Capacity Development to Support National Drought Management Policies

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Drought, Vulnerability and Risk Assessment Within the Context of UNCCD

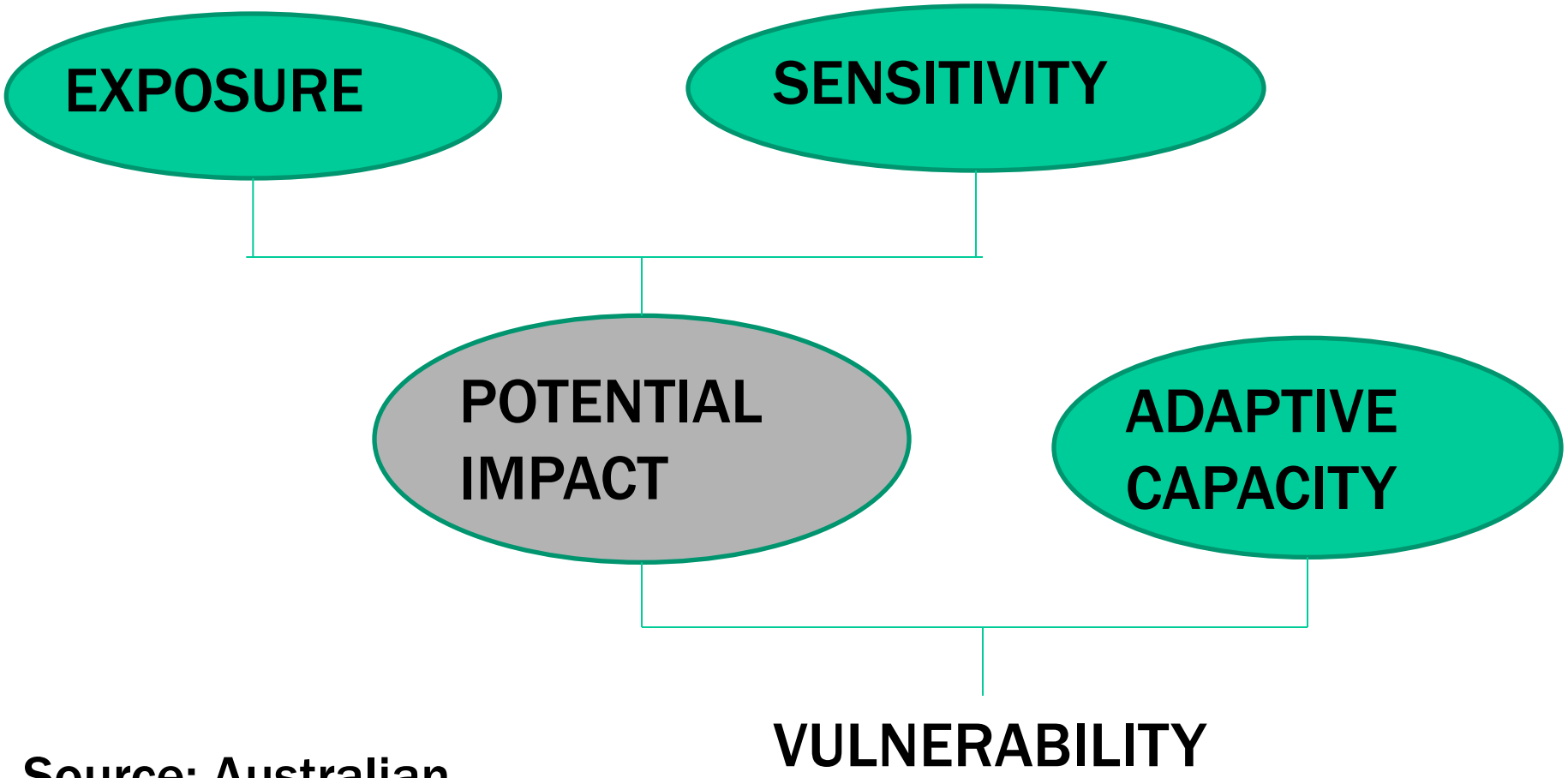
