



**ASSESSING COSTS AND BENEFITS OF IMPROVING
AGRICULTURAL PRODUCTION IN MALI**

Madrid, 22-24 June 2010

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1. Impacts of climate change on local agriculture

- Reduction of the rainfall of **more than 20%**
- Reduction of cycle of the cultures (**less than 20%**)
- Starting and end of the rainy season very variable, frequent **dry periods** and presence of locust
- Recurring dryness and climate variability since the years 1970.
- Disappearance or disturbance of the **reference marks** for the rural world.
- Disturbance of the **farming calendars** available to the level of the agricultural services.

Consequences: **lower agricultural production**,
famine, rural migration

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DESERTIFICATION IN LOCAL AREA -MALI



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2. Assessing costs and benefits

2.1 National Adaptation Programme of Action

- **Aim:** to direct and coordinate priority adaptation activities, including for agriculture
- Prioritization of activities was done using a **multi-criteria analysis** during which criteria were chosen following a participatory approach and taking into account local and national priorities



Photos à Sinzana (Ségou)

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2.1 NAPA cont.

5 criteria were chosen:

1. Impact on vulnerable groups and resources,
2. Impact on the rate of economic growth for poor people
3. Losses avoided for people,
4. Synergy with multilateral environmental agreements and national projects and programs
5. Monetary costs

Criteria were ranked on a scale from 1-5

Options	Impact sur les groupes et les ressources les plus vulnérables	Impact sur les revenus des populations	Pertes des productions évitées pour les populations	Synergie avec d'autres conventions	Coût de l'option	Note totale AMCO	Classement 0
Adoption des variétés culturales, espèces animales et végétales adaptées aux cc	5	5	4	3	3	20	1 ^{er} ex
Conseils agro-météo et pluies provoquées	5	5	4	3	2	19	3 ^e ex
Adoption des techniques CES/DRS	4	4	3	3	3	17	10 ex
Vulgarisation des techniques de compostage	4	4	3	3	3	17	10 ex

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2.1 NAPA cont.

- To account for the difference in importance of the criteria, relative weights were assigned and each criteria was standardized on a scale of 0-1
- Following the MCA and sensitivity tests a list of 18 priority options have identified, including number 1 option 'Adoption of climate-resilient crop varieties and animal species'
- Total cost of NAPA USD 50 million appr. 2.3 million by project

Options	Impact sur les groupes et les ressources les plus vulnérables	Impact sur les revenus des populations	Pertes des productions évitées pour les populations	Synergie avec d'autres conventions	Coût de l'option	Note moyenne AMC1	Classement 1 classement 0*
Adoption des variétés culturales, espèces animales et végétales améliorées et adaptées aux cc	1	1	1	0,5	0,66	0,832	1er ex (2è)
Conseils agro-météo et pluies provoquées	1	1	1	0,5	0,33	0,766	3ex (3è)
Adoption des techniques CES/DRS	0	0,5	0,66	0,5	0,66	0,464	10ex (12ex)
Vulgarisation des techniques de compostage	0	0,5	0,66	0,5	0,66	0,464	10ex (12ex)

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2.2 Adaptation case study: rain gauges and other met data to support farmers

Rationale: Take account of weather information to reduce climate risks on the production of crop yields

Need for assistance regarding

- Calendar of agricultural activities - crop cycles
- Timing of rainy and dry season (onset and end)
- Dates for ploughing, seeding, weeding and using manure and pesticides
- Timing of the appearance of crop diseases

2.2 Adaptation case study cont.

- Multidisciplinary team elaborates advice for farmers every 10 days
- A [Practical Planting Date Guides](#) is prepared in local languages that can be directly used by farmers
- Based on it, farmers are trained to carry out rainfall measurements and phenological observations
- A Special Raingauge ([Cost 5 Euro vs. about 200 Euro at international level](#)) which farmers can afford Is manufactured in Mali to facilitate the use of the guide



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2.2 Adaptation case study cont.

Estimated monetary and non-monetary benefits

- [Reduction of the losses](#) of seeds from 40% to 5% (impact on food security)
- Cost avoided for loss of seeds for millet/ sorghum/maize is approximately estimated at EUR 5 millions a year.
- Taking into account a daily weather forecasts allowed farmers to avoid additional phytosanitaire treatments, e.g. only one additional treatment on cotton would cost approximately EUR 110 millions in Mali by year - thus application of insecticides and fertilizer can be reduced
- [Increase in yields](#) millet/sorghum/maize between 20 to 30%: increase could on average cover the food needs of around 3,5 millions people in this area (eq. to EUR 165 millions)
- Awareness and capacity building difficult to evaluate
- [Estimated cost /benefit ratio 1/7](#)

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3. CONCLUSION

- For the NAPA using a MCA was beneficial as it allowed:
 - Involvement of vulnerable groups in ranking alternative adaptation options
 - Evaluating options using a number of criteria, which were deemed important and for which quantification and valuation in money terms of costs and/or benefits was not possible.
- For assessing the use of weather information using a CBA was beneficial as:
 - Costs and benefits could be quantified in monetary terms and thus a clear economic case could be made (cost /benefit ratio was estimated at 1/7)

THANK
YOU