



# Joint Research Centre

## Policy Support as a Challenge for European Research and Innovation

33<sup>rd</sup> Conference of Rectors and Presidents of European Universities  
of Technology, September 19-20 2014, Gothenburg, Sweden

[www.jrc.ec.europa.eu](http://www.jrc.ec.europa.eu)

Peter Churchill  
[peter.churchill@ec.europa.eu](mailto:peter.churchill@ec.europa.eu)

*Serving society  
Stimulating innovation  
Supporting legislation*



# The JRC in the Commission



President José Manuel Barroso

+ 27 Commission Members

... DG Environment

DG Climate Action

DG Agriculture and Rural Affairs ...

Commissioner Geoghegan-Quinn  
*Research, Innovation and Science*

DG Joint Research Centre

DG Research and Innovation

Science for Policies

Policy for Science

# JRC's Mission and Role



... is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Direct research:  
JRC is the European Commission's in-house science service and the only DG executing direct research; providing science advice to EU policy.

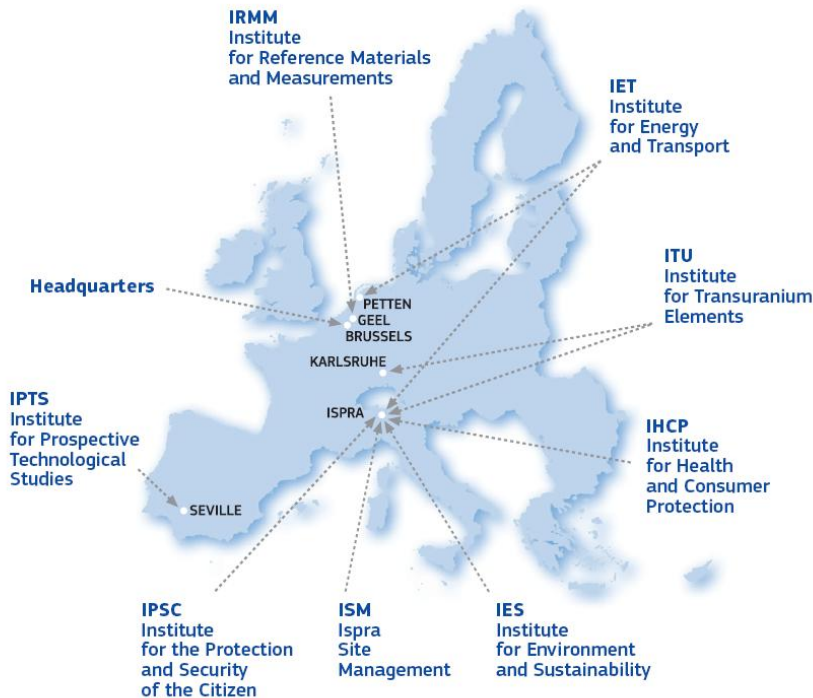


*Serving society, stimulating innovation, supporting legislation*

# JRC at a glance



- Established 1957
- **7 institutes in 6 locations**
- **3027 staff** in June 2014
- **1388 scientific publications** in 2013
- Budget: **€393 million** annually, plus **€73 million** earned income



## JRC's structure

## JRC Institutes

- **IRMM** – *Geel, Belgium*

Institute for Reference Materials and Measurements

- **ITU** – *Karlsruhe, Germany, and Ispra, Italy*

Institute for Transuranium Elements

- **IET** – *Petten, The Netherlands, and Ispra, Italy*

Institute for Energy and Transport

- **IPSC** – *Ispra, Italy*

Institute for the Protection and Security of the Citizen

- **IES** – *Ispra, Italy*

Institute for Environment and Sustainability

- **IHCP** – *Ispra, Italy*

Institute for Health and Consumer Protection

- **IPTS** – *Seville, Spain*

Institute for Prospective Technological Studies

# Mission and the role of the JRC



- Independent, evidence-based scientific and technical support
- Works in support of other Commission services, EU Institutions and Member States
- Independent of industrial and national interests