UNCCD

United Nations Convention to Combat Desertification

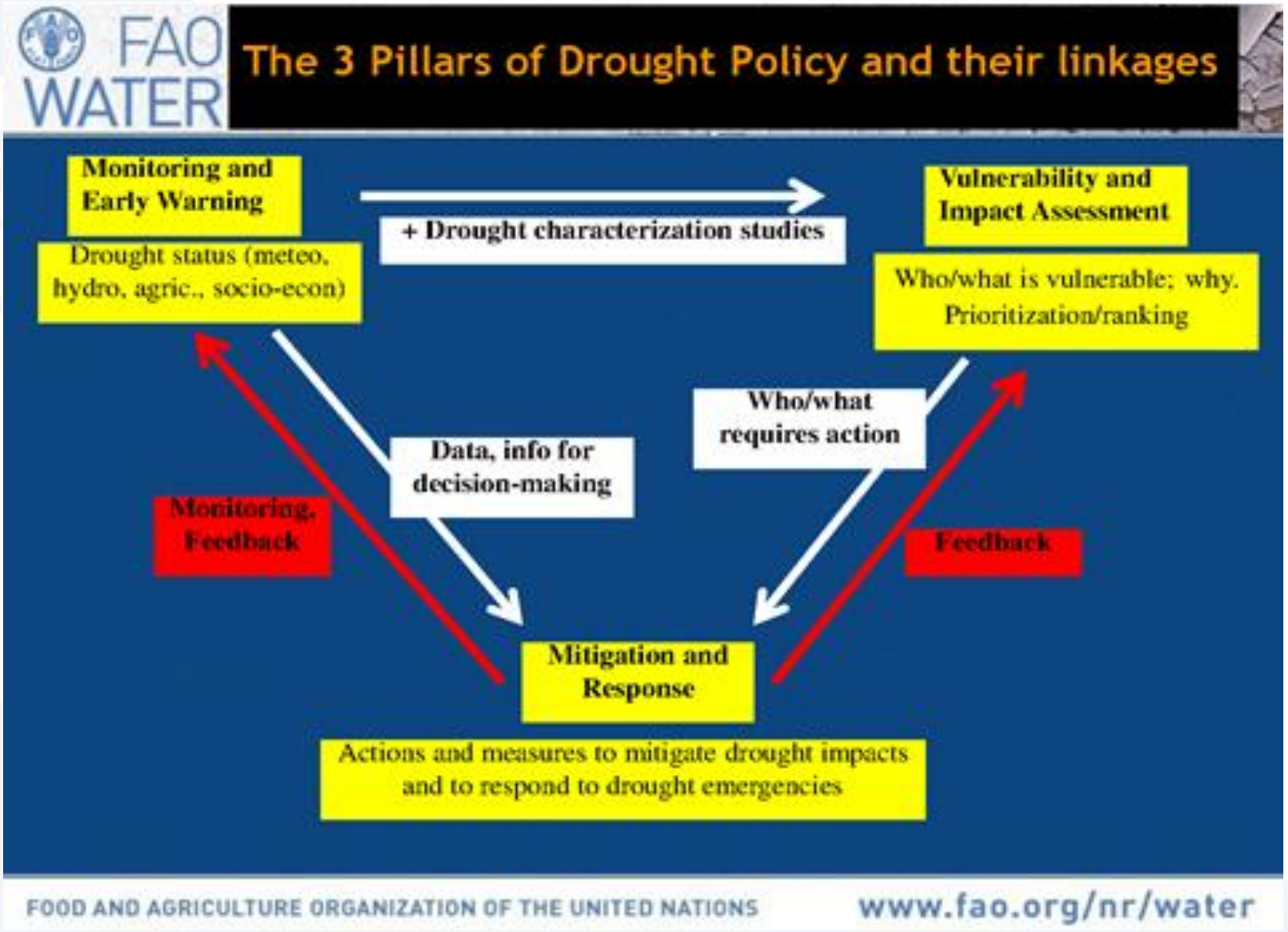
Outline

- Conceptual frameworks
- Impacts Assessment
- Vulnerability for North Africa
- Drought in the context of UNCCD implementation

