



Resources for Managing Adaptation to Climate Change

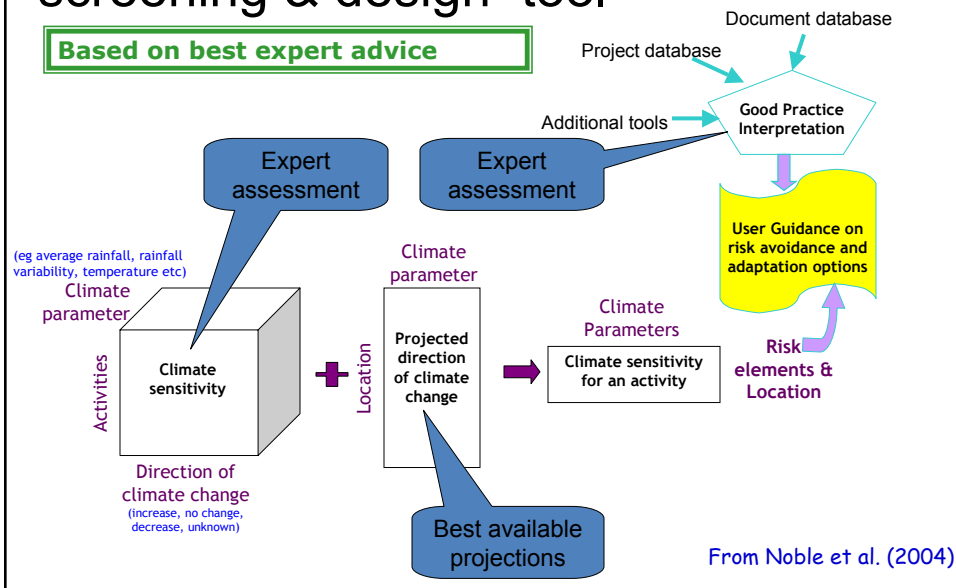
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A framework for a screening & design tool

Based on best expert advice



From Noble et al. (2004)



Resources for incorporating climate adaptation into development projects

- **Basic philosophy behind a support system**

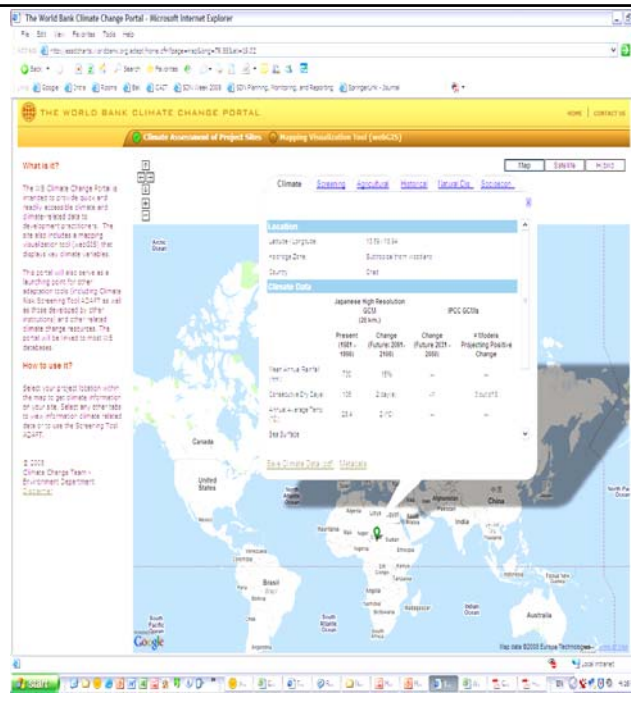
- Simple to access
- Does not impose unnecessary burden on project developers
- Few false positives or false negatives
- Provides guidance to appropriate resources including “best practice”



Elements of a resource support system

1. Has country/regional data, e.g. extremes events
2. Provides location specific information
3. Incorporates screening tools for particular risks
4. Has guide to web & literature resources
5. Includes Guidance Notes
6. Provides quick access to relevant analytical and projects etc

- Information System based on Google Earth
- Access to tabular and graphical data
- Visualization tool (webGIS) displays key climate variables



