Adaptation to Climate Change in Agriculture.
Exchange of experiences between the Republic of Macedonia and Italy

AGRICULTURE AND CLIMATE CHANGE IN ITALY: MAIN IMPACTS AND POLICIES

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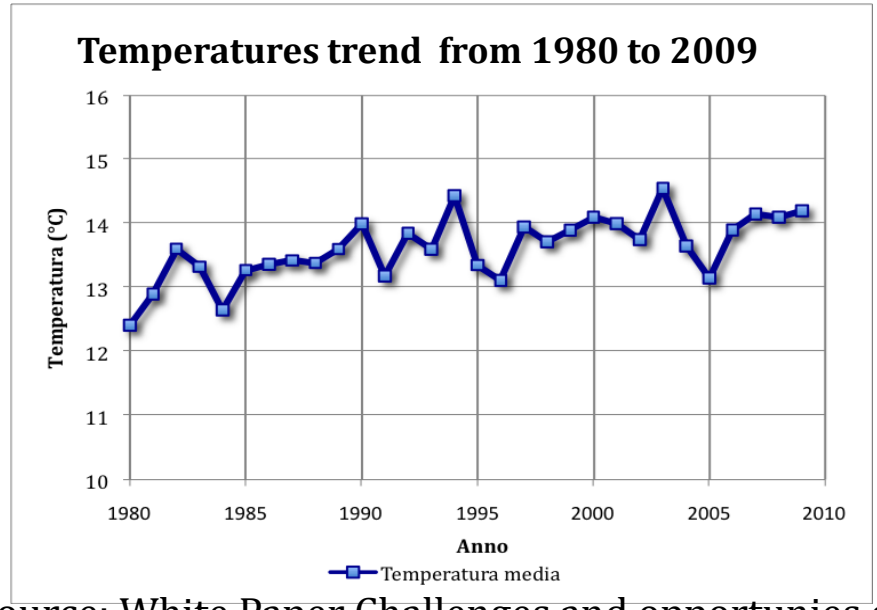
Rome, 16 July 2013

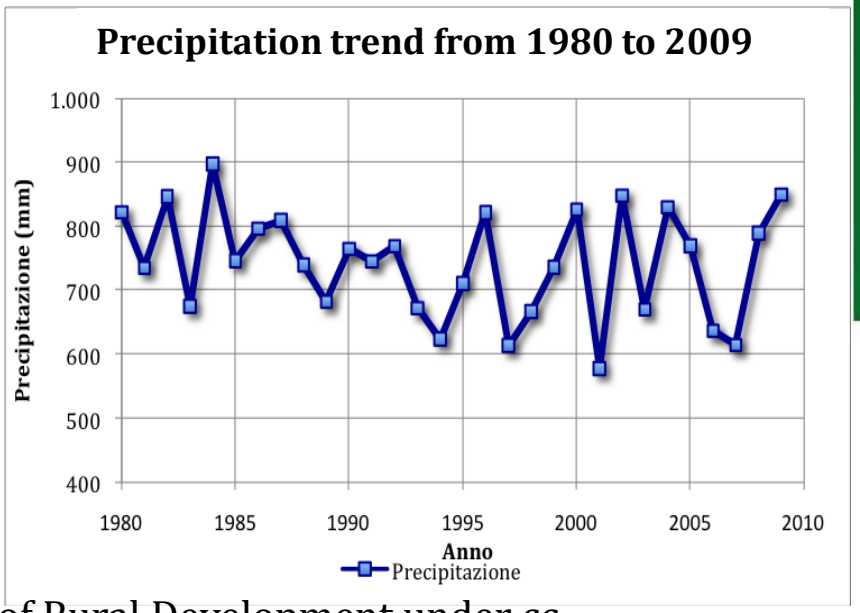
Outline of the presentation

- ✓ Evidences of climate change and major impacts in Italian agriculture
- ✓ Climate change related policies: building resilience
- ✓ Mitigation policy
- ✓ Adaptation policies and options
- ✓ Some concluding remarks