Conceptual Framework of Vulnerability



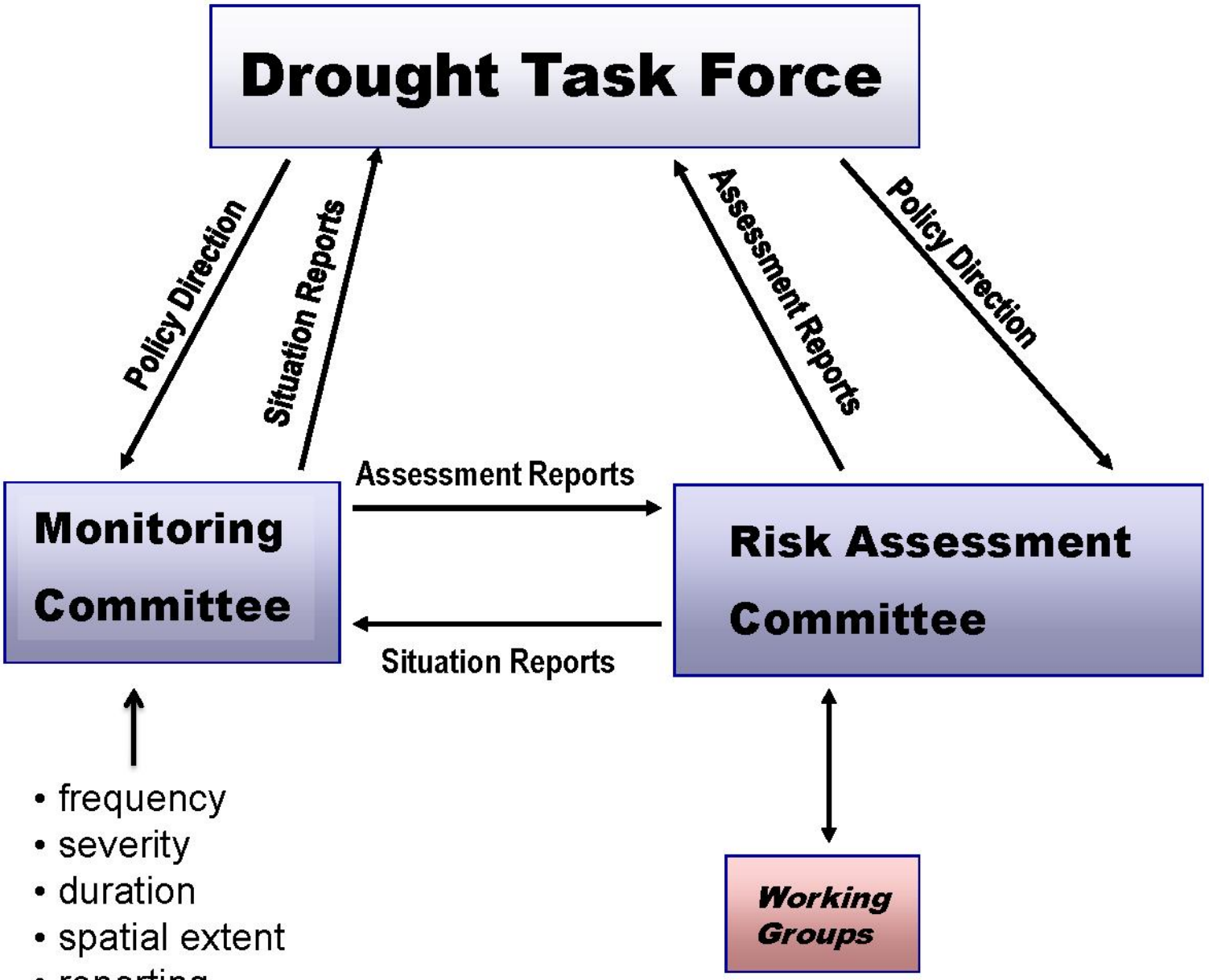
Source: Australian Government. 2005


FAO WATER
The 3 Pillars of Drought Policy and their linkages
Monitoring and Early Warning
Drought status (meteo, hydro, agric., socio-econ)
+ Drought characterization studies
Vulnerability and Impact Assessment
Who/what is vulnerable; why. Prioritization/ranking
Who/what requires action
Data, info for decision-making
Monitoring, Feedback
Feedback
Mitigation and Response
Actions and measures to mitigate drought impacts and to respond to drought emergencies
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
www.fao.org/nr/water

Vulnerability and Risk Assessment

The process of identifying, quantifying, and prioritizing (or ranking) the vulnerabilities in a drought scenario

- Includes assessing the threats from potential drought hazards to the population, infrastructure, environment, etc.
- It is conducted individually or combined from the political, social, economic or environmental perspective, etc.


