

**Capacity Development to Support  
National Drought Management  
Policies 1<sup>st</sup> Regional workshop,  
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Bucharest, Romania**

# **Drought Vulnerability and Assessment in the European Context**

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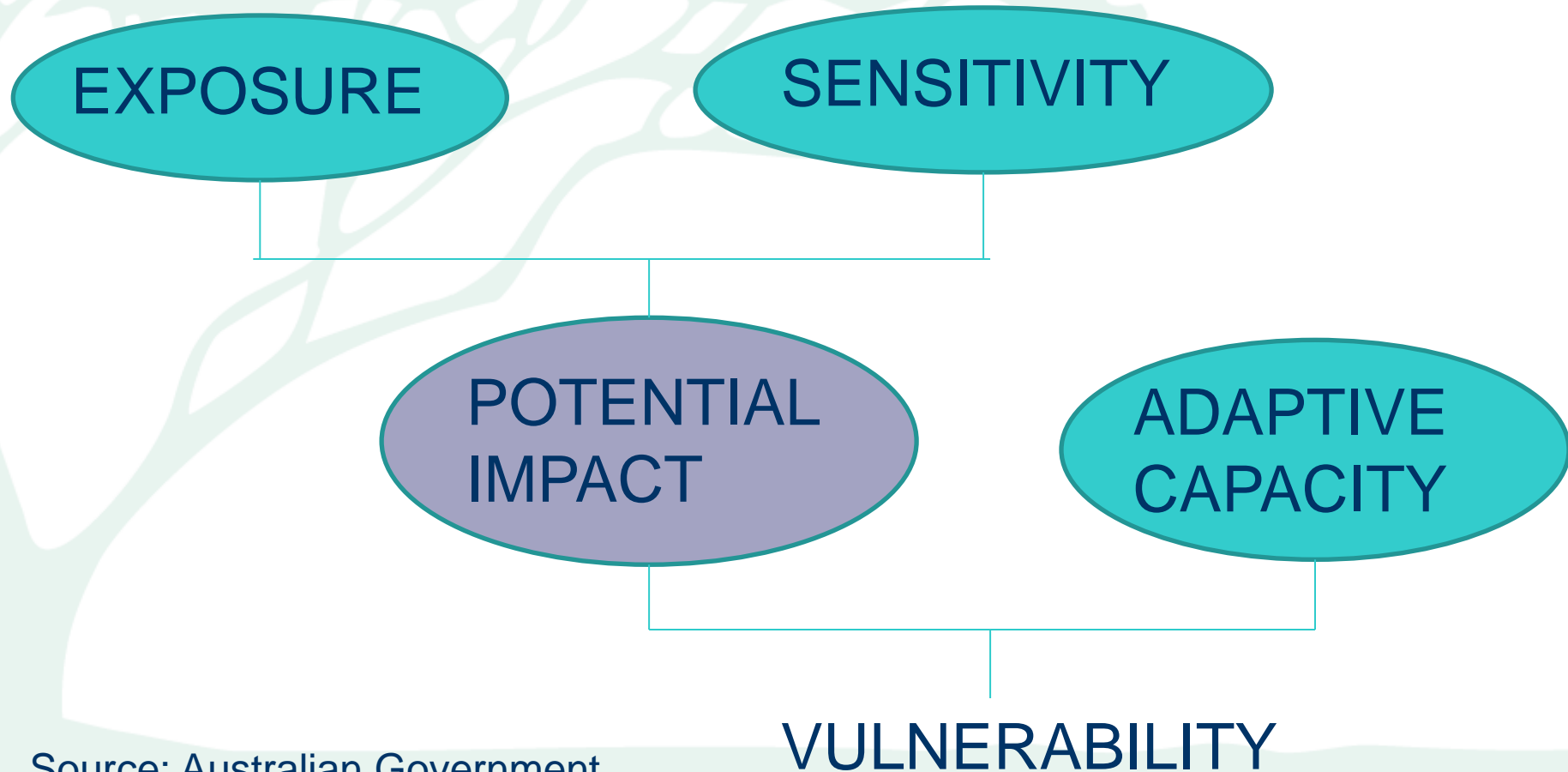
United Nations Convention  
to Combat Desertification

# Contents



- Vulnerability as a function of Exposure, Sensitivity and Adaptive Capacity
  - Impact of droughts in Europe
- From Vulnerability to Action
  - On-going examples of initiatives in Europe on drought vulnerability and risk assessment
- UNCCD Policy on Drought