Provides EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle



# JRC and the EU policy cycle



Policy anticipation

Policy formulation

**JRC**

Policy evaluation

Policy adoption

Policy implementation

Ad-hoc policy support

# Challenges



- Economic crisis
- Poverty, social exclusion, lack of fairness
- Demographic change
- Health
- Natural resources, food security
- Climate change
- Waste, pollution, sustainability
- Energy, transport
- Security



# A Selection of JRC Scientific Facilities



European Laboratory for Structural Assessment (ELSA)



Hot Cells Laboratory



European Crisis Management Laboratory



Fuel Cell Facility



Nano-Materials Laboratory

Vehicles Emissions Laboratory (VELA)



European Reference Laboratory for Air Pollution (ERLAP)



Van Der Graf Generator



# Policy Challenges

Political Guidelines for the next European Commission "*A New Start for Europe: My Agenda for jobs, Growth, Fairness and Democratic Change*" – Jean-Claude Juncker, July 2014

3 example policy challenges:

- A resilient energy union with a forward looking climate change policy
- A connected digital single market
- A deeper and fairer internal market with a strengthened industrial base



Plus:

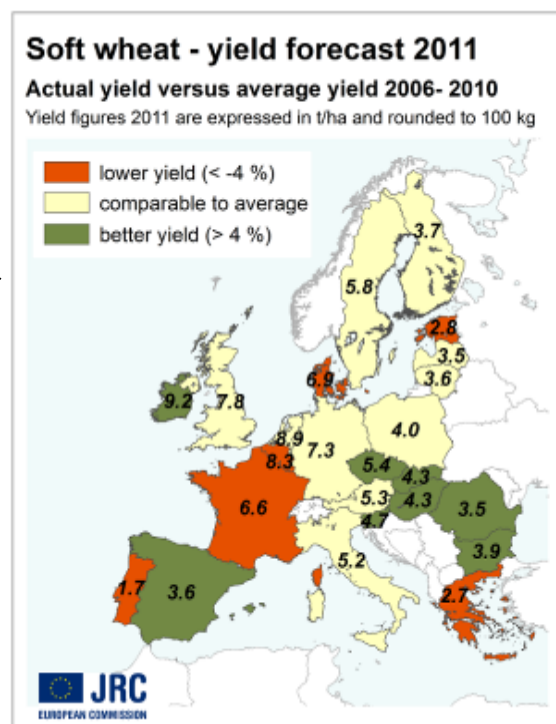
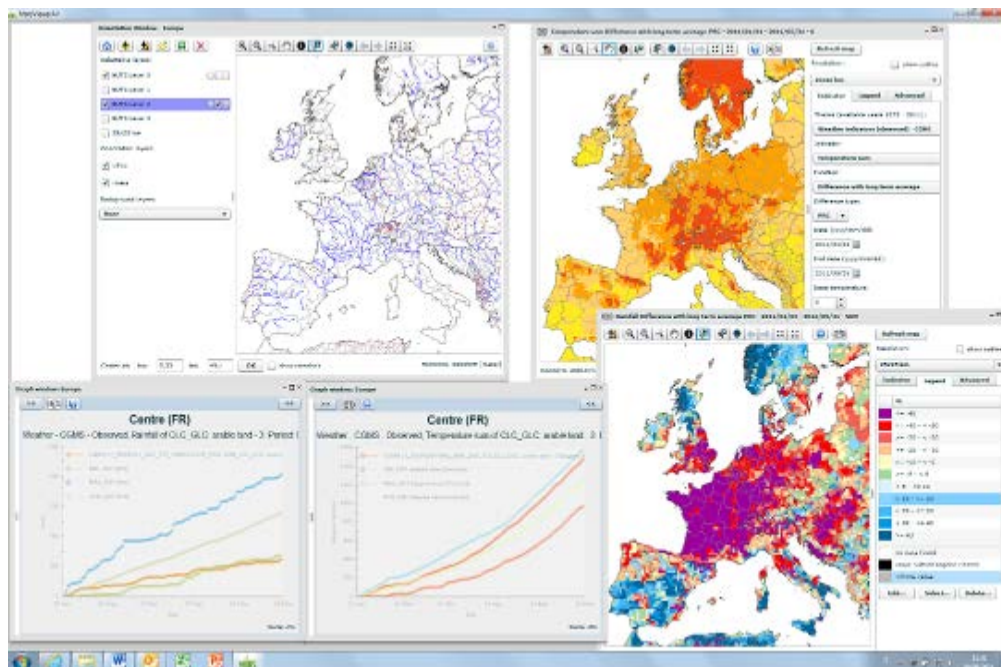
- Resilience of the European Union