Evidences of climate change in Italy

- Average annual temperature shows an increasing trend in the first 17 years and then fluctuates around 14 ° C in the last 13 years
- The fluctuations of the average annual precipitation in the last 15 years have been very higher than the previous period, varying from 600 mm to about 900 mm

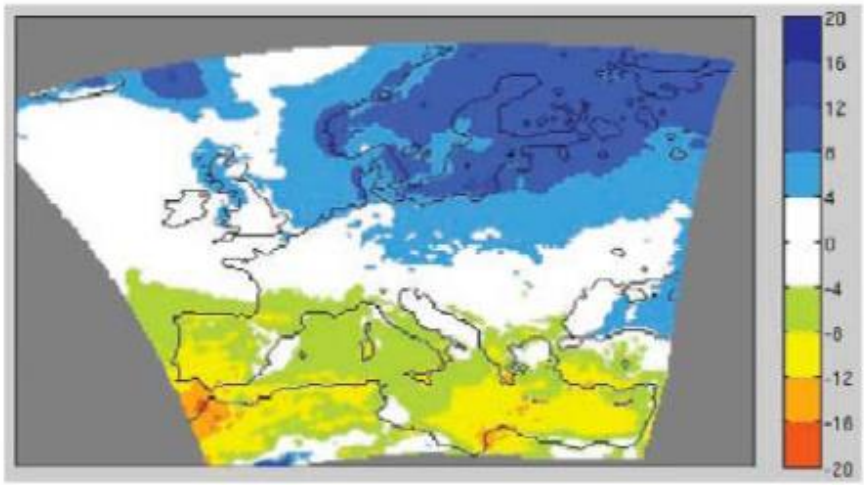


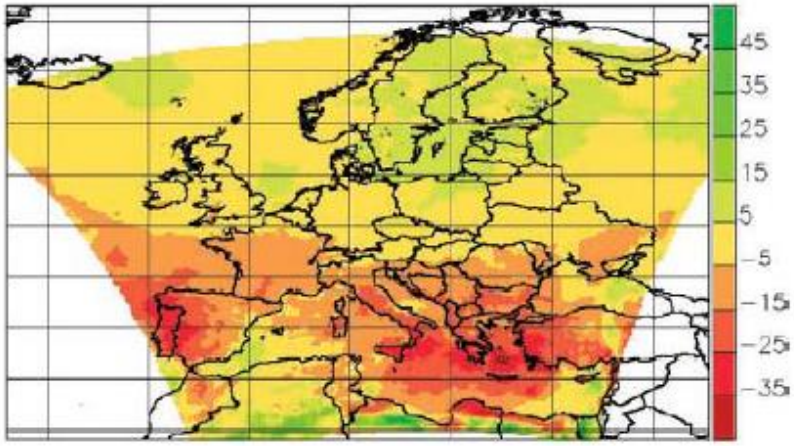


Source: White Paper Challenges and opportunies of Rural Development under cc

Climate Change Scenarios (1)

- CC scenarios for annual (left) and summer (right) mean precipitation (%) 2021-2050 with respect to 1961-1990 (emission scenario A1B).
- A slight decrease in the Mediterranean;
- Greater decline in precipitation at seasonal level (up to -25%)
- … and until -45% for 2071-2100 period