# Conceptual Framework of Vulnerability



# 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.

# What are the general steps for drought vulnerability and risk assessment?

Cataloging available assets and capabilities (resources) in the event of a drought



Assigning quantifiable value (or at least rank order) and importance to those resources



Identifying the vulnerabilities or potential threats to each resource



Mitigating or eliminating the most serious vulnerabilities for the most valuable resources

# Where are the drought impacts felt?



## Environmental

Wind and water soil erosion  
Increased desertification  
Biodiversity loss  
Increased fires



## Economic

Increased food prices  
Loss of livestock production  
Loss of hydroelectric power, navigation  
Loss to tourism industry



## Social

Increased poverty and reduced quality of life  
Mental and physical stress  
Social unrest  
Political conflicts

# Where does drought has the most secondary and tertiary impact?



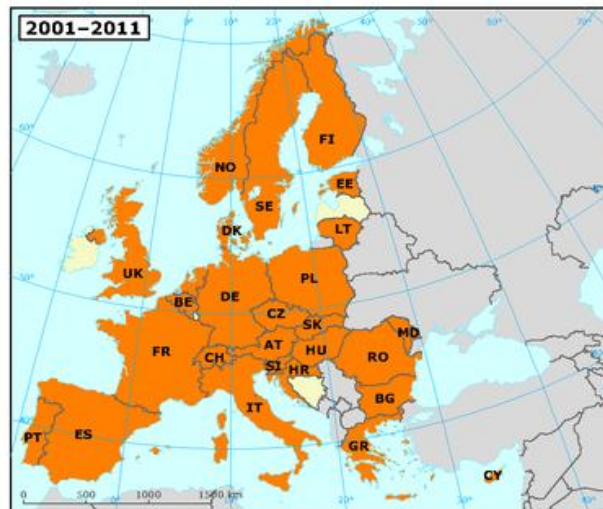
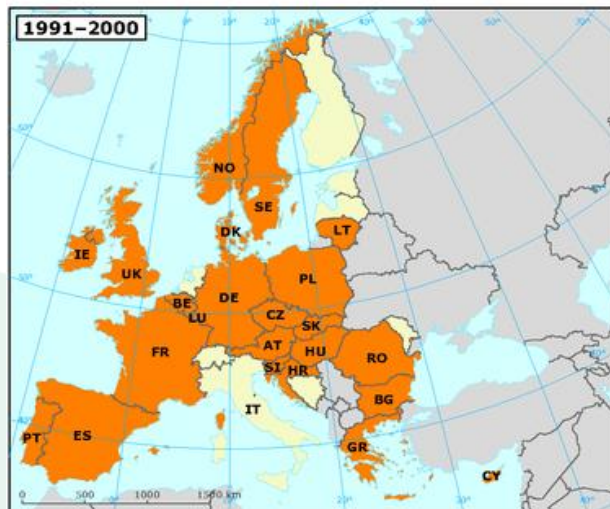
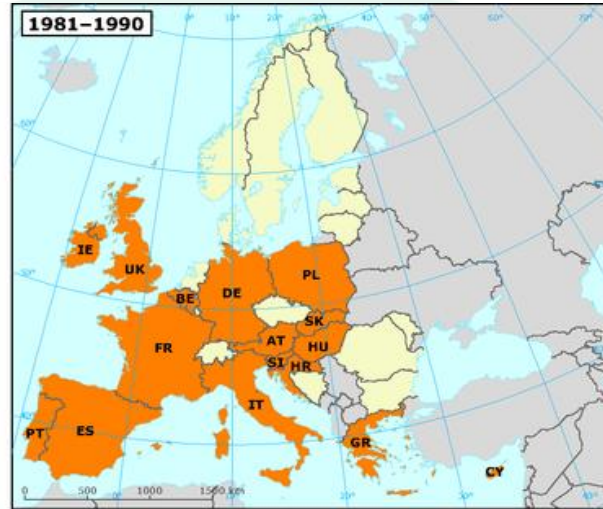
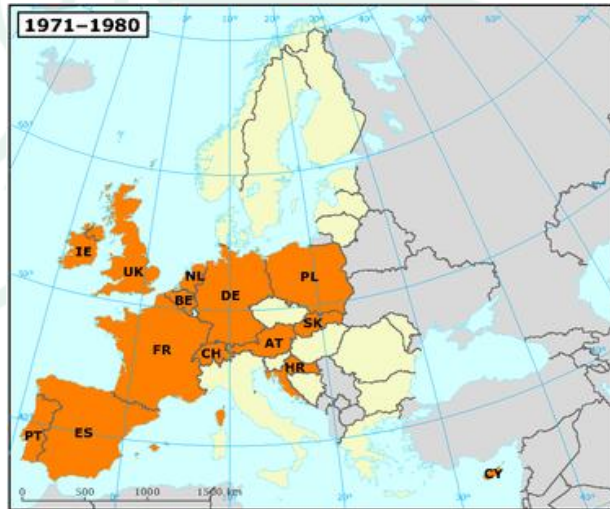
## Environmental

