

Horizon 2020 Slovakia and Joint Research Centre



Vladimir Šucha

*Serving society
Stimulating innovation
Supporting legislation*



How to get money



Simple solution

$$\Sigma(K + T1 + T2 + T3 + T4) \\ \times \\ \Sigma(E + R + C + G) = \text{€}$$

Simple solution

Enablers

Knowledge

Talent

Tolerance

Technology

Territory

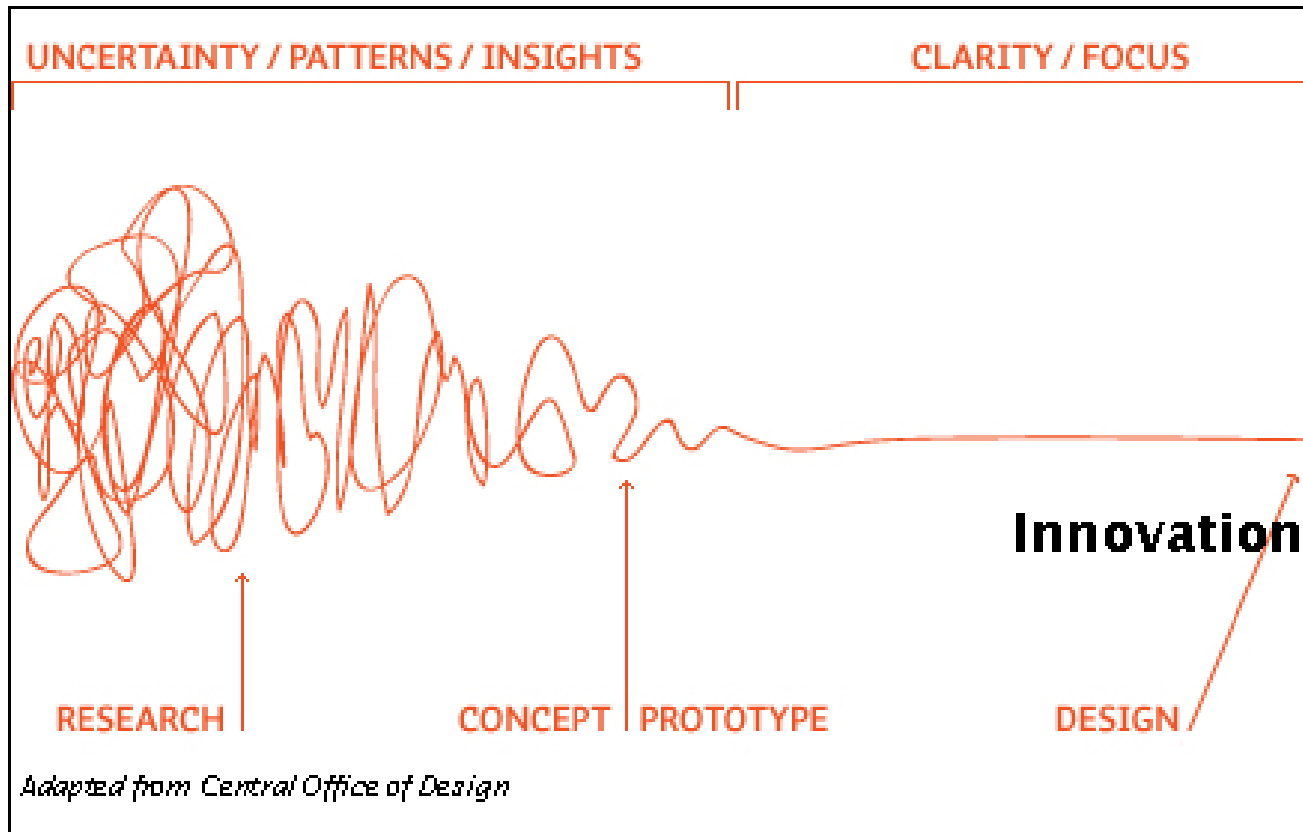
Drivers

Excellence

Relevance

Critical Mass

Governance



Education

**Research
Knowledge**