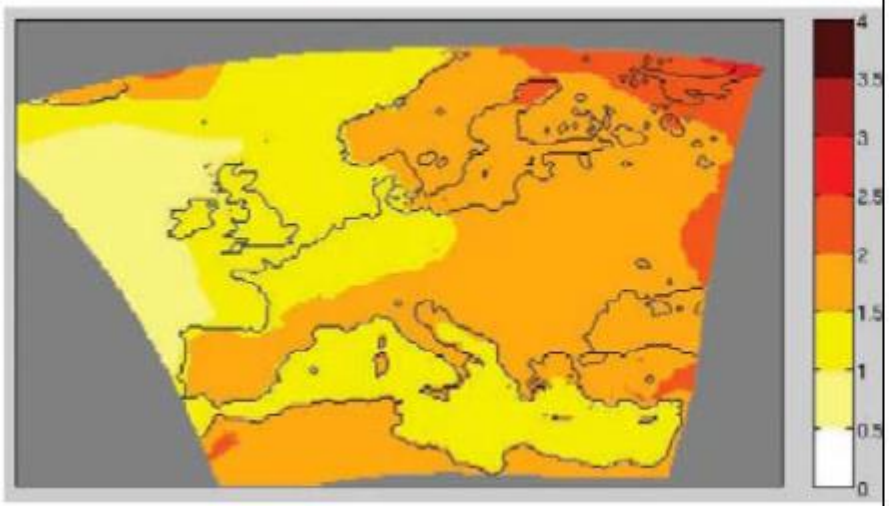


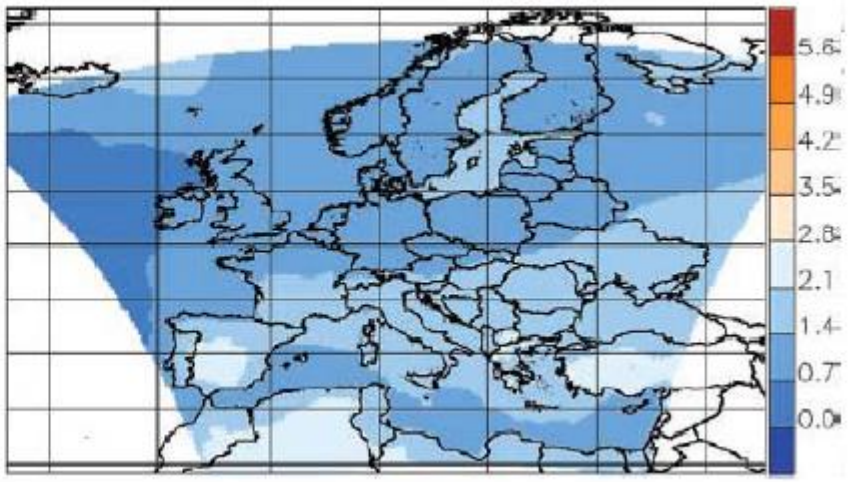


Source: http://ensembleseu.metoffice.com/docs/Ensembles_final_report_Nov09.pdf

Climate Change Scenarios (2)

- CC scenarios for annual (left) and summer (right) mean temperature (%) 2021-2050 with respect to 1961-1990 (emission scenario A1B).
- Temperature increase up to +2°C. Greater in summer.
- 2071-2100 up to 2.5 -5.5°C - scenario A2 (Giorgi *et al*. 2004).