- 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

# Observed drought episodes in Europe 1971-2011



## Observed drought episodes in Europe

 Drought occurrence  Outside data coverage

Source:  
EEA/NSV/10/002



# How vulnerable CEE region to drought ?



## Communication from EC to European Parliament (2007)

### 30 years overview

- To date, at least 11% of European population and 17% of its territory are affected by water scarcity
- 1976-2006 – dramatic increase in number and intensity of drought in EU
- In 2003 –100 million people and one third of EU territory were affected
- Cost of drought over 30 years up to 100 billion Euro

# Most vulnerable sectors in Europe

**Agriculture:** grain crops and livestock farming are most severely affected.

**Energy:** generation of electricity was decreased in more than 30 nuclear power plant units in Europe due to limitations in the level of cooling water discharge (IAEA, 2004)

**Forestry:** In Romania, severe drought affected forest causing changes of areal and species composition, encouraging appearance of Saharian species in South part of country (Lupu et al., 2010)

# Case Study: health impact of the heat wave



| Year              | Heat wave temperature record (°C) | Country (location)                      | Number of heat wave-related morbidities- <sup>a</sup> |
|-------------------|-----------------------------------|---|---|
| 2005              | 36                                | Romania (Bucharest)                     | 500   |
| 2000 <sup>b</sup> | 46                                | Turkey                                  | 300   |
| 2000              | 35                                | Croatia (Zagreb, Split, Osijek, Rijeka) | 200   |
| 2006              | 36                                | Romania                                 | 200   |
| 1996              | 40                                | Romania                                 | 200   |
| 2000              | 43                                | Romania (Bucharest, Bechet)             | 100   |
| 2007              | 40.3                              | Slovak Republic                         | 89  |
| 2000              | 42                                | Serbia and Montenegro                   | 70  |
| 2007 <sup>c</sup> | 45.5                              | Bulgaria                                | 50  |