**Culture
Art**

Innovation ecosystem

**Independent
personality**

Technologies

**Openness
Tolerance**

**Policy
Framework**

Finance

Education

**Research
Knowledge**

**Culture
Art**

Innovation ecosystem

**Independent
personality**

Technologies

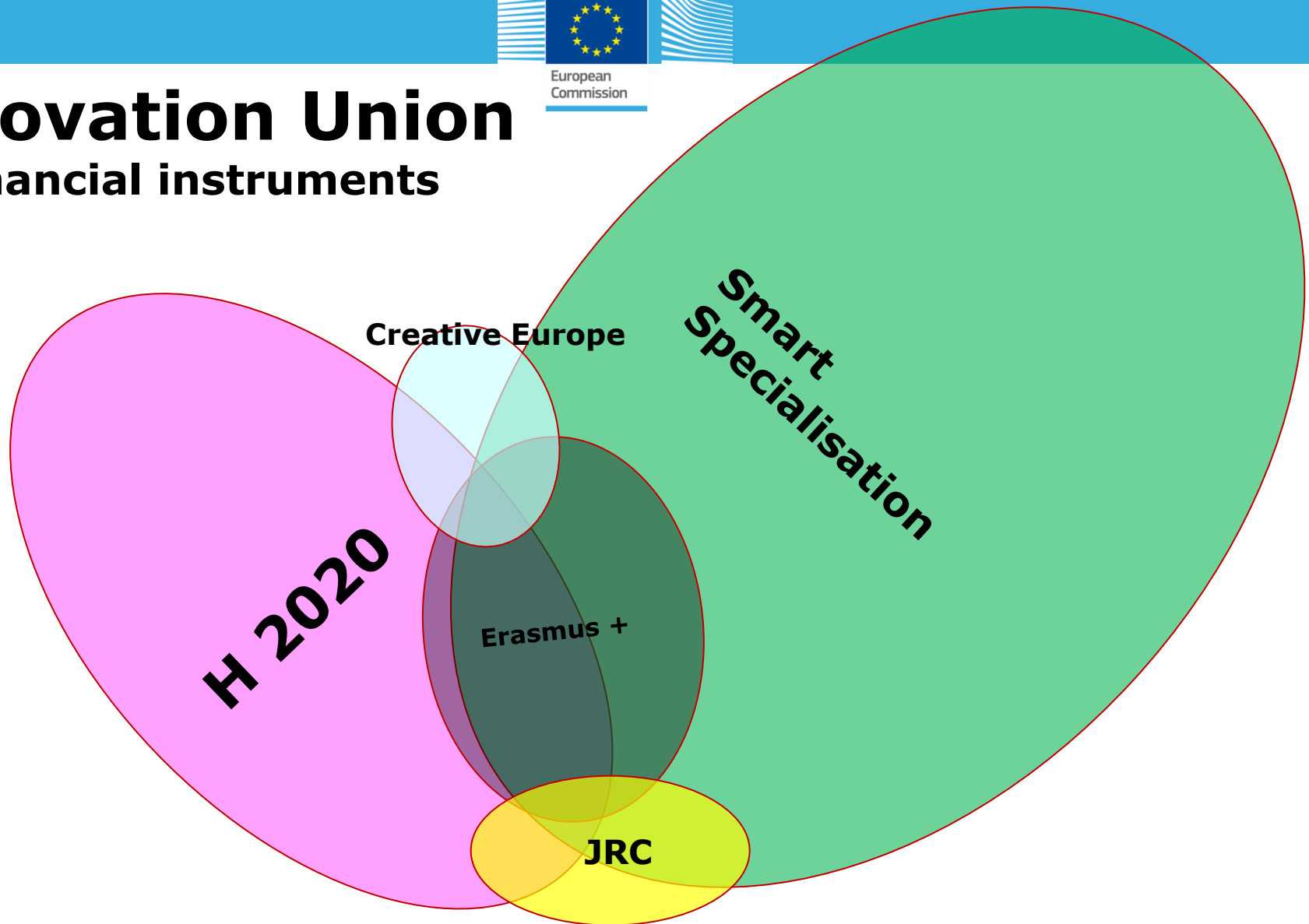
**Openness
Tolerance**

**Policy
Framework**

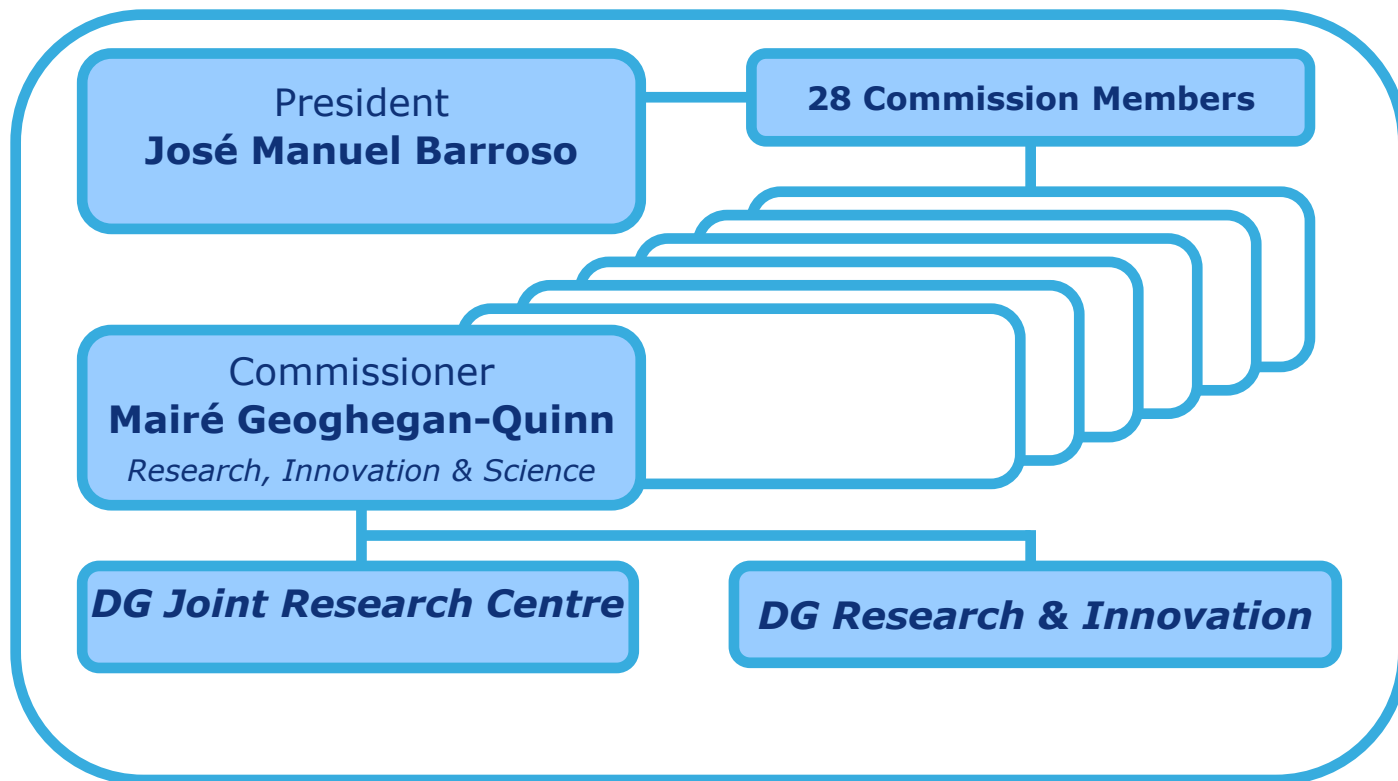
Finance

Innovation Union

financial instruments



