



European
Commission



Joint Research Centre

*The European Commission's
in-house science service*

Annual Report 2012

Joint
Research
Centre

EUR 25818 EN

President Barroso's visit to Ispra

When policy meets science

On Friday 16 March 2012, the JRC and the European Commissioner for Research, Innovation and Science, Máire Geoghegan-Quinn welcomed José Manuel Barroso, President of the European Commission, to JRC's Ispra site.

The visit was an opportunity to showcase the breadth of JRC's scientific support to EU policy. President Barroso visited the spectacular European Laboratory for Structural Assessment (ELSA), the largest of its kind in Europe, which is used to test the earthquake resistance of buildings and can test structures as high as a five-storey building.

Another highlight was the visit to the Vehicle Emissions Laboratory (VELA), capable of measuring emissions from all types and sizes of vehicles, which is now also working on electric vehicles. JRC scientists also presented their work in the areas of food security and natural resources, photovoltaics, nanotechnology and nuclear security.

The President inaugurated the new European Crisis Management Laboratory (ECML), which supports the EU's interventions in areas struck by disaster around the globe. The new facility, equipped with state-of-the-art information technologies, provides a dynamic situational awareness for crisis and disaster preparedness and response on any location or event in the world.

Speaking to JRC staff, the President stressed the important role of the JRC as a bridge between policy making, science, society and economy, thanks to its close relations between so many bodies and organisations inside and outside Europe, and its relevant, high quality research.



Hands-on testing at the JRC's Vehicle Emissions Laboratory (VELA).

Addressing JRC staff at Ispra.



Elke Anklam, Director of the JRC's Institute for Health and Consumer Protection, explains some of the research carried out in the area of nanotechnology.



From the left: David Wilkinson, Stephan Lechner, Laurence de Richemont, Thomas Fanghanel, Dominique Ristori, John Bensted-Smith, José Manuel Barroso, Leen Hordijk, Máire Geoghegan-Quinn, Dan Chirondajan, John Bell, Jean-Pierre Michel, Giovanni De Santi, Pieter Van Nes, Elke Anklam, Guido Schmuck, Krzysztof Maruszewski, Axel Nevens, Anne-Charlotte Bournoville.



Visiting the JRC's European Laboratory for Structural Assessment (ELSA).



Inaugurating the European Crisis Management Laboratory.



Speaking to the press.



"Congratulations for the tremendous and exciting work being done in the laboratories in Ispra! I am impressed by all that I saw during my visit and I can only encourage you to continue on the same path. I want to express my full support to the JRC work and to the contribution you are all making on growth strategy for the European Union. Thank you"
J.M. Barroso



Giovanni De Santi, Director of the JRC's Institute for Energy and Transport, explains the link between renewable energies and e-mobility.

Foreword by Máire Geoghegan-Quinn

Foreword by Dominique Ristori

Observations from the Board of Governors

Financial stability

- Towards a stronger and more stable financial system
- Scientific support for financial stability
- GAP and QUEST: Modelling essential macro-economic variables
- SYMBOL: Providing insight into the dynamics of the banking sector

Growth, jobs and Innovation Union

- Eco-industries for a sustainable future
- Uniform standards for the construction sector
- Measuring investment and innovation
- Innovation: Connecting European science and business


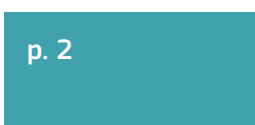
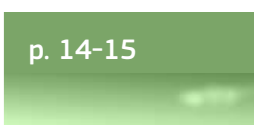



















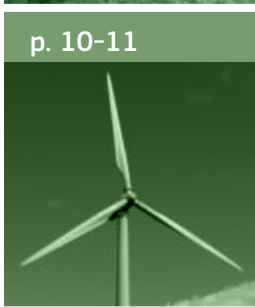


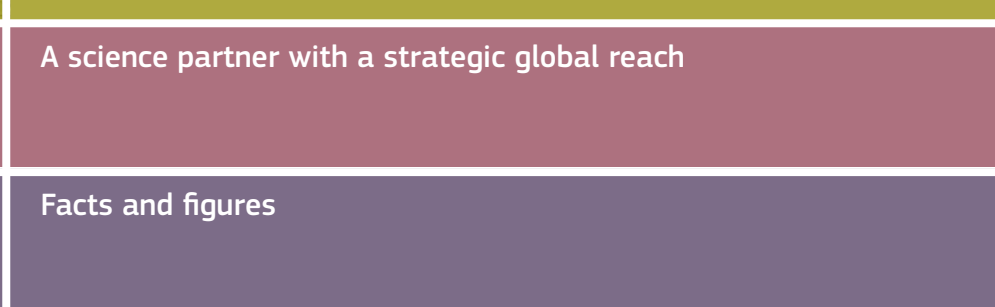



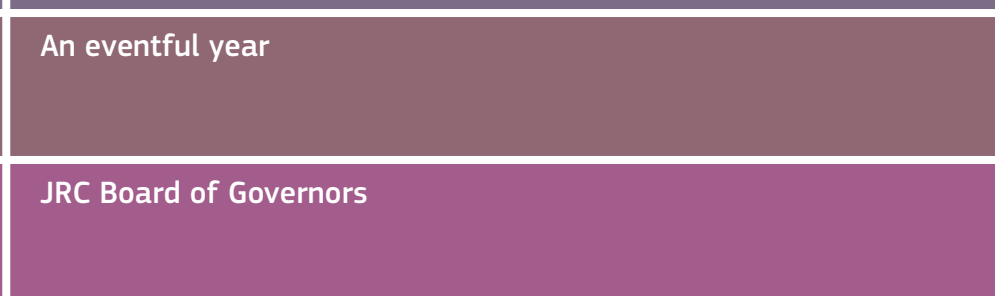
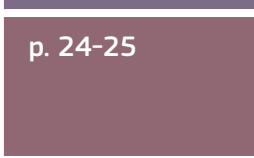