Drought Task Force
Policy Direction
Situation Reports
Assessment Reports
Policy Direction
Monitoring Committee
Assessment Reports
Situation Reports
Risk Assessment Committee
• frequency
• severity
• duration
• spatial extent
• reporting
Working Groups

Sensitivity aspect

Risk Assessment Committee Tasks

• **prior to drought**, conduct a risk assessment to identify relevant drought impacts and vulnerability factors, in order to identify priority drought management options

Risk Assessment Tasks:

Task 1: Conduct a Drought Impact Assessment

Task 2: Rank the Most Pressing Impacts

Task 3: Conduct a Vulnerability Assessment

Task 4. Identify Risk Management Options

Task 5. Prioritize Risk Management Options

Task 1: Conduct a Drought Impact Assessment

- **Identifying sectoral impacts is a good place to start**
- **"drought of record", last drought, or future drought as a basis** (with help from monitoring committee)
- **Goal: to identify as many drought impacts as possible from relevant sectors**

Case of Morocco (OSS study, (2013))

➢**10 periods of droughts in the 20th century**: 1904-05, 1917-20, 1930-35, 1944-45, 1948-50, 1960-61, 1974-75, 1981-84, 1991-93, 1994-95 and 1999-2001.

➢**Most severe droughts are**: 1904-05, 1931-34, 1944-45, 1944-45, 1982-84, 1994-95 and 1999-2000.

➢ 1994-05 has been the driest year of the 20th century.

➢Drought frequency shifted from 1/5 year before the 1990s to ½ year in the last decade of the 20th century.

➢Drought persistence varies from 1 (1904-05) to 6 years (1930-35).

Checklist of Historical, Current, and Potential Drought Impacts

H=Historical C=Current P=Potential

Social Impacts

H	C	P	Health
☐	☐	☐	Mental and physical stress
☐	☐	☐	Health-related low-flow problems
☐	☐	☐	Reductions in nutrition
☐	☐	☐	Loss of human life
☐	☐	☐	Public safety from forest and range fires
☐	☐	☐	Increased respiratory ailments
☐	☐	☐	Migration

Checklist of Historical, Current, and Potential Drought Impacts

H=Historical C=Current P=Potential

Environmental

H	C	P	
			Hydrological effects
☐	☐	☐	**Lower water levels in reservoirs, lakes and ponds**
☐	☐	☐	**Reduced flow from springs**
☐	☐	☐	**Reduced streamflow**
☐	☐	☐	**Loss of wetlands**
☐	☐	☐	**Estuarine impacts**
☐	☐	☐	**Increased ground water depletion, land subsidence, reduced recharge**
☐	☐	☐	**Water quality effects**

Checklist of Historical, Current, and Potential Drought Impacts

H=Historical C=Current P=Potential

Economic

H	C	P	Costs and losses to agricultural producers
☐	☐	☐	Annual and perennial crop losses
☐	☐	☐	Damage to crop quality
☐	☐	☐	Income loss for farmers from poor crop yields
☐	☐	☐	Reduced productivity of cropland
☐	☐	☐	Insect infestation
☐	☐	☐	Plant disease
☐	☐	☐	Wildlife damage to crops
☐	☐	☐	Increased irrigation costs
☐	☐	☐	Cost of new or supplemental water resources

Summary: Clustering impacts of drought

Environmental

Water scarcity (frequent restrictions in water usages)

Wind and water soil erosion

Increased desertification

Biodiversity loss

Increased fires

Economic

Increased food prices (threats to food security)

Loss of crops and livestock productions

Loss of hydroelectric power, navigation

Loss in tourism industry

Social

Increased poverty & reduced quality of life

Mental & physical stress

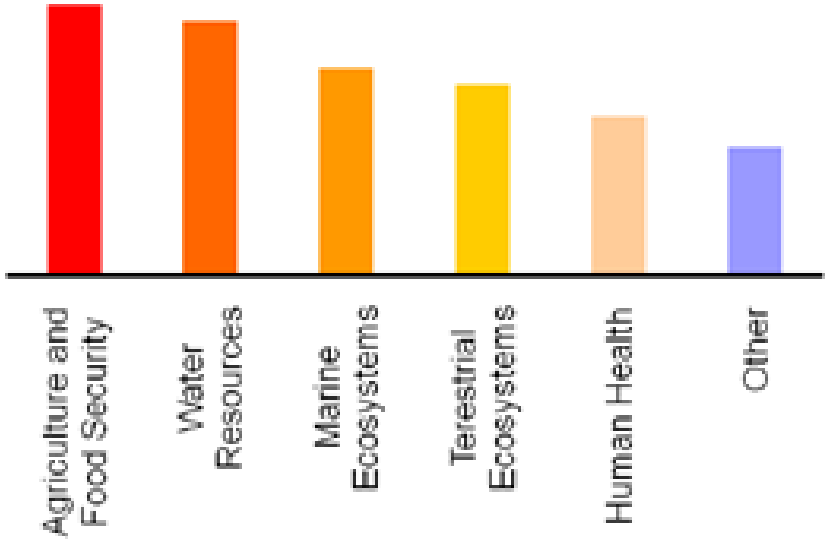
Forced human migration (Mauritania)