The JRC inside the European Commission



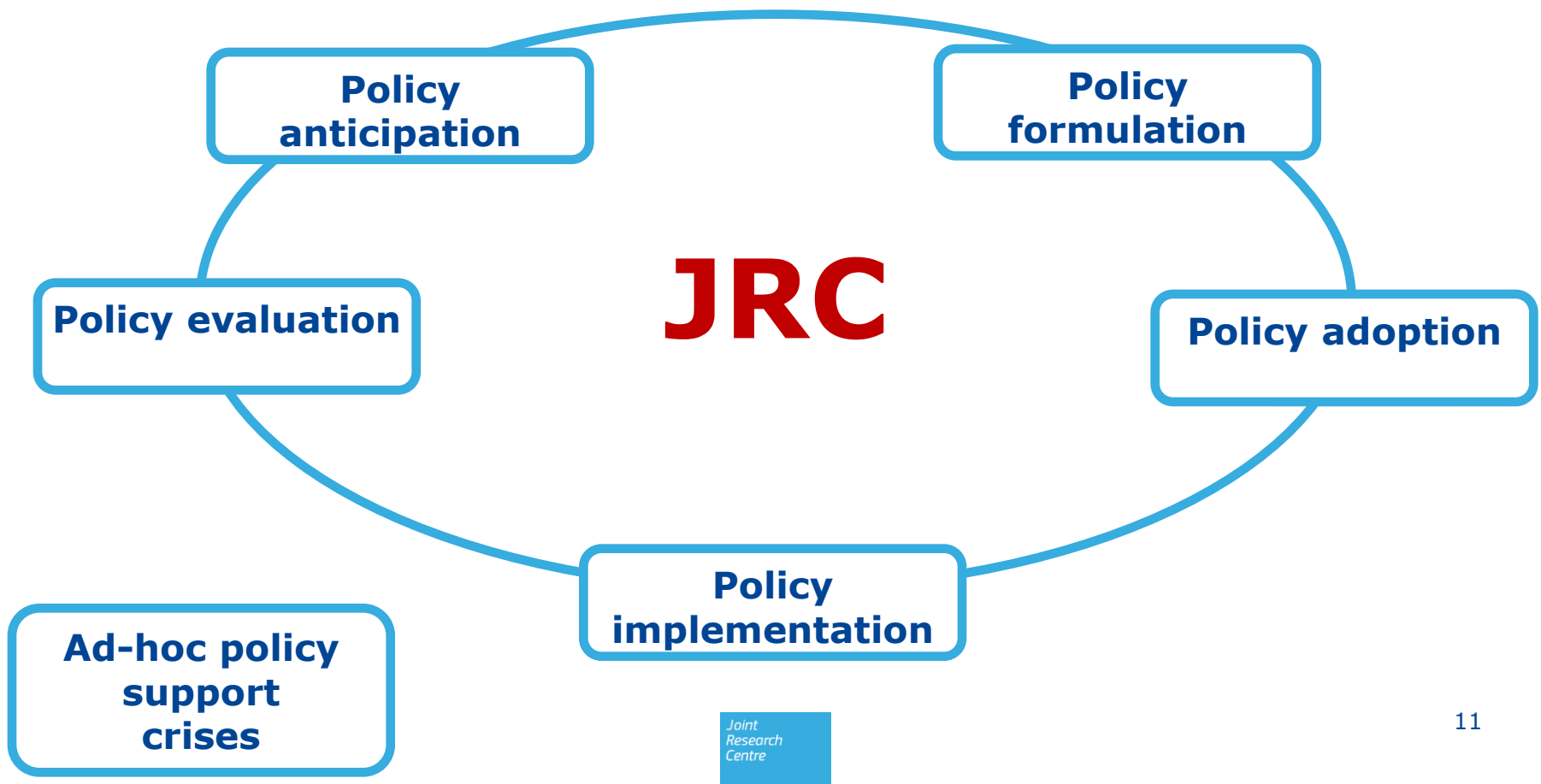
DG Joint Research Centre

Science for Policy

DG Research & Innovation

Policy for Science

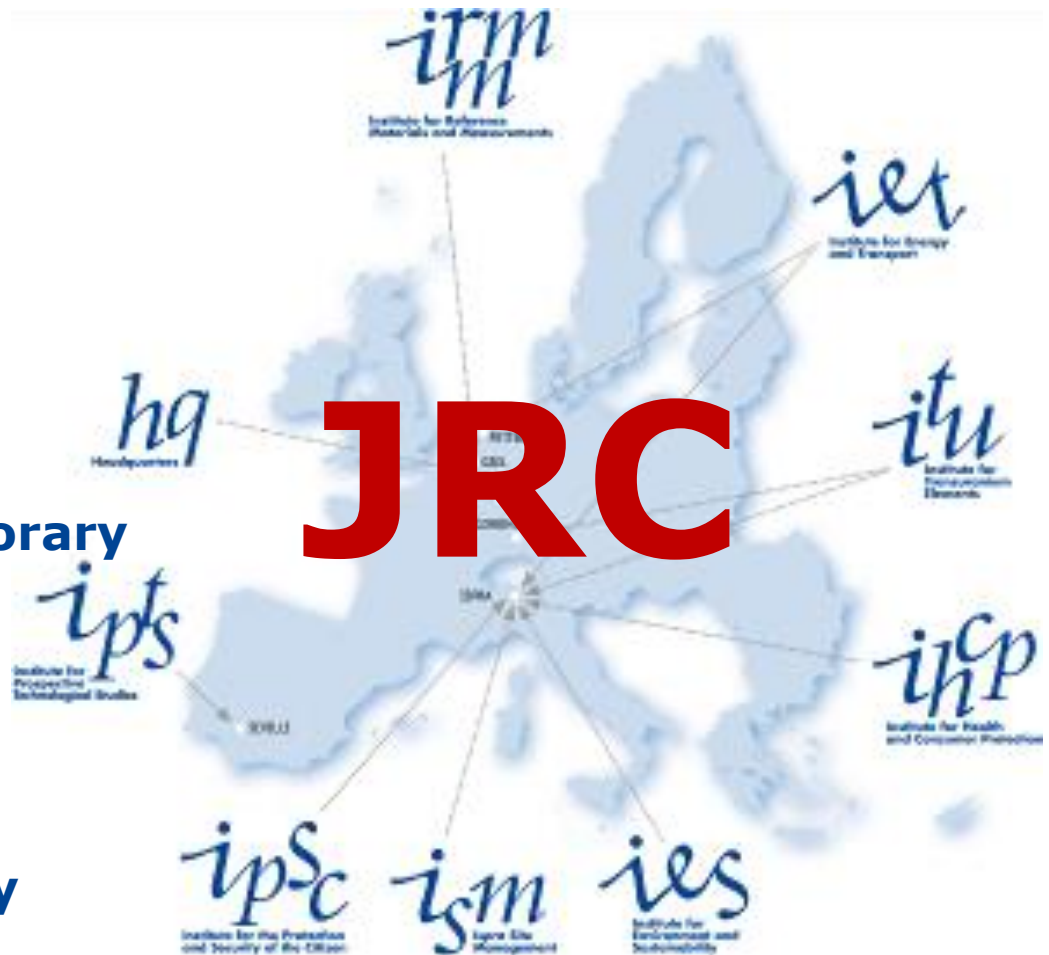
Implementing the JRC mission in the EU policy cycle



Quick Facts

Established 1957

- **7 institutes in 5 countries**
- **3000 permanent and temporary staff**
- **Over 1400 scientific publications per year**
- **Budget: €400-500 million/y**
- **1000+ partners**