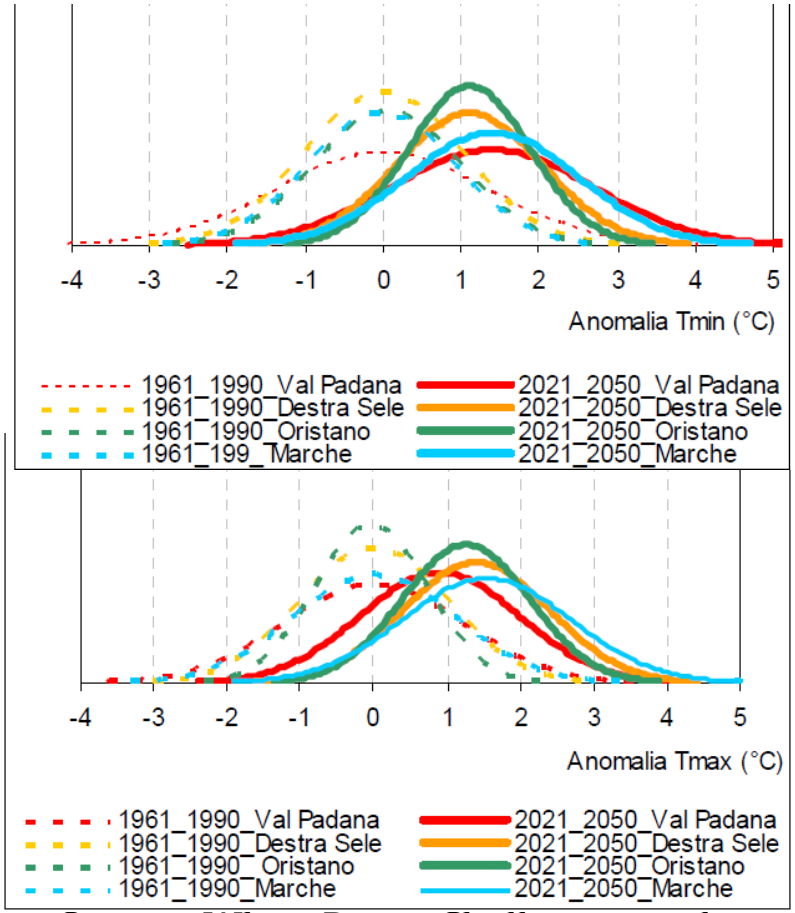


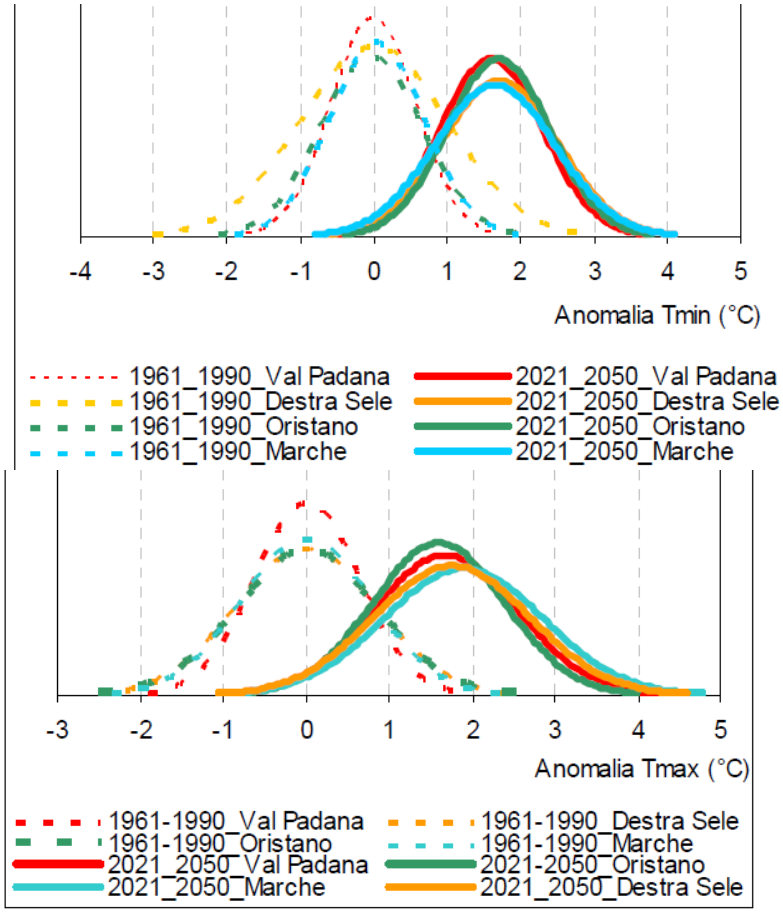


Source: http://ensembleseu.metoffice.com/docs/Ensembles_final_report_Nov09.pdf

Climate Change Scenarios (3)

Climate change projections for T Anomalies from winter (left) an summer (right) temperature-Ensemble mean simulation, with respect to reference level (1961-1990) [dotted line]