Each have their significant research and innovation challenges

# Example: Resilience - European food security

European Commission

EC requires timely yield forecasts to coordinate Member States and propose appropriate decisions



JRC has developed Crop Growth Monitoring and Yield forecast Systems (CGMYS) with DG Agriculture and Rural Development

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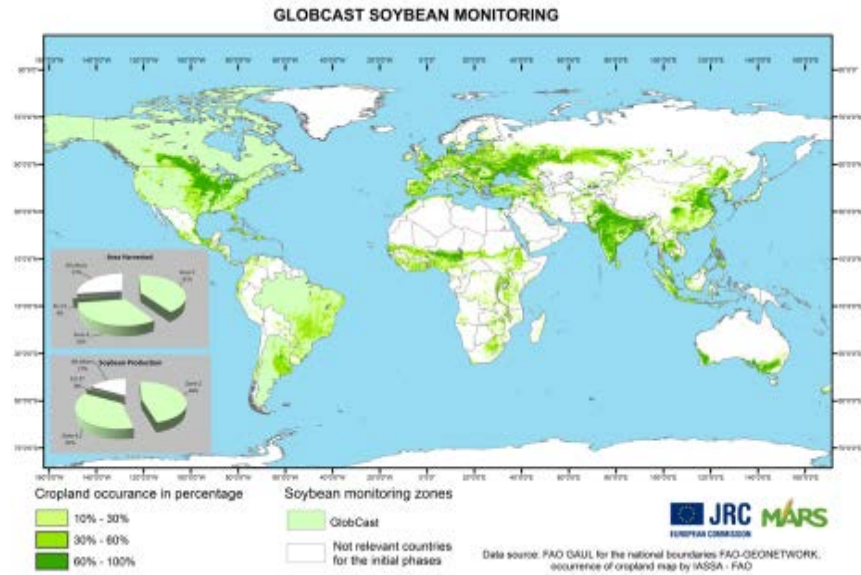
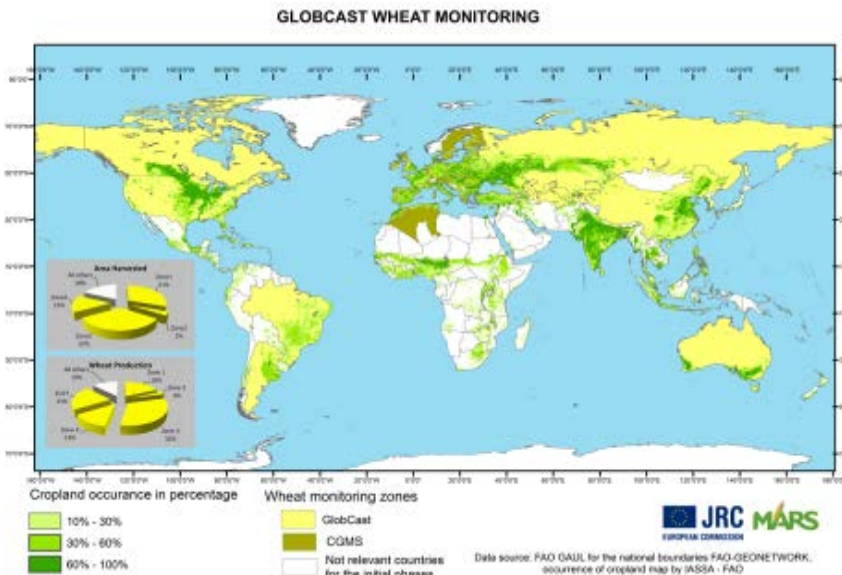
# Example: Resilience – Global crop monitoring