SOCIETY NEEDS THE CREATIVE FORCE, SCIENCE AND INNOVATION

CHALLENGES

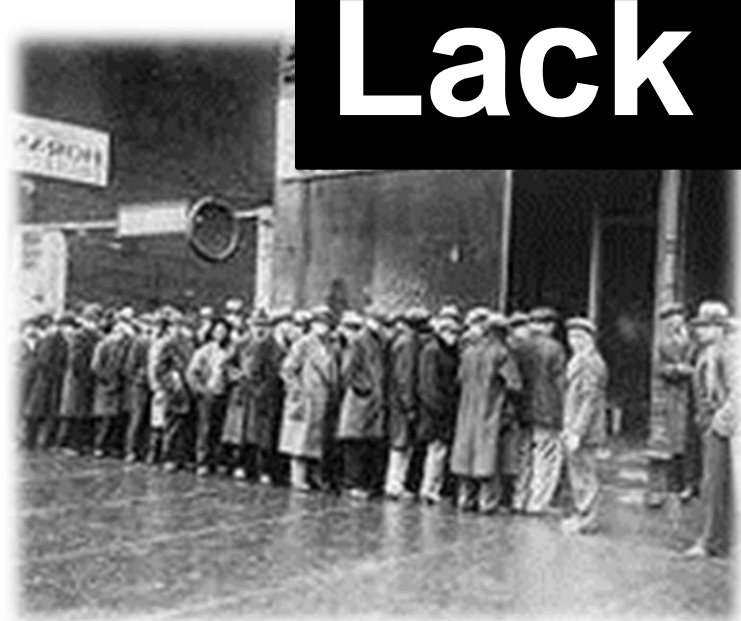


Crises





Poverty Social Exclusion Lack of Fairness



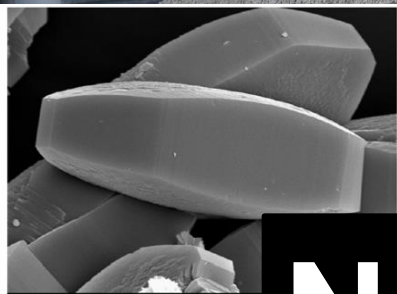


Climate change

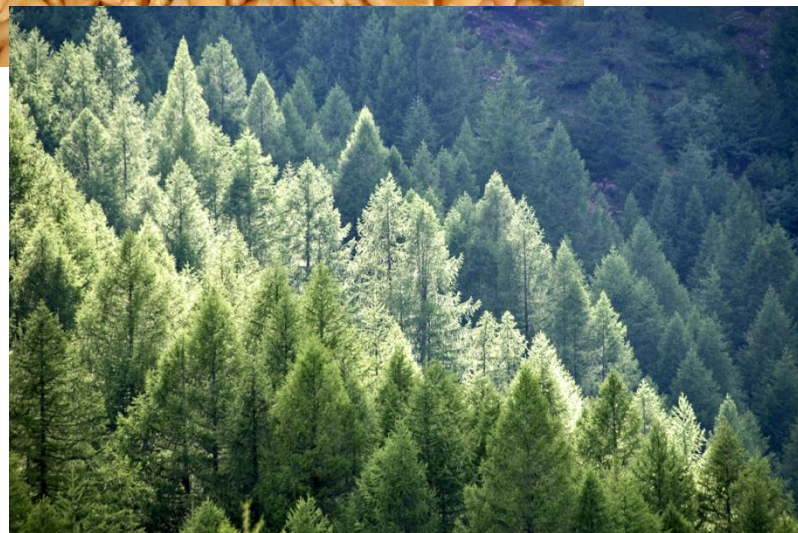


Waste Pollution Sustainability





Natural resources

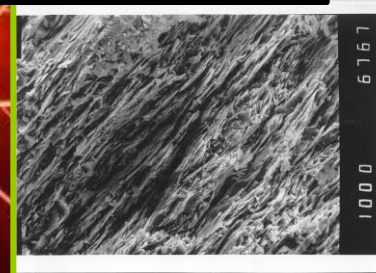




on

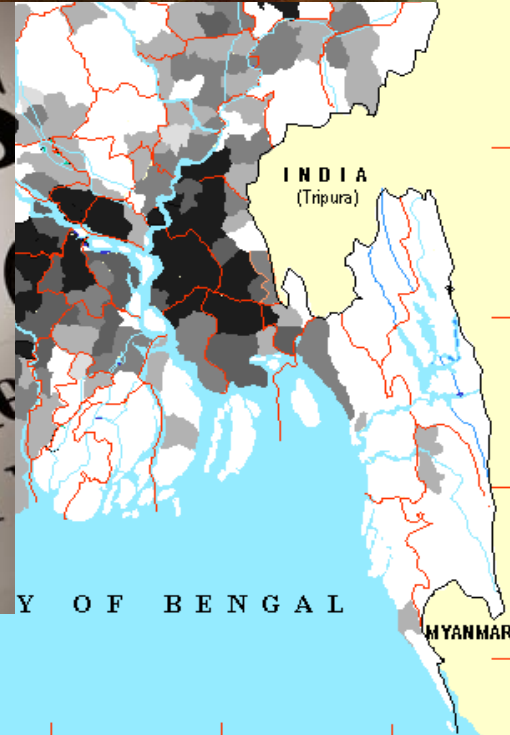


Energy Transport





Health

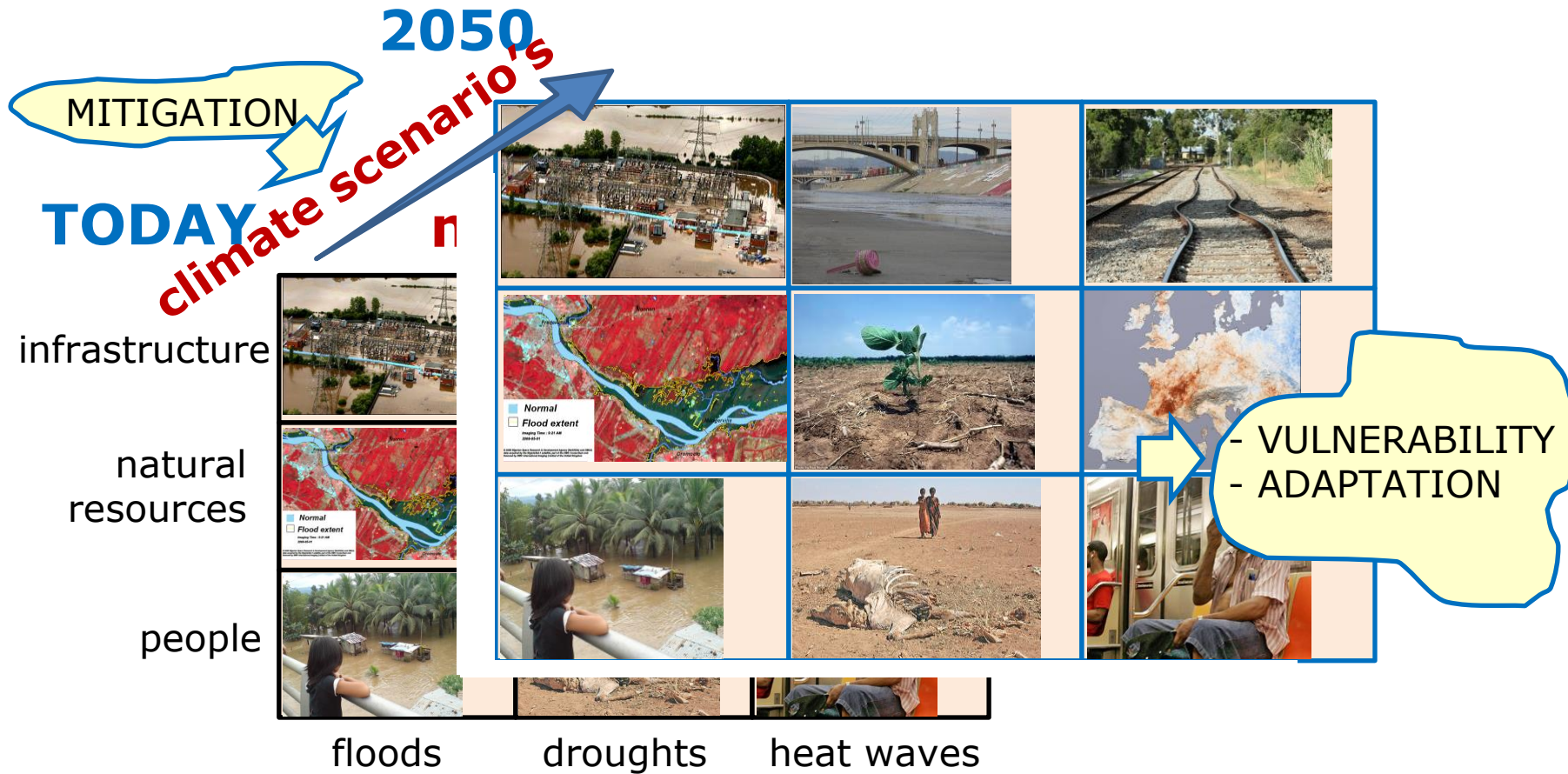




Security



Climate Risk



European Commission
(EU funded soil related projects)

Data from specific in-house JRC
actions (e.g. ESDB, SOTER)

Member States

EIONET, EEA, etc

Soil

European Soil Data Centre (ESDAC)

Data from related JRC
and EC actions
(e.g. LUCAS, BIOSOIL)

Network of soil centres
(e.g. ESNB)

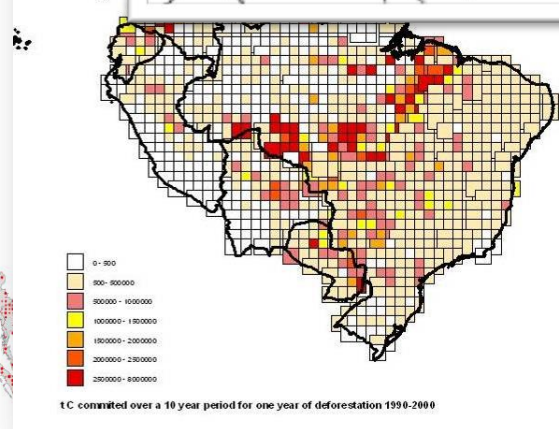
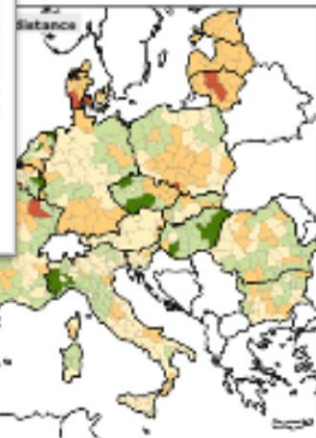