Latitude/Longitude	13.59/18.94			
Holdridge Zone	Subtropical thorn woodland			
Country	Chad			
	Japanese High Resolution GCM (20 km.)		IPCC GCMs	
	Present (1981 - 1990)	Change (Future: 2091-2100)	Change (Future 2031 - 2050)	# Models Projecting Positive Change
Mean Annual Rainfall (mm):	730	15%	--	--
Consecutive Dry Days:	106	2	-1	3
Annual Average Temp(°C):	28.4	2	--	--
Sea Surface Temperature(°C):	--	--	--	--
Runoff(mm/yr):	0	0%	--	--
Maximum 5-day Precipitation Total(mm):	65	-8%	115	8
Wildfire Frequency(%):	NA	NA	NA	NA
Biome Change(%):	NA	NA	NA	NA

Any location on the globe can be queried.
 Get historical trends and climate change projections (from high resolution, 20km, from the Japanese Earth Simulator) and other GCM runs



Climate Summary

Holdridge Zone	Tropical dry forest
Country	Chad
Latitude/Longitude	9.46/20.44

Mean Annual Rainfall	No significant change in mean annual rainfall (-15 to +10%) is projected for your site.
Consecutive Dry Days	No significant change (-10 to + 10) in consecutive dry days is projected for your site.
Annual Average Temperature	A moderate increase in temperature (1 - 2.5° C) is projected for your site.
Runoff (P-E)	No significant change (-15 to 10%) in runoff is projected for your site.
Rainfall Extreme Events	No significant change (± 25 mm) in the maximum 5-day precipitation (rainfall extreme events) is projected for your site.

Includes: Crop yield changes for 14 major crops worldwide (from IIASA)
Biome and biome change
Disaster hotspots data
Fire frequency
All on both a point and country-aggregated basis

Screening for Climate Risk

1. Country circumstances
2. Location specific
3. Screening tools

ADAPT: Analysis History

Question & Answer History

What is the thematic area(s) for the project?

Agriculture

Which farmers will this project target?

Subsistence farmers

How will the project be financed?

Microcredit facility

On a broad level, which agriculture-related activities will the project include?

Water management (including watershed and irrigation improvements)

Make farming systems changes/ improvements (eg new crops, rotations, etc)

In which aspects of the farm system will improvements be made?

Soil conservation and improvements

What will the soil conservation practices will be adopted?

Improve soil fertility and structure

How will soil fertility be improved?

Chemical fertilizers

Climate Assessment of Project Sites Mapping Visualization Tool (webGIS)

Questions to Identify Climate Sensitive Activities [Previous Question](#)

Q. What kind of farm-level irrigation project is this?

Water delivery to farm
Improve water availability on farm
Water distribution within farm
Water delivery to plants etc
Drainage
Water conservation

(Ctrl-click to select multiple activities)

Select

Further Information
For example, new wells, on-farm dams/tanks, electric pumps

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Climate Assessment of Project Sites Mapping Visualization Tool (webGIS)

Once activities are screened:

Activities are ranked as sensitive to varying degrees, depending on location, current and projected climate, and type of activity. This is based on expert assessment.

Climate sensitivity analysis is indicated by a qualitative color-coded flagging scheme

Explanation of sensitivity rating is provided

Adaptation options are briefly outlined

Relevant literature and experts database is consulted

Legend

- Significant climate risk
- Some climate risk
- Not enough known to assess
- No climate change threat perceived
- Activity may reduce climate risk

Summary Report based on your description of the project

Climate Map Questionnaire

Sensitive Activities Experts Documents Climate Summary

Sensitive Activity

■

This project involves/concerns the construction of shallow ground wells.

Why this Activity is Sensitive

The Sensitivity (flag colour) is due to Consecutive Dry Days.

Your project site is projected to have decreased rainfall and/or increased rainfall variability. This may reduce recharge rates to shallow wells. .

Please refer to the Climate tab of this form for your project location's climate.

Adaptation Advice

You should take this into account in considering whether more shallow wells are justified within the region.