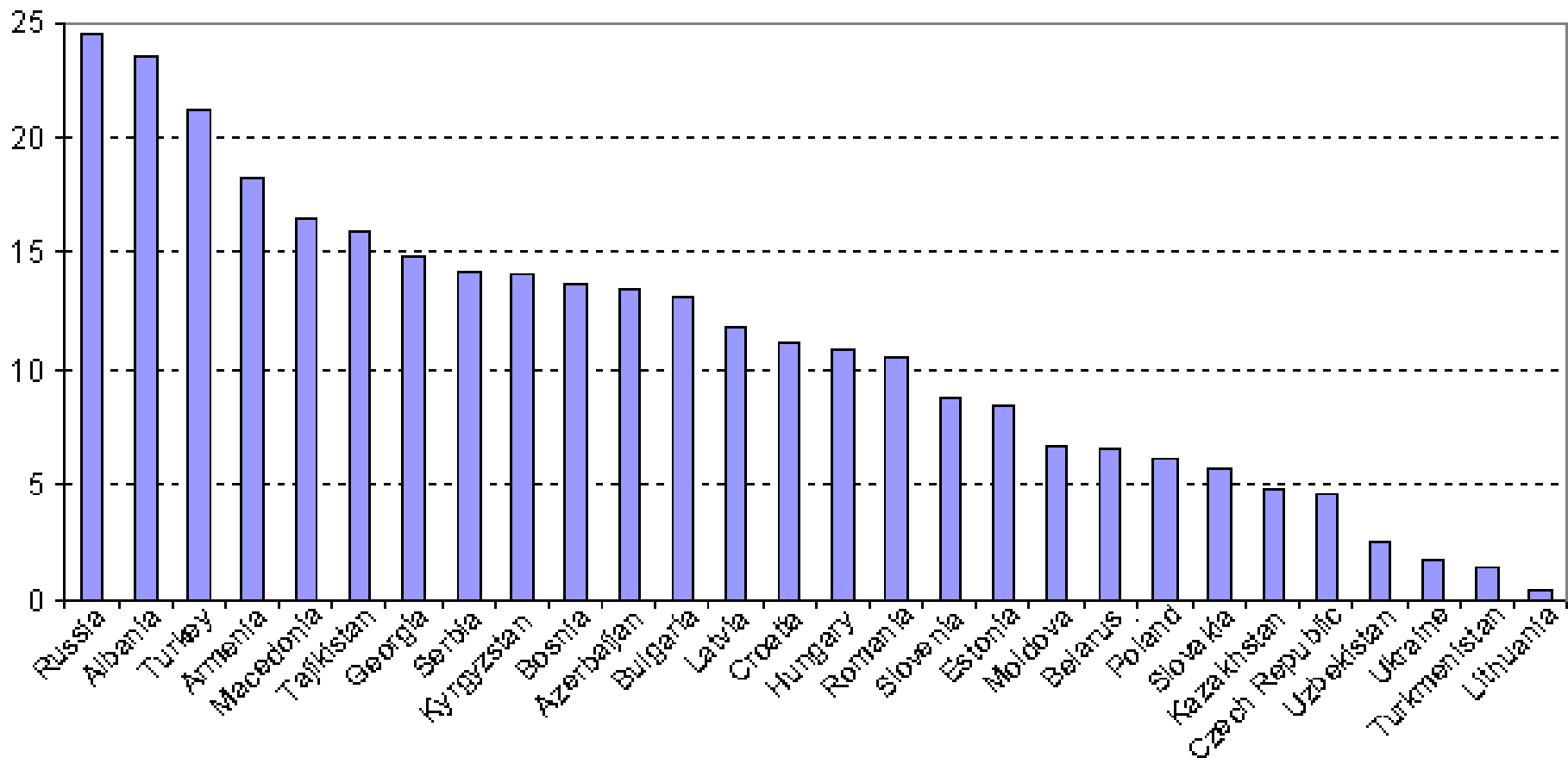
Source: EM-DAT 2008.

# Vulnerabilities – Future projections for Europe



In 2012 the IPCC concluded that there is *medium confidence* in a projected increase in duration and intensity of droughts in some regions of the world, including southern Europe and the Mediterranean region, and Central Europe