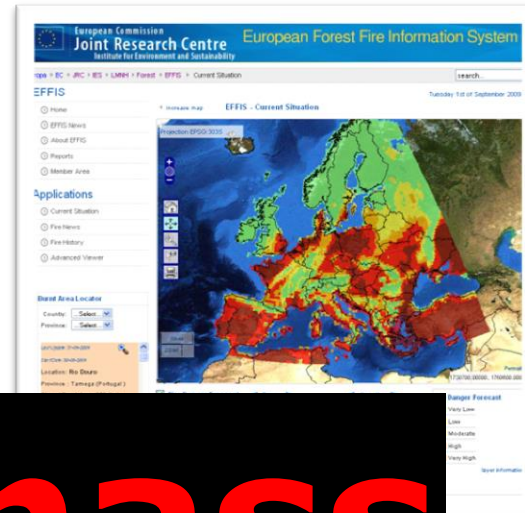
Collaborative research
(e.g. EuroGeoSurveys, FAO, ISRIC)

**The Soil
of Europe**

Biomass Resources and Climate

- **Collecting base parameters:** forest cover, species
- **Monitoring Fire:** danger mapping, alerts
- **Change:** especially
- **Climate parameters:** sources, emissions
- **Modelling:**
 - fragmentation, LULUCF
 - support to policy definition

Biomass



The Water-Agriculture-Energy Nexus: Building the Evidence Base

- Global water demand in 2030 is projected to exceed water supply by 40%.
- Agriculture and energy are the priority sectors in which water saving and efficiency should be improved to avoid scarcity.
- The objective of this activity is to build scientific testing achievement or water security targets addressing the Water-Agriculture-Energy Nexus.
- The Mediterranean region, the Danube and the Niger river basins have been taken as study areas.