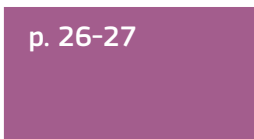

Energy and transport for a low-carbon society

- Shale gas – opportunities and risks for Europe
- Towards a strategic transport system
- Making the transition to a low-carbon economy
- Improving the refining industry

Environment and climate change

- Water resources management
- Measuring sulphur dioxide emissions from ships in harbours
- Tackling near-term climate change in the Arctic
- Best available techniques for iron, steel and glass
- Scientific support to the Danube Strategy

Table of contents

	 <p>p. 2</p>	 <p>p. 14-15</p> 	 <p>Agriculture and food security</p> <ul style="list-style-type: none">• Researching food markets, prices and food security• A global reference for the socio-economic assessment of GM crops• Biofuels and the indirect effects of changing land use• Extreme weather affects EU 2012 cereal yields
	 <p>p. 3</p>		
	 <p>p. 4-5</p>		
	 <p>p. 6-7</p> 	 <p>p. 16-17</p> 	 <p>Public health and consumer protection</p> <ul style="list-style-type: none">• Nanomaterials' characterisation and safety• New role in cancer policy support• First certified reference material to monitor leukaemia• Inorganic arsenic in animal feed: a new reference method
	 <p>p. 8-9</p> 	 <p>p. 18-19</p> 	 <p>Safety and security</p> <ul style="list-style-type: none">• Timely information on drought, fires and floods• The fight against piracy off African coasts• Nuclear decommissioning initiative• 20 years of nuclear forensics• MELISSA used to monitor movements of Costa Concordia
	 <p>p. 10-11</p> 	 <p>p. 20-21</p>	 <p>A science partner with a strategic global reach</p>
	 <p>p. 12-13</p> 	 <p>p. 22-23</p>	 <p>Facts and figures</p>
		 <p>p. 24-25</p>	 <p>An eventful year</p>
		 <p>p. 26-27</p>	 <p>JRC Board of Governors</p>



Foreword by Máire Geoghegan-Quinn

European Commissioner for Research, Innovation and Science

Looking back on 2012, and at the sheer magnitude of the challenges that Europe has faced, I am proud of the determination and resourcefulness shown by the Commission to enhance stability and create a climate for growth and creation of new jobs. Together with stakeholders and partners, we have taken great strides towards realising the EU's innovation potential and developing workable yet visionary structures to fund science and research in the EU over the next seven years.

Horizon 2020, the proposed EU programme for research funding for the period 2014-2020 and Innovation Union are key to ensuring that our cities, regions and Europe as a whole become powerhouses of research and innovation.

The Joint Research Centre (JRC), as the Commission's in-house science service, has a key role to play in this endeavour and I am pleased with the increased focus the JRC has put on supporting innovation-related issues, from its dedicated unit on Innovation Union, through to cross-cutting topics such as eco-industries.

its contribution to innovation and growth and its potential to address societal challenges such as climate change, food and energy security and an ageing population.

I am proud of the JRC's achievements over the last year. Needless to say, it was a particular pleasure for me to welcome President Barroso to JRC's Ispra site, where so much of this exciting work is being done. The inauguration of the European Crisis Management Laboratory was a highlight of this visit. I can also confirm that the JRC's vital contribution to global crisis management is appreciated by our international partners, as witnessed in the high level meeting with senior scientific advisers of the Carnegie Group countries, the World Bank, the UN and other major partners which I had the pleasure of hosting in Brussels on 6 December 2012.

As the Commission's in-house science service, the JRC has truly demonstrated its relevance as the trusted provider of unbiased scientific and technical support to policy, with an impressive capacity to rapidly mobilise the necessary resources to deal with emerging topics. It has amply demonstrated its quality, not least as a scientific and technical reference centre maintaining the highest analytical and technical standards and overseeing the validity of methods that ensure EU legislation is consistently applied. An example of this is the JRC's cutting edge capacity in nuclear forensics, which few research institutes can rival, as I was able to see first hand during my visit to the JRC's Institute for Transuranium Elements in Karlsruhe.

Through its strong scientific and technical expertise and impressive networking capacity, the JRC continuously contributes to innovation as a leading partner in standardisation efforts. It helps to build the predictable framework in which innovation can thrive and new technologies gain acceptance, which in 2012 was very evident in JRC's work on nanomaterials, and its efforts to further interoperability of electric vehicles and smart grids.

Written to give a short glimpse of the JRC's widespread and rich scientific activities, the Annual Report is in itself a strong argument for the central role of science in dealing with today's societal challenges.



*Commissioner
Máire Geoghegan-Quinn
during her visit to the JRC's
Institute for Transuranium
Elements.*

At the time of writing, the ongoing negotiations on the size of the EU research budget are closely followed by the science community, as it is clear that this has profound implications for the extent to which Horizon 2020 will be able to meet its aims; to promote excellent, curiosity-driven research, create industrial leadership and address today's challenges across disciplines and research fields. Now, more than ever, it is crucial to emphasise the central place of science in European society, at the heart of Europe's economy. Scientific research needs to demonstrate its relevance and quality,