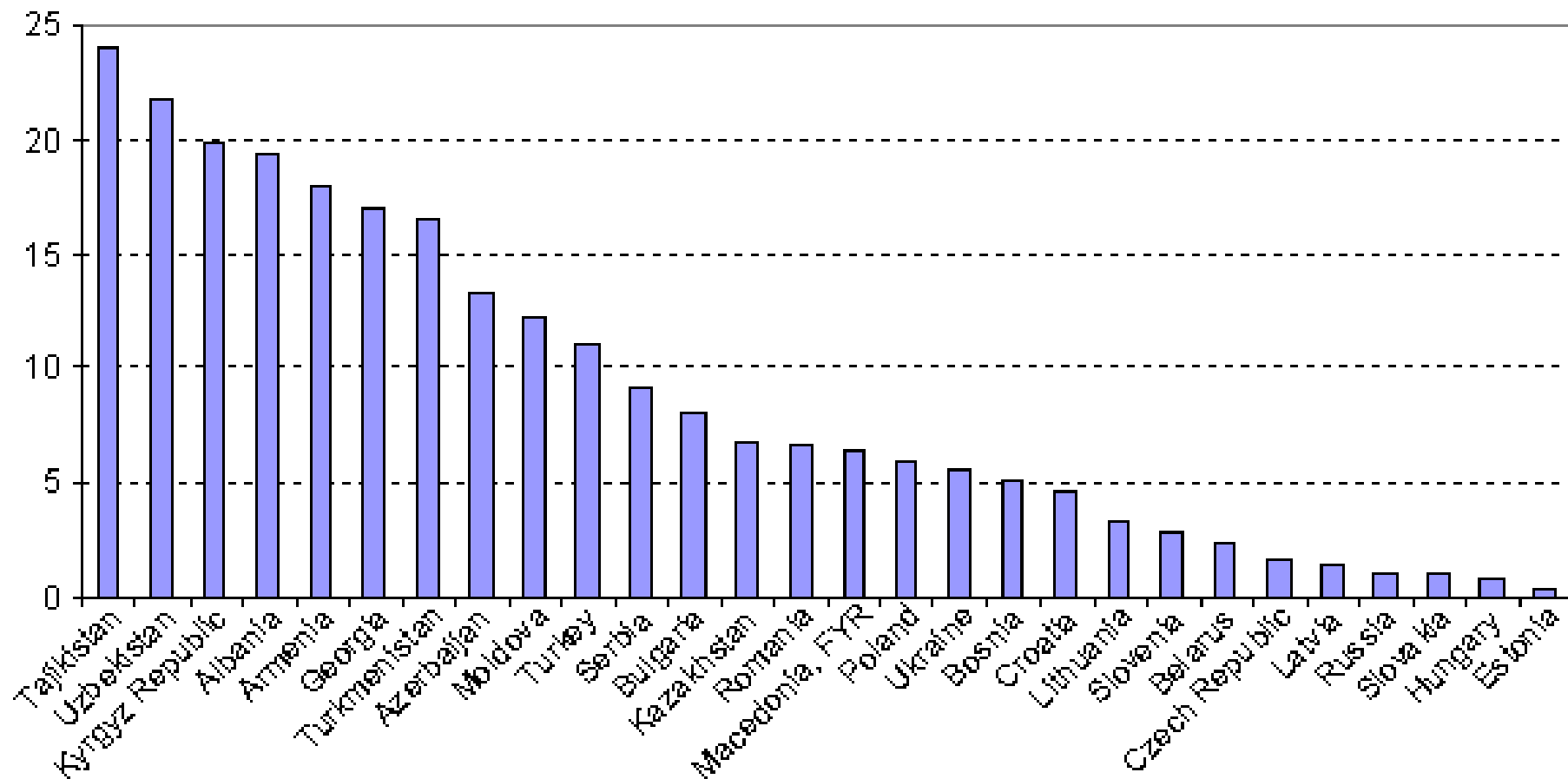
# Index of Exposure to CC



Strength of future CC related to current variability

Source: Baettig et al, 2007

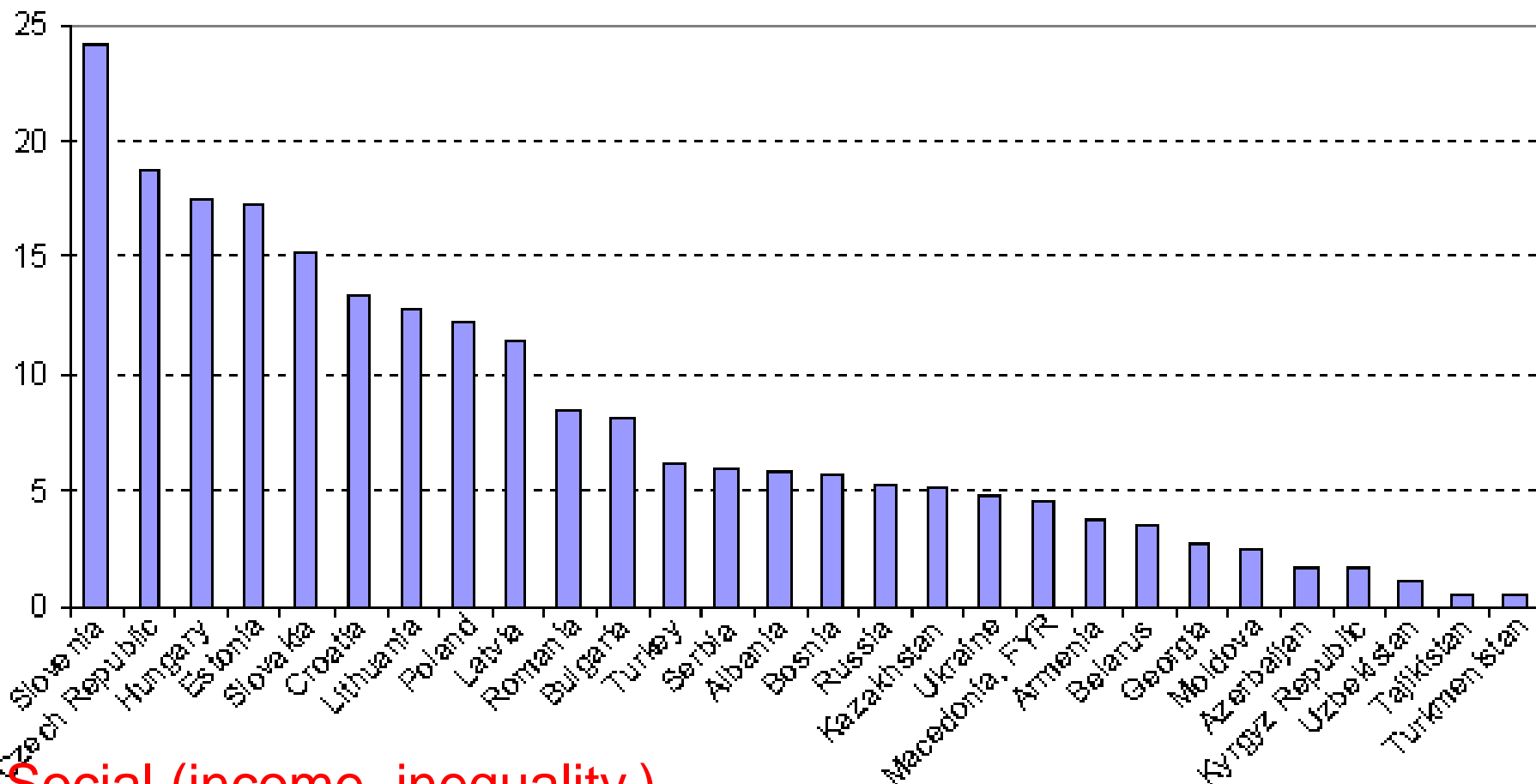
# Index of Sensitivity to CC



Physical and economic indicators

Source: Fay and Patel , 2008

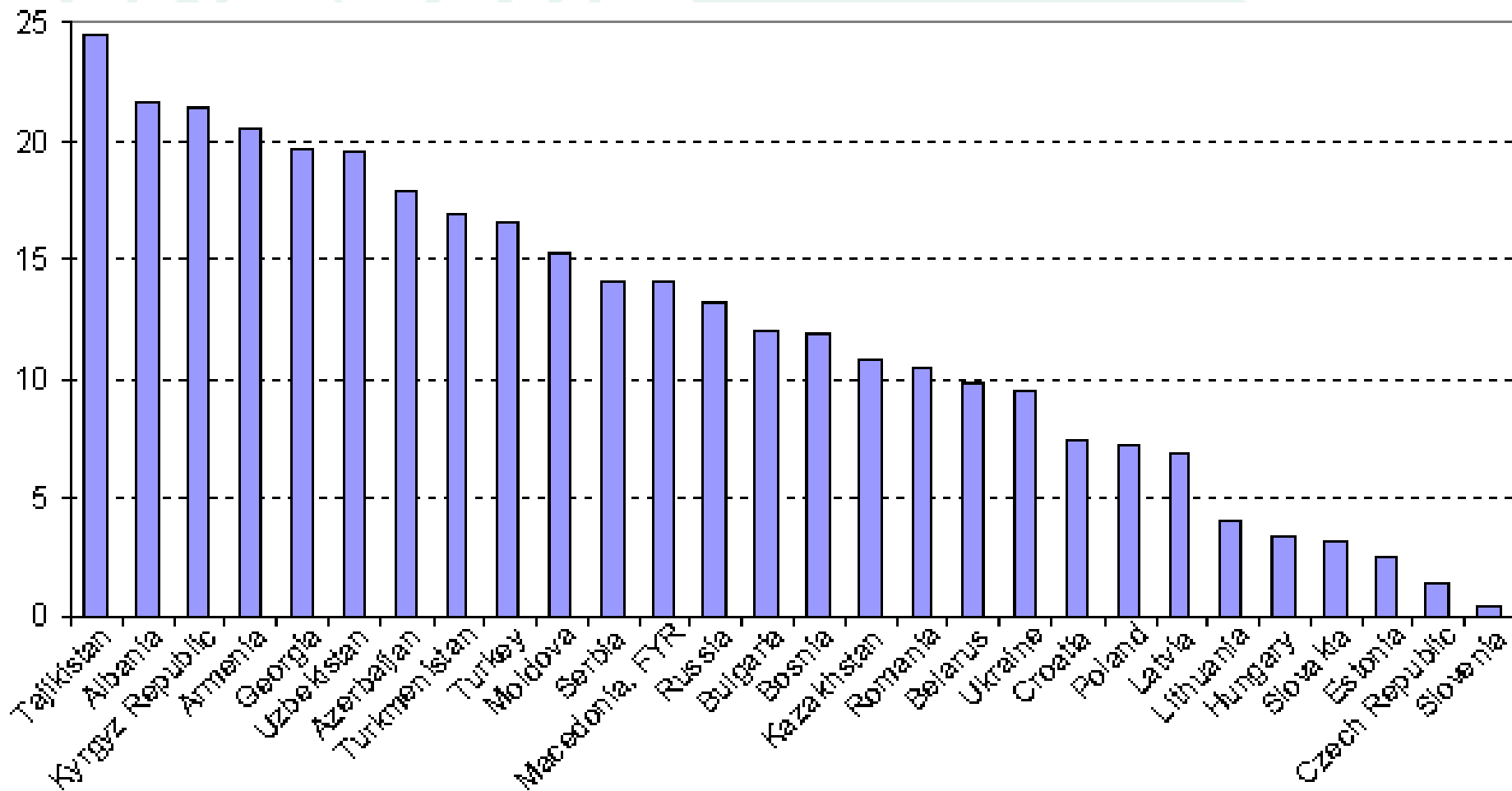
# Index of adaptive capacity to CC



Social (income inequality),  
Economic (GDP per capita),  
Institutional measures

Source: Fay and Patel, 2008

# An Index of Vulnerability to Climate Change for Different ECA Countries





# How vulnerable CEE region to drought ?



- The vulnerability and adaptive capacity of Central and Eastern European countries to climate change over the next two decades **will be dominated by socio-economic factors and legacy** rather than by climate change itself (World Bank, 2009)