Water



Crop

Geo-Information Management and Control Methods



Competition for land in Africa

50,000 km² of natural vegetation converted to agriculture each year

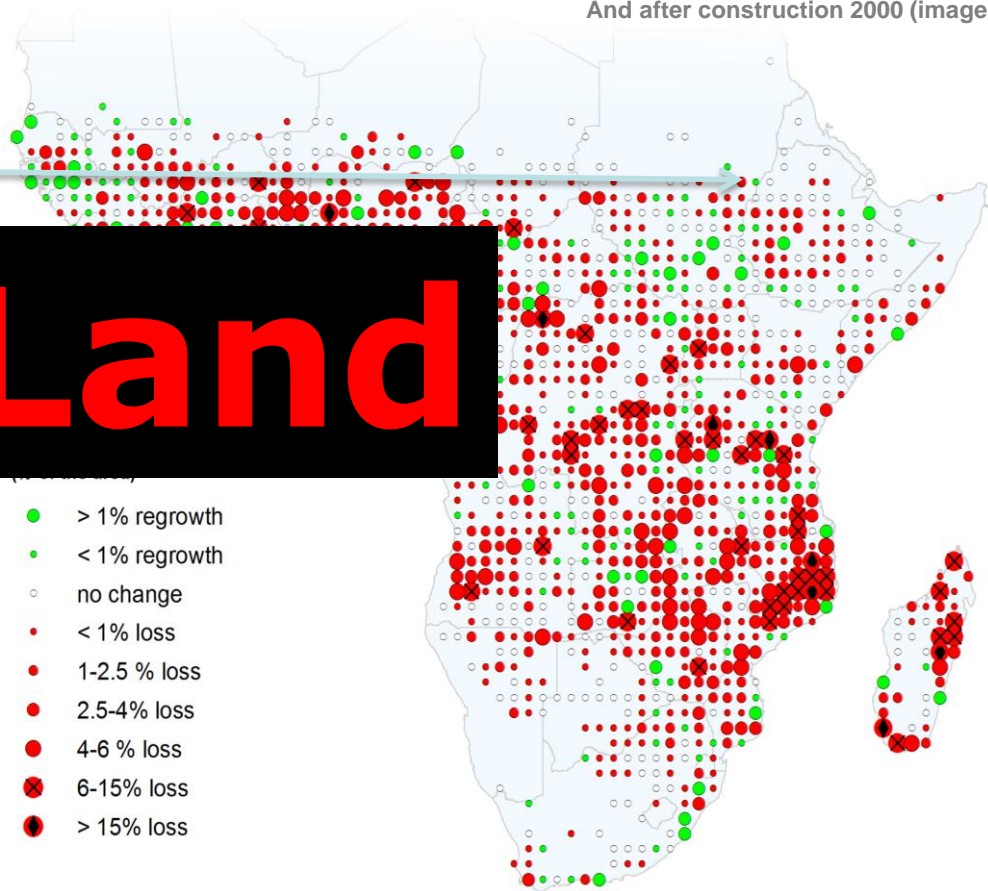


50 km

Land

- > 1% regrowth
- < 1% regrowth
- no change
- < 1% loss
- 1-2.5 % loss
- 2.5-4% loss
- 4-6 % loss
- ⊗ 6-15% loss
- > 15% loss

White Nile Irrigation Scheme – pre expansion 1975
And after construction 2000 (images Landsat)

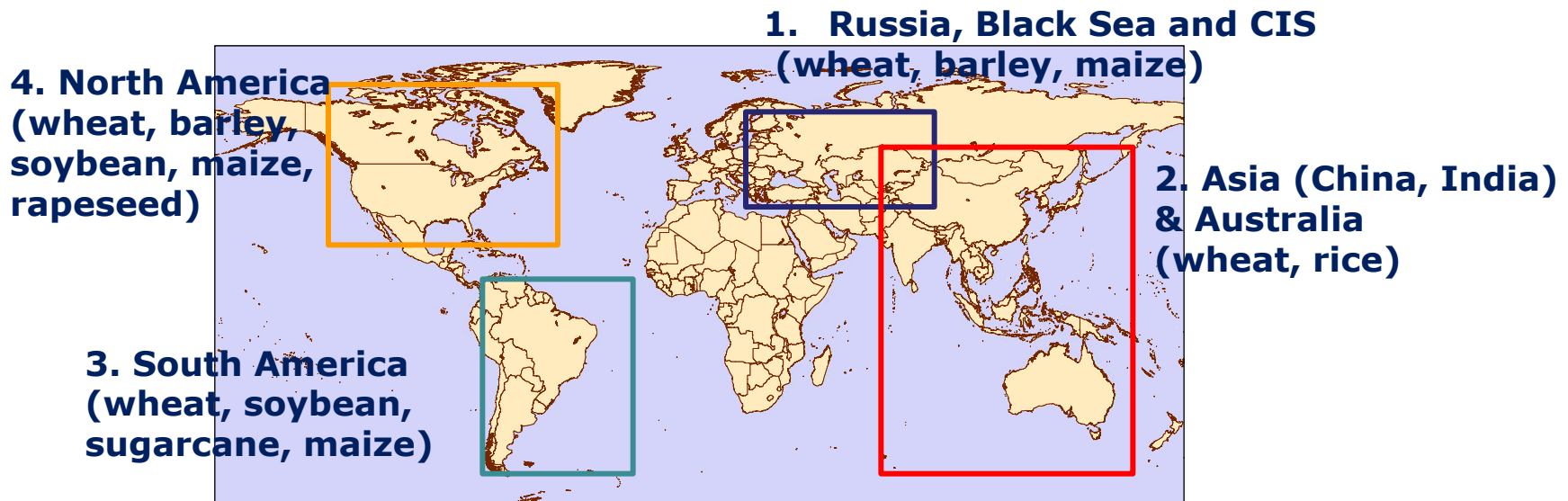


Global food security

General objectives of GLOBCAST

- Monitor the impact of weather in main grain producing areas
- Produce short-term forecasts

4 Zones of the world



Global food security



European



FROST KILL DAMAGE DUE

Period covered: 11 January until 18 Feb

Since January 26 Europe has been hit by spell. The so far the mild winter prevented partially from hardening and they were vulnerable to damage in western Europe but also in the Czech Republic and around the Black Sea.

Frost kill due to the current cold spell is very in eastern France, the Benelux countries, Germany and Czech Republic as well as in Ukraine. The continue with harsh frosts in central and east. Intense precipitation is forecast in south of the area between the Black Sea and the Aegean. Weather conditions will persist in France and Portugal aggravating the precipitation deficit.

OBSERVED TEMPERATURES

Due to the cold spell caused by an anticyclone over Russia and then anchored over Scandinavia, very cold and dry air masses towards central Europe over the considered period. 4 °C colder than average in France, Benelux, Germany and central Europe. Mean temperatures are -4 to -6 °C colder in Spain and Ukraine. The cold spell brought heavy snow in Europe and daily maximum temperatures below 0 °C since 28 January from Germany towards Russia. At the beginning of February as -16 °C average were recorded in Poland. Absolute minimum temperatures fell below temperatures occurred around the Baltic Sea and the European part of Russia. Mediterranean and Atlantic coastal areas were free.



MARS BULLETIN
MARS



DROUGHT IN SPAIN AND PORTUGAL WITH UNFAVOURABLE BIODIVERSITY IN GERMANY, POLAND

Generally milder-than-seasonal conditions prevailed from the beginning of December until the last days of January in most of Europe, followed by an extremely cold spell until mid-February, especially in central and eastern Europe. Due to insufficient snow cover and severe significant winter kill occurred in eastern Germany, Poland, the Czech Republic, some Romania, Bulgaria and Ukraine, as simulated by the kill model and confirmed by remote sensing observations showing unfavourable biomass development.

A severe rain shortage has been observed since December in Spain, Portugal and Morocco, with the driest of our climatological record for southern Spain. Average winter precipitation is recorded also in France, northern Italy and some areas of England, Slovenia and Hungary as well as in southern parts of European Russia.

As it is early in the season our forecasts are mainly on trend and average values, apart from the durum wheat forecasts for Spain, Portugal and Italy where the close to anthesis and crop growth model outputs have been used to produce the forecast. Due to the dry conditions the main durum wheat-producing regions in Spain and Italy are clearly below the average as the potential can no longer be reached even in the next weeks of the growing season are beneficial.

Content

1. Agro-meteorological review (Dec-March)
2. Weather forecast (23 March - 31 March)
3. Remote Sensing analysis
4. Crop yield forecasts (EU 27 and neighbouring countries)
5. Meteorological and crop atlas maps

The Bulletin covers the period from December to March 2012.