## Feasibility study to cover the globe

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

4 zones of the world main crops of interest: wheat, barley, rice, maize, rape seed, soybean, sugar cane



**GLOBCAST is a feasibility study currently conducted for DG AGRICULTURE**

# Example: Resilience - Flood and Fire Alert Systems



## European Flood Alert System (EFAS)

### Flood forecasts

The screenshot shows the EFAS forecasting website. The header includes the European Commission logo, the Joint Research Centre name, and the EFAS logo. The main content area features a map of Europe with red dots indicating flood forecast locations. A sidebar on the left contains a main menu with links to Home, EFAS Forecasting, Utilities, Partners Forum, Search, Partners list, and Contact us. Below the menu, there are informational boxes: one about EFAS forecasts' consistency and another about the Danube-Olt River. At the bottom left, there is a box for the AJAX error cross-browser warning. The footer contains the Joint Research Centre logo and copyright information.

## European Forest Fire Information System (EFFIS)

### Fire danger forecast

The screenshot shows the EFFIS - Current Situation website. The header includes the European Commission logo, the Joint Research Centre name, and the EFFIS logo. The main content area features a map of Europe with a color-coded fire danger forecast. A sidebar on the left contains a home section with links to Fire Danger Forecast 2011, Daily Mode, Hot Spots, and Burnt Areas. Below these links, there is a Burnt Area Locator section with dropdown menus for Country and Province. At the bottom left, there is a Fire Danger Forecast legend with five categories: Very Low, Low, Moderate, High, and Very High. The footer contains the Joint Research Centre logo and copyright information.

# Example: Resilience – GMOs



## Detecting GMOs in food and feed

To be able to monitor the presence of GMOs on the market, it is important to have harmonised detection methods available. The JRC provides validated methods and certified reference materials for the detection of genetically modified organisms in food and feed.

## Support in emergency situations

The JRC provides support to the management of food crises, for example in the case of unauthorised GMOs on the market.



## Research in Systems Toxicology

The JRC carries out research to support the risk assessment of new technologies and substances, using High Throughput Screening and computational toxicology tools.

# Example: Resilience

## - BSE



- IRMM evaluated 29 different tests for BSE between 1999 and 2009, amongst which 12 were approved for use within the EU. IRMM also developed reference materials for the quality control of approved rapid BSE tests.
- In the EU all slaughtered bovine cattle above 30 months and all fallen stock above 24 months have to be tested for bovine BSE. More than 10 million BSE tests are carried out annually, as specifically laid down by Regulation (EC) No 999/2001.
- The number of approved tests greatly impacts the price of testing and in turn enables the safety net to work well. This facilitates better control of the disease in the EU and restoring consumer confidence in European beef.



# Example: Resilience – Nuclear Forensics



There is an urgent need to have an integrated and coordinated European response to the illicit trafficking of nuclear materials

JRC role:

- Develop forensic methods and response plans;
- Analyse seized material (>35 cases);
- Close cooperation and support to national authorities;
- Database on commercial nuclear materials.
- Central contribution to international efforts

(e.g. Global Initiative to Combat Nuclear Terrorism)



Since 1993 there have been:

- 300 confirmed cases of the illicit trafficking of radioactive and nuclear material;
- 215 cases in the last 5 years
- 400 samples analysed annually



# Research and innovation response

What is required to address policy challenges?

- Systemic, holistic approaches
- Multi-disciplinary approaches
- Social, economic and behavioural sciences working with the natural sciences
- Pre-normative research leading to standards
- Knowledge and technology transfer
- Education, training and skills
- Structured partnerships





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