T Min

T Max

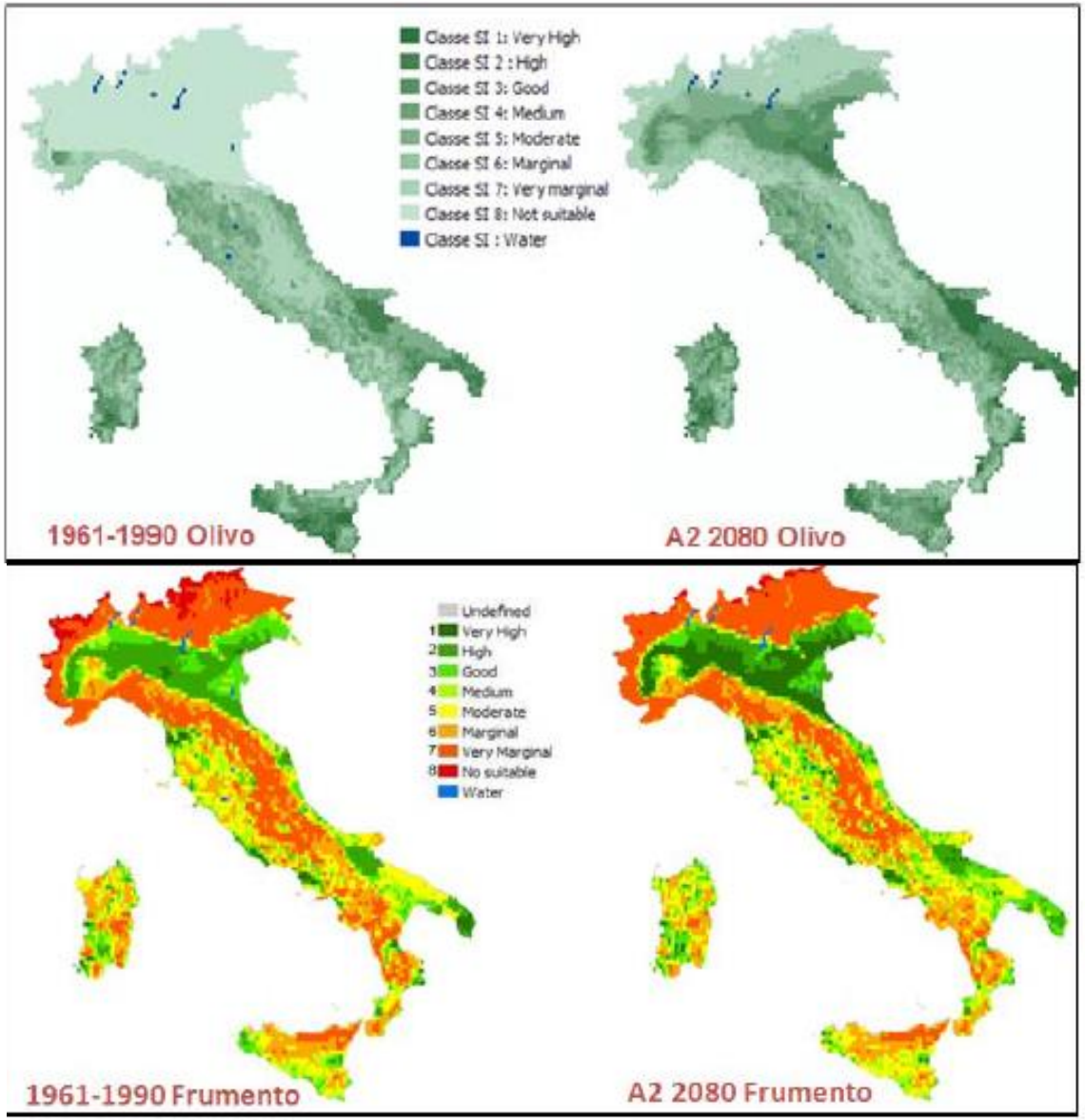
Source: White Paper Challenges and opportunies of Rural Development under cc

Main vulnerabilities of Italian agricultural systems

Threats:
- Crop yield reduction (Reduction of areas used for traditional crops and increase in yield variability)
- Water deficit and drought
- Production risk due to increased frequency of extreme weather events
- New plant diseases and pests
- Heat damage and heat stress for animals
- Increased risk of leaching
- Accelerating decomposition of soil organic matter

Opportunities
- Introduction of new crops
- Increasing yields in some areas
- Need for more resource efficiency

Some specific impacts



Suitability index for the cultivation of olive tree (up) and wheat (down) calculated for the reference period (1961 - 1990) and for 2080 under the A2 emission scenario.

Source: White Paper Challenges and Opportunies of Rural Development under cc

The challenges of Climate Change

Adaptation and Mitigation

Increasing the **adaptive capacity** of plants, animals and production systems to cope with new climate conditions.