- Non-climatic factors, such as **a legacy of inefficient water use and continued unsustainable demand**, will be the main drivers of water stress in Europe over the next couple of decades. (Vörösmarty et al. 2000.)

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# From Vulnerability to Action



## Successful Drought Mitigation Policy

- Different time scale:
  - short-term
  - long –term measures and investment
- Stakeholders:
  - Climatologists (monitor)
  - Agriculturalists and Natural resources managers (assess impact)
  - High level decision –makers (act on base of received info)

# Barriers for successful mitigation policy



- Absence of unified authority in natural resource management
- Responsibility is divided among governmental jurisdictions
- Inadequate policy and institutional capacity
- Others ...

# On-going initiatives: Communication from Commission to European Parliament and Council

Proposes set of policy  
options:

- Effective **water pricing** policy
- Improving **drought risk management**
- Considering **new water supply infrastructure**
- Efficient allocation of water and water-related **funds**
- Improving **knowledge and data** collection



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 18.7.2007  
COM(2007) 414 final

COMMUNICATION FROM THE COMMISSION  
TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

**Addressing the challenge of water scarcity and droughts in the European Union**

# On-going initiatives in Europe



- MEDROPLAN, Mediterranean Drought Preparedness and Mitigation Planning (since 2003)
- European Drought Center (since 2004)
- Drought Management Center for South and Eastern Europe (DMC SEE) in Slovenia (since 2006)



# Drought Management Action Plan of Turkey



## The Plan

Legislative framework was set in 2007.

### Policy objective:

- To establish strategies and measures to minimize the impact of drought on farming and food security