Social unrest

Political conflicts

Main Sectors Vulnerable to Drought

- **Working groups based on sectors vulnerable to drought**



Other:
- Tourism
- Recreation
- Industry, etc.

(After Lulian Florin Vladu, UNFCCC, 2006)

Where does drought has the most secondary and tertiary impact?

Environmental

- Land degradation, desertification, dust storms
- Water scarcity

Socio-Economic

- Agriculture and food security -
- Industry and manufacturing - unemployment
- Poverty
- Forced human migration
- Malnutrition, poor health and diseases prevalence
- Conflicts over use of resources

Exposure aspect

Exposure: Meteorological forecasts for Africa

Climate Change global context will not affect equally the regions and countries.

Africa is likely to be negatively affected.

- CC = acceleration and amplification of drought periods in North Africa (4th report of the IPCC)
- Raising of the temperature to 3 to 4 °C in the African continent (IPCC, 2007),
- Drought will become multiple, diffuse, and difficult to characterize, and North African countries are particularly sensitive;
- Between 75 to 250 million of people will be threatened by water stress in all Africa.

Physical characteristics of the Maghreb Sub region

- Global superficies: 5,7 million km2
- Arid, semi-arid and dry sub humid areas cover 80%
- Population : 80 million with 50% living in rural areas and relying on vulnerable natural resources for their livelihoods
- Climate is diversified but mostly dominated by aridity: North of Sahara Desert in Algeria, Libya, Morocco, and Tunisia has a Mediterranean climate, while the South (Mauritania) has a Sahelian climate with a short rainy season and a long dry season
- Rainfalls are characterized by their high level variability and unequal distribution within time and space.

Adaptive capacities

Indication relating to adaptive capacities

IPCC: the adaptive capacity of a society can be divided into generic and impact specific indicators. “Generic indicators include factors such as education, income and health. Indicators specific to a particular impact, such as drought or floods, may relate to institutions, knowledge and technology” (IPCC 2007:727).