Reducing emissions from agricultural production, land use and bioenergy production and **increasing carbon sink.**

FOOD SECURITY

Greatest strength of agri-environment and forestry measures is their ***multi-objectivity.*** They deliver carbon savings integrated with other benefits to society: flood risk and water quality; soil protection and biodiversity conservation.

Building Resilience

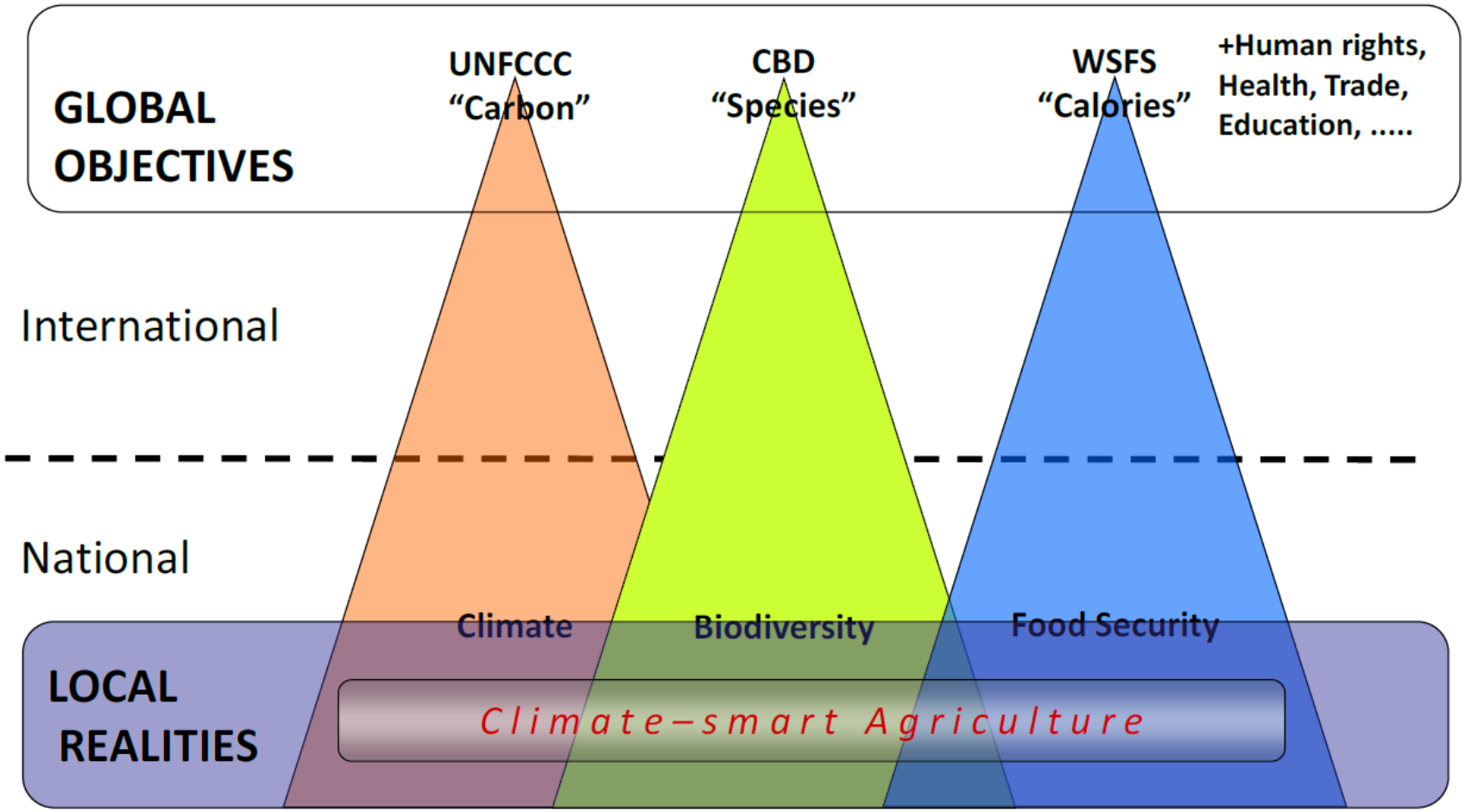
"Resilience" is the ability of a system to anticipate, absorb, accommodate or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration or improvement of its essential basic structures and functions (IPCC, 2012).