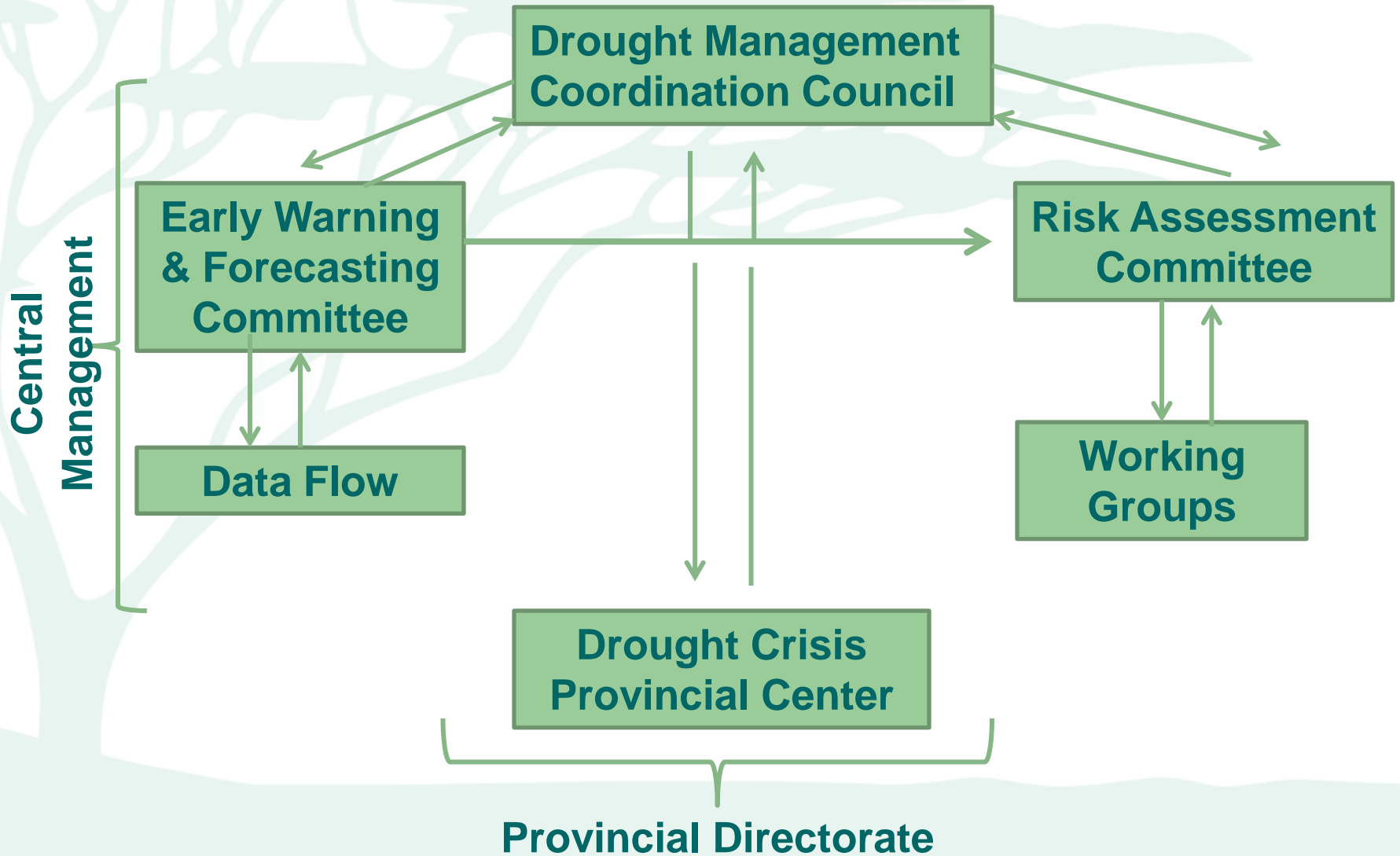
### Scope:

- To establish coordinated actions through involvement of all stakeholders,
- To monitor and manage drought (& climate related disasters) in the country,
- To supervise and coordinate development of the Drought Management Action Plan
- Monitor implementation of the action plan

**Result:** Strategy on Agricultural Drought and Action Plan prepared



# Drought Management Action Plan



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# What is the role of the Advocacy Policy Framework on Drought?



- Parties to the UNCCD COP 10 requested the Secretariat to develop an **Advocacy Policy Framework** (APF) on drought
- The APF on drought provides the UNCCD secretariat with **tools and approaches** for assisting country Parties in addressing key drought issues and concerns.
- The overarching goal of this APF is to promote the development and adoption of policies that reduce societal vulnerability to drought.
- COP 11 in Windhoek, Namibia is expected to take a decision endorsing the APF in September 2013.

# CEE policies on land degradation and drought in the UNCCD context



- **National Action Programmes** to be aligned with the strategic objectives of the 10 Years Strategy
- In 2013, eighteen (18) countries of Central and Eastern Europe (UNCCD Annex V) started designing the **Regional Action Programme** to combat Desertification, Land Degradation and Drought

# Recent from UNCCD: Economics of Land Degradation



- Partnership of the UNCCD, EC, Germany (BMZ), UNU, Center for Development Research (ZEF)
- Standard methodology to assess economic costs and benefits of action on SLM and provide policy options
- On-site and off-site damages and losses
- Country case studies

# Thank you



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# Roundtable discussion



## GROUP A

Who is vulnerable (socially/economically) and why?

## GROUP B

What are the mitigation policies and plans that reduce drought impact?

Are there any on going initiatives in your country ?

## GROUP C

Who plays which role in developing the mitigation policies at all levels?