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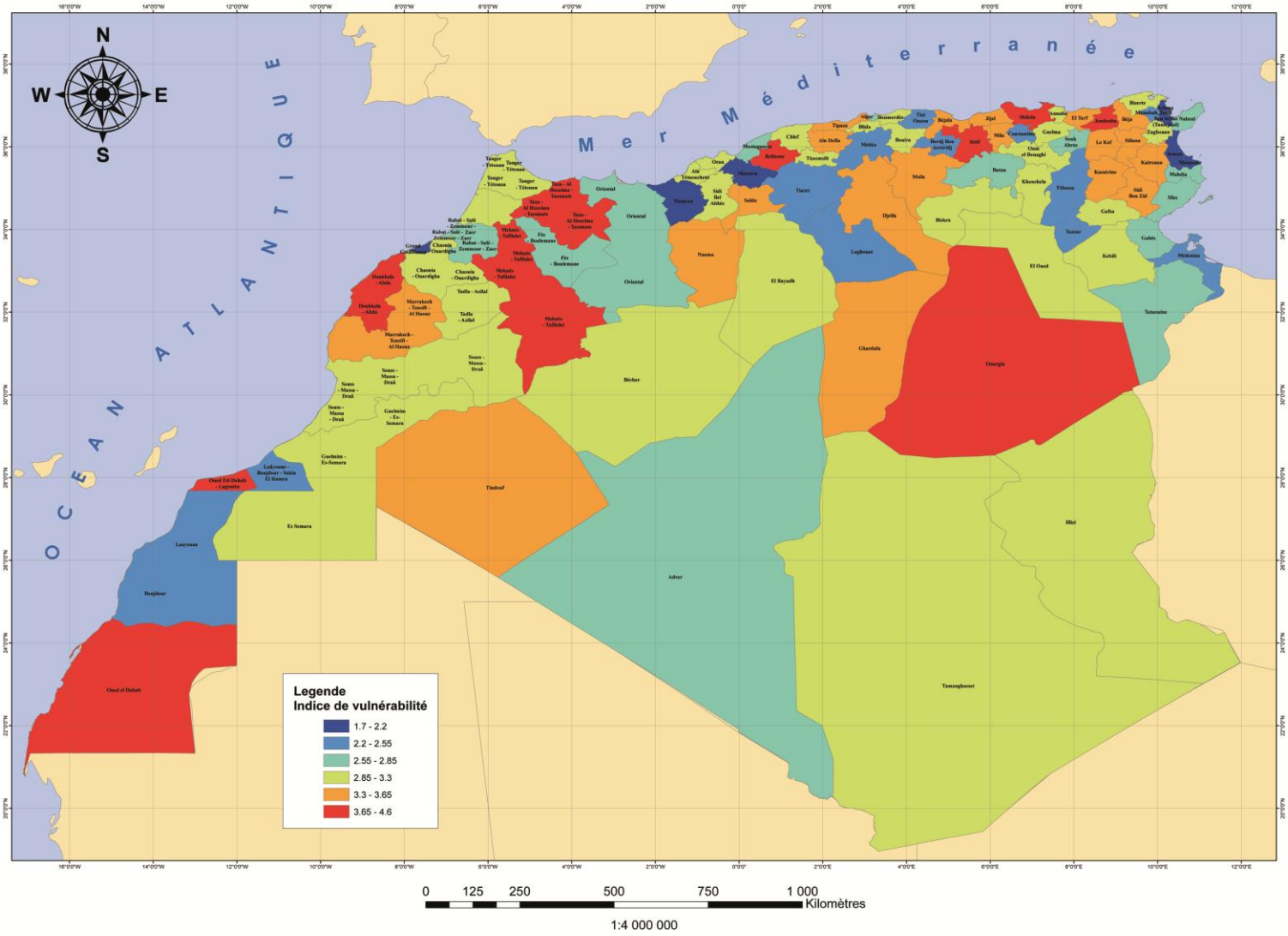
Sub regional level capacities

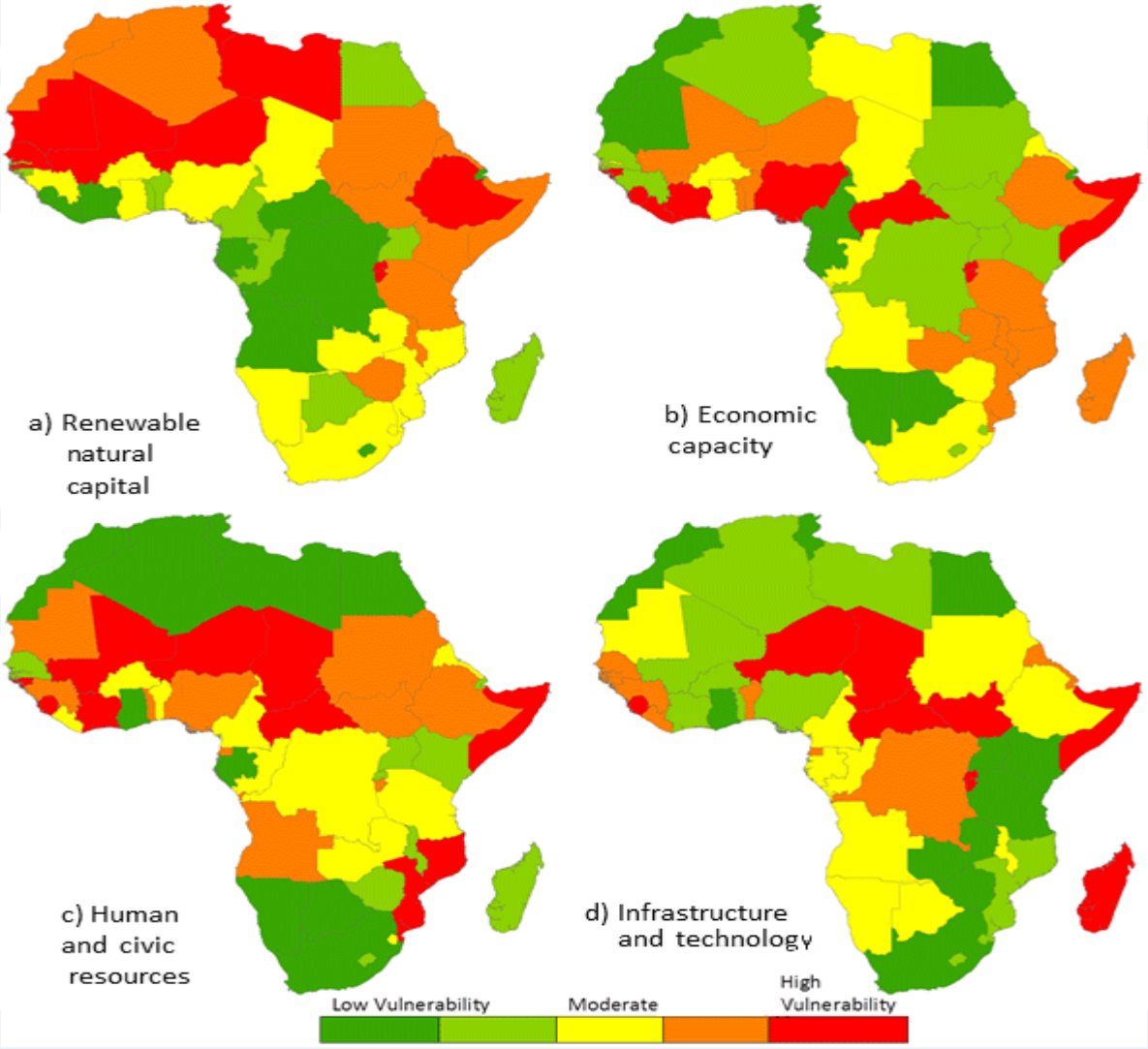
To complement national levels there can be capacities at sub regional and also regional levels, which enable cooperation on drought matters, among countries belonging to sub regions. In North Africa, for instance OSS in cooperation with UMA has elaborated a drought vulnerability map and is working to put in place a sub regional early warning system on drought.