[Previous Activity](#) [Next Activity](#) [View Printable Output \(pdf\)](#)

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Sensitive Activity

Holdridge Zone Tropical dry forest

Country Chad

Latitude/Longitude 9.46/20.44

■

This project involves/concerns the maize cropping

Why this Activity is Sensitive

The Sensitivity (flag colour) is due to Annual Average Temperature.

Your project site is projected to have on or more of the following climate changes: a significant decrease in rainfall amount and/or increased temperature and consecutive number of dry days. .

Please refer to the Climate tab of this form for your project location's climate.

Adaptation Advice

Maize requires some considerable amount of water to grow. Consider changing to more drought and high temperature resistant varieties. Consider implementing soil conservation practices such as good soil cover and increased organic matter content. This activities might reduce the negative impacts of higher evapotranspiration and increased drought on maize production.

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- Some climate risk
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Summary Report based on your description of the project

Sensitive Activities Experts Documents **Climate Summary**

[Sensitivity of Evapotranspiration to Global Warming: A Case Study of Arid Zone of Rajasthan](#)

The author studied the effects of change in temperature, solar radiation, windspeed and vapor pressure on evapotranspiration in arid areas of Rajasthan. Based on the research, he suggests roughly a 14% increase in total ET demand with a 20% increase in temperature. Evapotranspiration seemed to be less sensitive, however, to net changes in solar radiation, windspeed, and vapor pressure.

Year: 2004 Authors: [Goyal, R.K.]

[Salinity Management for Sustainable Irrigation: Integrating Science, Environment and Economics](#)

This report discusses the ways in which poor irrigation and drainage practices can result in waterlogging and salinity. It looks at salinity control and waterlogging reduction as well as at early warning systems that can detect incipient land degradation. The paper emphasizes that irrigation can only be sustainable when used in the proper circumstances with appropriate measures.

Year: 2000 Authors: [Hillel, D.]

[Design and Operation of Smallholder Irrigation in South Asia](#)

This document contains information on a wide range of irrigation issues pertaining to South Asia. Topics include: canal systems and hydraulics, soil types and their irrigability, canal lining, drainage works, tank projects, lift irrigation systems, irrigation rehabilitation, and ecological factors in irrigation development.

Year: 1995 Authors: [Campbell, D.]

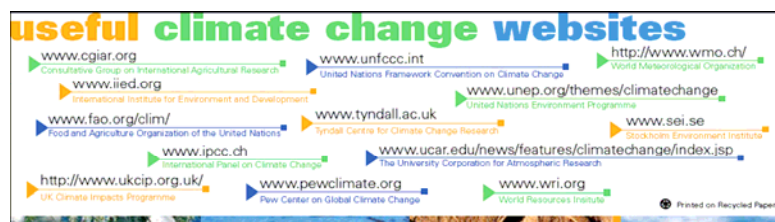
[Extended-Range Weather Forecasting in Sub-Saharan West Africa: Assessing a Potential Tool for Adapting Food Production to Climate Variability and Climate Change](#)

This contribution is designed primarily to bring into focus seasonal weather forecasting as a potential tool for adapting crop production to the variable and changing climate of sub-Saharan West Africa. The contribution is essentially a synthesis of several investigations, the details of which have been provided in the technical report of AIACC Project titled "Climate variability, climate change and food security in sub-Saharan West Africa" (http://www.aiaccproject.org/Final%20Reports/final_reports.html) The existing climate forecasting capacity in the sub-continent incorporates the activities of