- ✓ Building resilience does not depend on predictions of how climate change may unfold in the future.
- ✓ Reduce vulnerability to potential impacts.
- ✓ Ability to plan the management of the production system: minimizing costs (resource) and increasing adaptive capacity

The role of sinergies

- Adaptation will have consequences for mitigation
- Mitigation options cannot reduce adaptive capacity
- Adaptation and mitigation are linked and complementary strategies ("climate friendly Eu agriculture"; "climate smart agriculture": FAO)
- Some examples:
  - Farm woodland acts as a windbreak, shelter, reduces runoff and erosion, a habitat for wildlife, a diversified source of business
  - Erosion reduction measures, reduce carbon losses, improve water retention and safeguard biodiversity
  - Wetter winters require improved manure storage and facilitate use as a feedstock in anaerobic digesters

Global and local level



Source: Peter Holmgren, FAO, Workshop «Building resilience for adaptation to climate change in the agriculture sector»

Policies

Climate change requires coordinated mitigation and adaptation efforts

Three way relationship between agriculture, forestry and climate:

- ✓ **Emitter** – source of GHG → Effort Sharing Decision (2009)
- ✓ **Sink** – can sequester carbon rules → LULUCF accounting (2013)
- ✓ Needs to **adapt** → EU adaptation strategy (2013)

Mitigation policies

GHG Target in 2020: -20% compared to 1990

-14% compared to 2005

EU Emissions Trading System (ETS)
-21% compared to 2005

Non ETS sectors (transport, buildings, waste, agriculture)
-10% compared to 2005

27 Member State targets stretching from -20% to +20%

CH_4 and N_2O from agriculture included

CO_2 from LULUCF NOT included

Effort Sharing Decision 406/2009/CE
National level: -13%

LULUCF – land use, land use change and forestry - accountig decision n.529/2013/Ue (21 May)

Adaptation Strategy

- ✓ EU Adaptation Strategy has been adopted by the European Commission in **April** (2013)
- ✓ + Principles and recommendations for **integrating** climate change adaptation considerations under the 2014-2020 Rural Development Programmes
- ✓ Italy is now deleloping its own **National Adaptation Strategy** (end of 2013- beginning of 2014)
- ✓ In 2011 The Ministry of Agriculture and the Italian NRDN: **White Paper** «Challengies and opportunities for the rural develolpment in climate change scenarios »

Adaptation options and instruments

- ✓ Helping farmers to adapt
- ✓ Training, advisory and communication
- ✓ Research (on what is still unclear)
- ✓ Long term planning: mainstreaming and integrating
- ✓ Adaptations options for crop and livestock
- ✓ Risk management - Economic instruments

… and instruments

Regulation

- Ensuring the implementation of existing policies and strengthening protection standards (e.g. Nitrates Directive, WFD)

Financial instruments

- Taxes and Emission Trading System → Carbon markets likely to have a role –but incentives through CAP Pillar 2 will remain important at least until 2020

Financial incentives (Rural Development - CAP)

The role of the CAP

- Farm and forest modernisation
- Agri-environmental schemes (payments for ecosystem services) e.g. extensive
- Management of livestock, efficiency of fertiliser use etc.
- Afforestation/agro-forestry systems on agricultural land
- Biogas production using organic waste (e.g. manure)

2014-2020

Common Strategic Framework – all investments should be resilient to the impact of climate change

CAP: Greening (LULUCF accounting rules); more emphasis on climate change and targeted territorial/collective action (e.g. agri-environment climate measures)

Some concluding remarks

- ✓ Climate change is an important driver, but not necessarily the most important
- ✓ Mainstreaming climate change in national and local policies: “Doing things differently” not “doing different things”
- ✓ Adjust farm management to climate change
- ✓ Increase resilience of farming systems
- ✓ Elaboration and implementation of long-term policy (different time horizons)
- ✓ Abandon the perspective of crisis management and move on to the risk management

Thank you for your attention

Grazie dell'attenzione

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