MARS BULLETIN ma
MARS agro



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CURRENT PROSPECTS FOR EU27 YIELDS ARE ON AVERAGE

A very mild but predominantly dry March boosting the start of the season in central and eastern Europe followed by a so far chilly April decelerating crop growth. Nevertheless biomass development in Romania, Bulgaria and Hungary is not satisfactory. Finally precipitation arrived around the Mediterranean Sea with beneficial rain for Spain, southern France, Italy and Maghreb. Also the dry period for England has come to an end.

As the season advances crop model simulations are more and more used to forecast winter cereals. In northern Europe and the Baltic States forecasts are still based on the trend analysis as well as in Ukraine. In general the current prospects for EU 27 yields are on average. Compared to our last issued forecasts rape seed has been revised down, below biomass accumulation is now apparent in the crop growth model and the yield potential has been decreased due to frost damage. The low yield potential for durum wheat in Spain is confirmed and yields are revised down compared to the last Bulletin.

AREAS OF CONCERN



Yellow: Dry conditions Red: unfavourable biomass development
Data source: MARS crop growth forecasting system: 10.0.2012

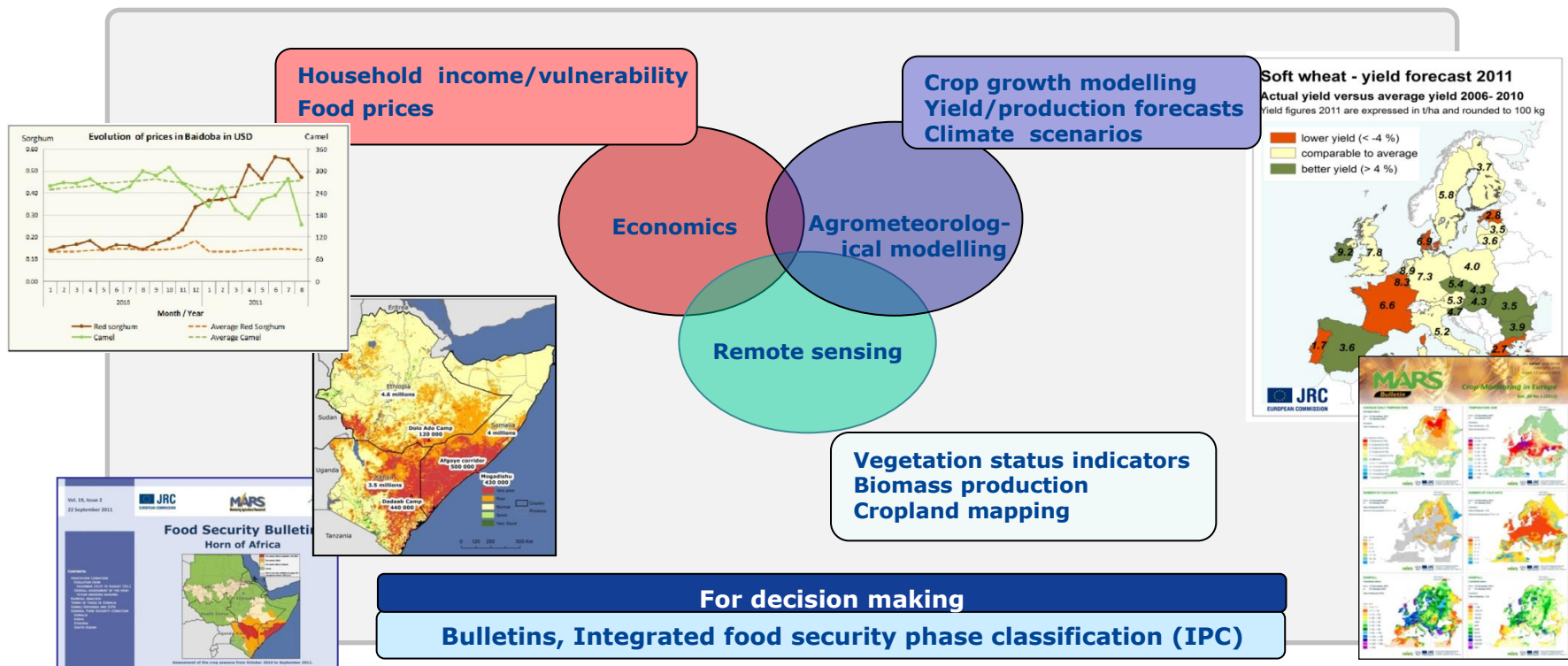
Crops	Yield t/ha (20 April 2012)				
	2011	MARS 2012 forecasts	Aug Sys	5/12/11	5/12/09
TOTAL CEREALS	5.12	5.09	4.99	-0.7	+1.9
Total Wheat	5.38	5.42	5.31	+1.1	+2.1
soft wheat	5.58	5.68	5.57	+1.6	+2.0
durum wheat	3.41	3.18	3.18	-0.5	+0.0
Total Barley	4.54	4.33	4.20	+1.1	+0.5
spring barley	3.87	3.88	3.83	+0.4	+1.0
winter barley	5.08	5.15	5.10	+1.7	+0.2
Grain maize	7.58	7.60	6.82	-0.2	+1.6
Rye	3.08	3.26	3.18	+0.5	+2.5
Triticale	3.96	3.89	3.89	-0.3	-2.3
Other cereals	2.95	2.95	3.23	+0.0	-0.6
Rape and turnip rape	2.88	2.88	3.80	+0.7	-3.8
Pulses	31.95	38.98	29.78	-3.4	+2.9
Sugar beet	71.25	68.25	67.88	-2.8	+2.1
Sunflower	1.98	1.79	1.79	-0.9	+0.3



MARS BULLETIN mars.jrc.ec.europa.eu/mars/bulletin-publications
MARS agro-meteorological database marsop.jrc.ec.europa.eu