Carte de la vulnérabilité structurelle à la sécheresse au Maghreb Central



Vulnerability

Hydrol. Earth Syst. Sci., 18, 1591– 1604, 2014: Vulnerability levels for Africa



Hazard x Vulnerability = Risk

EXPOSURE

- Severity/Magnitude
  - Intensity/Duration
- Frequency
- Spatial extent
- Trends
  - Historical
  - Future
- Impacts

SOCIAL FACTORS

- Population growth
- Population shifts
- Urbanization
- Technology
- Land use changes
- Environmental degradation
- Water use trends
- Government policies
- Environmental awareness

RISK

Summary: general steps for drought vulnerability and risk assessment are:

1. Cataloging available assets and capabilities (resources) in the event of a drought
2. Assigning quantifiable value (or at least rank order) and importance to those resources
3. Identifying the vulnerabilities or potential threats to each resource
4. Mitigating or eliminating the most serious vulnerabilities for the most valuable resources

International Response : UNCCD as legal framework

UNCCD: "Combating desertification in those countries affected by drought and desertification, particularly Africa"

- Article 10 (on National Action Programmes) parag. 2. (d): « ….enhance national climatological, meteorological and hydrological capabilities and the means to provide for drought early warning"

- Article 10, parag. 3 (b): "strengthening of drought preparedness and management, including drought contingency plans at the local, national, sub regional and regional levels, which take into consideration seasonal and inter-annual climate predictions."

- Article 3 (particular conditions of the African Region (Annex 1), parag.(b): "the substantial number of countries and populations adversely affected by desertification and by the frequent recurrence of severe droughts.

Implementation of the UNCCD and mainstreaming of drought

- Article 10 of the convention: preparation and implementation of actions programmes at all levels (national, sub regional and regional);

- NAP, SRAPs and RAP are the frameworks within which drought preparedness, drought control and drought mitigation are to be addressed.

- Pursuant to the HLMNDP held in Geneva in March 2013, the UNCCD Secretariat is requested to develop an Advocacy Policy Framework (APF) on drought and to support countries to address the drought issue within the implementation of their AP.

- The overarching goal of the APF is to promote the development and adoption of policies that reduce/minimize people vulnerability to drought through preparedness and coping measures.

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Cooperation among UN agencies in support to affected countries

- UN agencies, particularly WMO, FAO, UNCCD, UN-Water, CBD and others are cooperating to jointly provide supports to countries to improve their decision-making process and national policies on drought management (decision 9/COP 11);

- UN and International Agencies are expected to promote the establishment of an Investment Framework to cope with drought and desertification at country level.

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Thank you