Summary Report

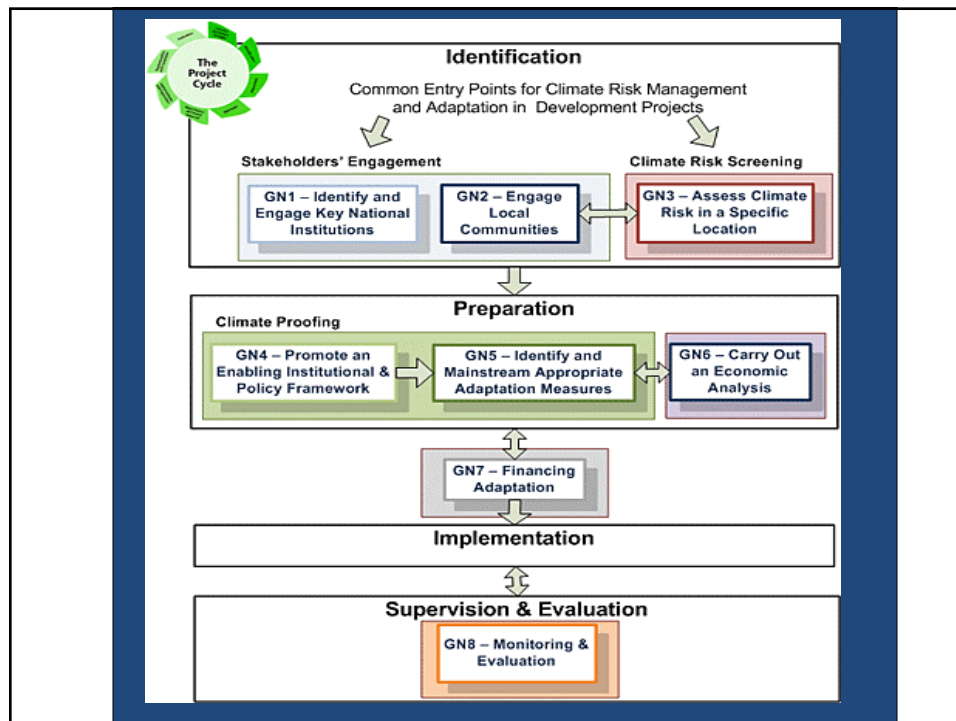
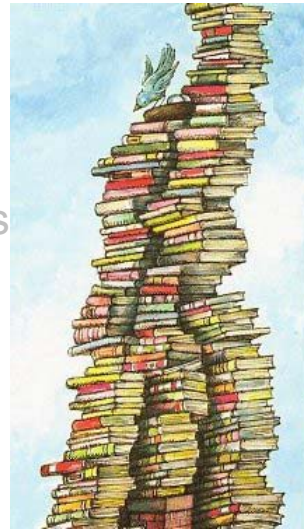
Web and literature resources

1. Country circumstances
2. Location specific
3. Screening tools
4. Web & literature resources



Screening for Climate Risk

1. Country circumstances
2. Location specific
3. Screening tools
4. Web & literature resources
5. Guidance notes



Principles underlying the Guidance Notes

- **Mainstreaming adaptation into development planning and projects promotes sustainable livelihoods.**
 - Increase **adaptive capacity** of local communities to climate variability and climate change
 - Increase **resiliency of natural and managed systems** under current climate and projected climate change by enhancing and conserving environmental services.



What types of projects are considered?

- Projects where adaptation measures either constitute a specific component of a broader development project, or are fully mainstreamed within conventional project components.
- Programmatic agendas such as via Poverty Reduction Strategies, Country Assistance Strategies, and national development strategies that should address Adaptation.

Guidance Notes Methodology

- *Direct learning of practical lessons* through the direct participation of the authors in the preparation of some pilot projects that include adaptation to climate change; interviews.
- *Focus groups or small workshops* on specific issues with operational staff and sector specialists
- *Reviews of literature on lessons learned in the practice of adaptation*
- *Feedback from the use of these notes for actual projects*

Engaging Key National Institutions in the Adaptation Agenda Guidance Note 1 (GN1)

Identify the Right Institutional Counterparts



In order to select the best institutional counterpart(s) to work on adaptation issues, and to ensure successful institutional arrangements, it is recommendable to:

- Identify the "Entry Points"
- Review the Institutional Structure and Existing Disaster/Climate Risk Management Programs
- Identify the National "Champion"

Select each recommendation to learn more.