Multidisciplinary Models

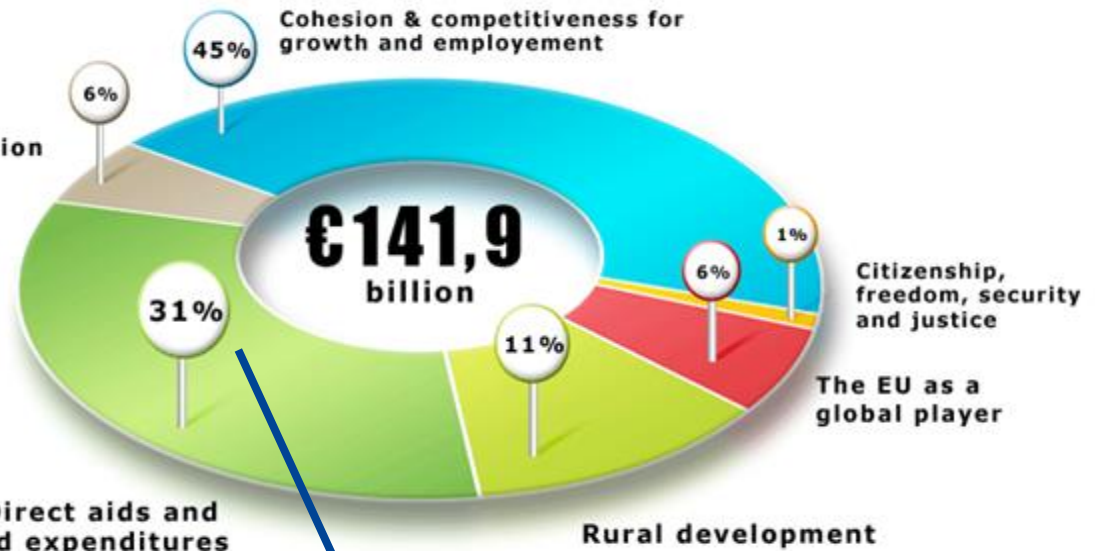


The CAP

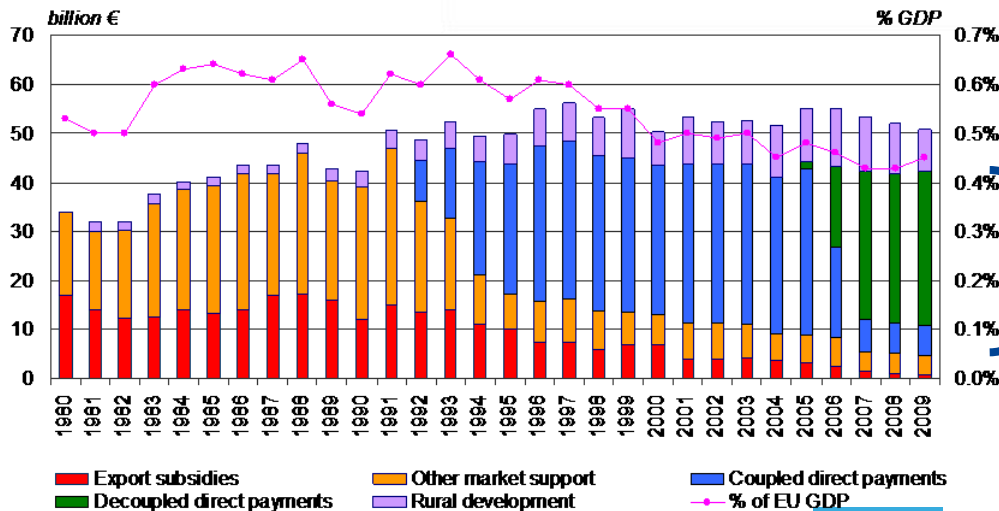


(Common Agricultural Policy)

From an EU perspective... Administration



Over the years....



40 bn €/year is area based aid!

Economic assessment of alternative EU biofuel policies

Scenarios:

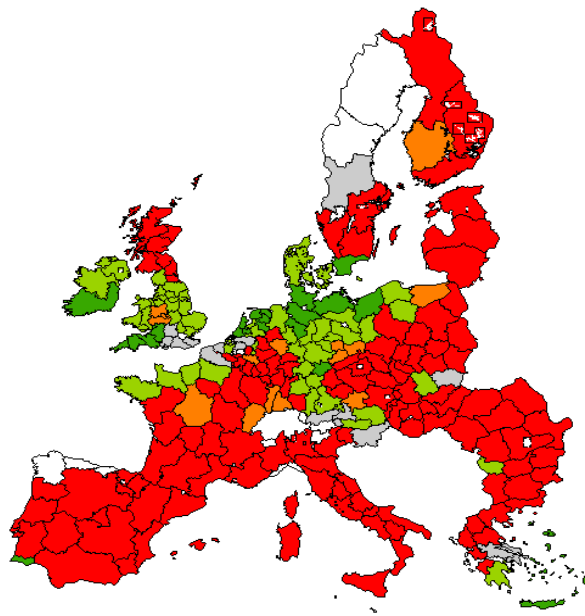
- **No EU biofuel support scenario:** EU biofuel support policies abolished
- **High 2nd generation:** support abolished but biofuel production from second generation technologies 50% of total biofuel production

Possible medium-term impacts:

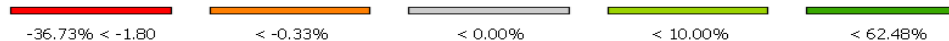
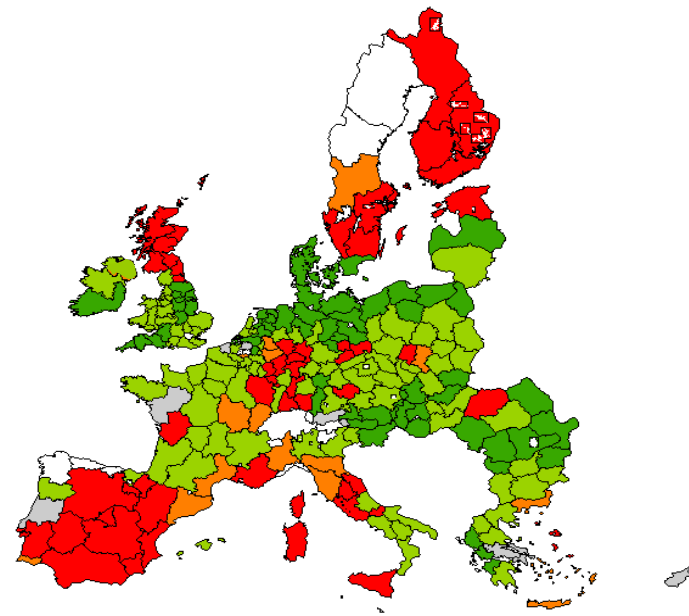
- Aggregate EU oilseeds production drops by -4.8% in no-adaptation situation and increases by 7.9% with best adaptation

Change in oilseeds production in EU-27 (% change relative to baseline)

No adaptation



Best adaptation



How to work with us

WHO

- Policy bodies – ministries
- National laboratories, Agencies
- Regions
- Industries/industrial associations
- Academia
- Individual scientists/PhDs/PostDocs

HOW

- Partnership agreements
- Networks
- Scientific projects
- Joint Laboratories
- Short/mid/long – term visits, contracts
- Use of infrastructure
- Ad hoc requests

Scientific support to Danube Strategy

4 flagship clusters:

- Danube Water Nexus (DWN)
- Danube Land and Soil Nexus (DLSN)
- Danube Air Nexus (DAN)
- Danube Bio-energy Nexus (DBN)

2 horizontal activities:

- Danube Reference Data and Service Infrastructure
- Smart Specialisation
- Danube Innovation Partnership



Simple solution

Enablers

Knowledge

Talent

Tolerance

Technology

Territory

Drivers

Excellence

Relevance

Critical Mass

Governance

**We want to be part of
solution**