition of the criteria
      - ❖ Weight of each criteria
  - Proposed list of selected technologies

# • PRIORITIZATION OF TECHNOLOGIES FOR MITIGATION AND ADAPTATION

## • Agriculture:

### — Technologies identified:

- 13 technologies identified by the consultant and specifications sheets of technologies prepared for familiarization
- 04 technologies validated by the working group
- 04 additional technologies proposed by the WG

### — Technologies selected for multi-criteria analysis:

- ❖ Agroforestry alley cropping
- ❖ Zai
- ❖ Assisted Natural Regeneration
- ❖ Bio-charcoal
- ❖ Deep placement of urea
- ❖ Constitution and fodder conservation reserves
- ❖ Dykes anti-salt + salt-tolerant species
- ❖ Organic Farming
- ❖ Bank of improved seeds

# AGRICULTURE

- **Selection criteria :**

- contribution to economic development;
- contribution to vulnerability reduction;
- contribution to social development;
- contribution to environmental development;
- and the cost of technology.

- **Technologies selected after the multicriteria analysis:**

- Dykes anti-salt + salt-tolerant species
- Bank of improved seeds
- Bio-charcoal
- Constitution and fodder conservation reserves
- Agroforestry alley cropping



# WATER RESOURCES

## TECHNOLOGIES IDENTIFIED:

- Flow restrictors in faucets;
- Desalination of salt water;
- Capture of rainwater per tank;
- Measurement of water level with mini Orpheus;
- Measurement the flow of rivers with ADCP;
- GEOSFM Model for simulation of flow over the watershed;
- Technique for drip irrigation;
- Reuse of treated wastewater

## TECHNOLOGIES SELECTED :

- Technique for drip irrigation;
- Reuse of treated wastewater
- Capture of rainwater per tank;
- GEOSFM Model for simulation of flow over the watershed

# ENERGY : TECHNOLOGIES IDENTIFIED

- **RENEWABLE ENERGY**

- Concentrated Solar Power (CSP)
- Small and large hydro
- Solar cooker
- Solar Photovoltaic Technology
- Technology Thermodynamics Solar Electricity Production
- Large Scale Wind Turbine Technology "onshore »
- Biomass direct combustion technology
- Technology Hydropower (large and small scale)
- Biogas technology for cooking

# ENERGY : TECHNOLOGIES IDENTIFIED

- **ENERGY EFFICIENCY IN INDUSTRY**

- Combined cycle power generation
- Co-generation (heat and electricity)
- Fuel switch
- Substitution of Clinker
- Energy efficient motors
- Power factor compensation

- **ENERGY EFFICIENCY IN BUILDINGS**

- Geo-Technology for Concrete Buildings
- Technology Polystyrene Buildings
- CFL : Use of CFL among urban users, suburban and rural
- Solar Water Heaters
- Portable solar lamps (for low-income customers in rural and suburban areas)
- Solar PV kit or SPF (Solar Photovoltaic Systems)
- Efficient air conditioner
- Efficient food refrigeration equipment

# ENERGY : TECHNOLOGIES SELECTED

- Biomass direct combustion
- Solar PV
- Wind "onshore"
- Portable solar lamps
- Solar Water Heaters
- Solar dryer
- Low consumption lamps (CFL)
- Automated power factor improvement

# Results

- Set up the steering committee and awareness of its members on the objective of the project
- Set up of the TNA team and an operational working plan
- Strong motivation of relevant stakeholders involved in the process
- Selection of sectors realized in a participative process
- Sectorial Working group in place

# Results

- Capacity building on technologies prioritization
- Identification of main technologies in the sectors selected
- Elaboration of technology sheets for the technologies identified
- Support of URC and ENDA effective (workshops, intranet and desk help)
- experiences and expectations shared with participants from other countries during the regional workshops
- Prioritized technologies selected on Mitigation and Adaptation

# Results

- Barriers Analysis and enabling framework
- Development of Action Plans for Mitigation and Adaptation
- Identification of Project ideas in Adaptation and Mitigation

# Lessons learned

- Stakeholders involvement
  - Fundamental to set up the national steering committee
  - The financial community need to be involve at the early stage of the project
  - It's highly recommend that the coordinator dedicates enough time to the project
  - The working groups need to be focused and be constituted by experimented experts
  - Need to involve the right experts in the working groups at dedicated times
- Organisation of the work:
  - A detailed work plan should be developed with clearly defined tasks, schedules and budgets



# Lessons learned

- In the **technologies identification and prioritization**, it is crucial:
  - To have all the relevant experts in the working group
  - To define carefully the criteria and their weight for the multi – criteria analysis
- Need to see how to capitalize the gains & the experience for the preparation and implementation of both NAPA and NAMA
- Need to reflect on how to engage policy makers in the implementation of the results: need for a strong signal of the international community (finance for the TAP, NAPA and NAMA)
- Need to build capacity of members of the Working groups (multi-criteria analysis, barriers analysis)

# Lessons learned

- TAPs and project ideas could be more credible for potential funders if technology prioritisation and TAP/project idea preparations were done by small expert teams including financial experts with stakeholder consultation
- It is good practice to include in project ideas a detailed project plan with project milestones.
- Almost all project ideas contain budgets, but mostly lack specified budget details.

# Lessons learned

- Organization of direct meeting with key players necessary before the organization of the working Group meetings
- Need to imagine how to continue the barriers analysis at national level, for some technologies not selected (ongoing programs)
- Need to organize regional workshops on “**preparing technology transfer projects for financing**” for countries involved in the project
- Need to see how to link this project to the ongoing negotiations about the TEC and the Climate Technology Center and Network (Technology mechanism)

# Lessons learned

- TAPs and project ideas need to be more detailed and tailored to the information needs of potential investors and banks for considering funding.
- It is crucial to engage high-level policy makers and financial sector stakeholders in TNAs from the beginning, and to make TNA processes more receptive to their inputs
- For engaging high-level policy makers (ministerial departments of selected sectors, Finance, Economic Affairs, and National Planning) and financial sector stakeholders in TNAs, it is good practice to be clear from the beginning about the purpose of a TNA and its planned outputs, and how these could support national planning processes.

# Lessons learned

- TAPs and project ideas could be more credible for potential funders if technology prioritisation and TAP/project idea preparations were done by small expert teams with stakeholder consultation.
- Interlinkages between TNAs, NAMAs or NAPs could enhance implementation of TNA priority technologies. One suggestion has been to focus TNA on analysis (priority technologies and barriers) and include project ideas in NAMA/NAPs formulation.

***THANK YOU FOR YOUR  
ATTENTION***