Engaging Key National Institutions in the Adaptation Agenda

Guidance Note 1 (GN1)

Build a Political Consensus and Engage Client Collaboration



These are some options for increasing appreciation of CC issues at the highest political levels:

- Focus on Current Climatic Risks
- Use Strategies, Policy Notes and Sectoral Assessments to Raise Awareness and Promote Mainstreaming of Adaptation Measures in the Development Agenda
- Present the Evidence on Vulnerability Patterns and Socio-Economic Impacts of Climate Variability and Change in a Visible Manner
- Demonstrate Feasibility / Cost-Effectiveness of Adaptation
- Support Regional Initiatives on Climate Change Adaptation

Select each recommendation to learn more.

Engaging Key National Institutions in the Adaptation Agenda

Guidance Note 1 (GN1)

Resources and References for Guidance Note 1

Select the following additional resources and references for more information on how to engage key national institutions in the adaptation agenda:

- [Terms of Reference Examples](#)
- [Contact Persons for Advice](#)
- [Relevant Toolkits](#)
- [Additional Reading](#)

Select each recommendation to learn more.

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Screening for Climate Risk

1. Country circumstances
2. Location specific
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4. Web & literature resources
5. Guidance notes
6. Relevant analytical work, projects etc

WORLD BANK AAA WORK ON CLIMATE CHANGE									
No.	Department / Region	Title	Project ID	Product Line (ESV, TA Non Lending, Global programs and Partnership, Publications & Research, etc.)	Country / Area	TTL / Other Team Members	Sector/Theme	Mitigation/ adaptation	Status (closed, active, pipeline)
7	AFD / WBI / AFR (with CEEPA and University of Pretoria)	Climate, Water and Agriculture: Impacts and Adaptation of Agro-Ecological Systems in Africa (several studies, training workshops, etc.)			World		Agriculture / Water	A	closed
8	AFD with FAO, CGIAR, and NASA GSFC	Climate Change, Agriculture and Food Security, Adaptation and mitigation hot spots and opportunities		Knowledge Product/TA	World	Erick Fernandes, Nadim Khouri (ARD), Arimesh Sivasthava, Josef Schneider (FAO), Richard Thomas (ICARDA), Francesco T. NASA, GSFC	Agriculture and Rural	A,M	active
9	AFD with the Katoombe Group and private sector partners.	Pilot mechanisms for aggregating local community producers of ecosystem services, aggregation of private sector buyers, and innovative payments for Ecosystem Services.		Knowledge Product/TA	World	Erick Fernandes, Gerhard Dielerle, Gunnars Platals	Agriculture/Environment	A,M	active
10	AFD with Ecoagriculture Partners	Landscape level indicators and measures for integrating biodiversity conservation into agricultural landscapes (to enhance resilience to climate change and livelihoods)		Knowledge Product/TA	World	Erick Fernandes, Gerhard Dielerle, Gunnars Platals	Agriculture/Environment		active
11	AFD / WBI / AFR (with CEEPA and University of Pretoria)	Climate, Water and Agriculture: Impacts and Adaptation of Agro-Ecological Systems in Africa (several studies, training workshops, etc.)			World		Agriculture / Water	A	closed
12	AFD / AFR	Tree based Adaptation to Climate Change		AAA	Africa	Dij Chandrasekharan			
14	ARD/AFR	Making Development Climate Resilient: A Strategy for Africa -- Coastal Zones and Fisheries		Publication	Sub-Saharan Africa	John Virdin, Dleg Martens	EN/IFAD	AM	active
15	AFD	Assessing the effects of Livestock on Climate Change and Climate change on livestock		Research	World	Jimmy Smith	Agriculture/Environment/health	AM	Pipeline
16	ARD/EAP	Analysis of Forest Land Use Options for Reducing Carbon Emissions from Deforestation and Degradation (PECD)			Indonesia	PROFOR, John Spears/Mario Boococ	Forestry	M	closed
17	AFD/SDY	Risk, vulnerability and adaptation to climate change		Publication	Africa	Paul Siegel	All sectors	A	pipeline
18	AFD	The Next Generation of Certification of Ecosystem Markets			World	PROFOR (Gregor Völl/Dij Chandrasekharan)		A,M	closed

Summary

As number of people become engaged in adaptation activities, challenge

- Need to have resources that point people in the right direction
- Help design and implement activities that would produce resilient societies
- Learn as we go along – move from data to information and even wisdom