

ERA- the role of the Joint Research Centre (JRC)

***Dr. Roland Schenkel, Director General
Joint Research Centre, European Commission***



<http://ec.europa.eu/dgs/jrc/>

Prague, 17 April 2009

Outline

- Role of the Joint Research Centre (JRC)
- How the JRC contributes to ERA

The Mission of the Joint Research Centre

... is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies.

As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union.

Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.



Our Structure: 7 Institutes in 5 Member States

IRMM - *Geel, Belgium*

Institute for Reference Materials and Measurements

ITU - *Karlsruhe, Germany*

Institute for Transuranium Elements

IE - *Petten, The Netherlands*

Institute for Energy

IPSC - *Ispra, Italy*

Institute for the Protection and Security of the Citizen

IES - *Ispra, Italy*

Institute for Environment and Sustainability

IHCP - *Ispra, Italy*

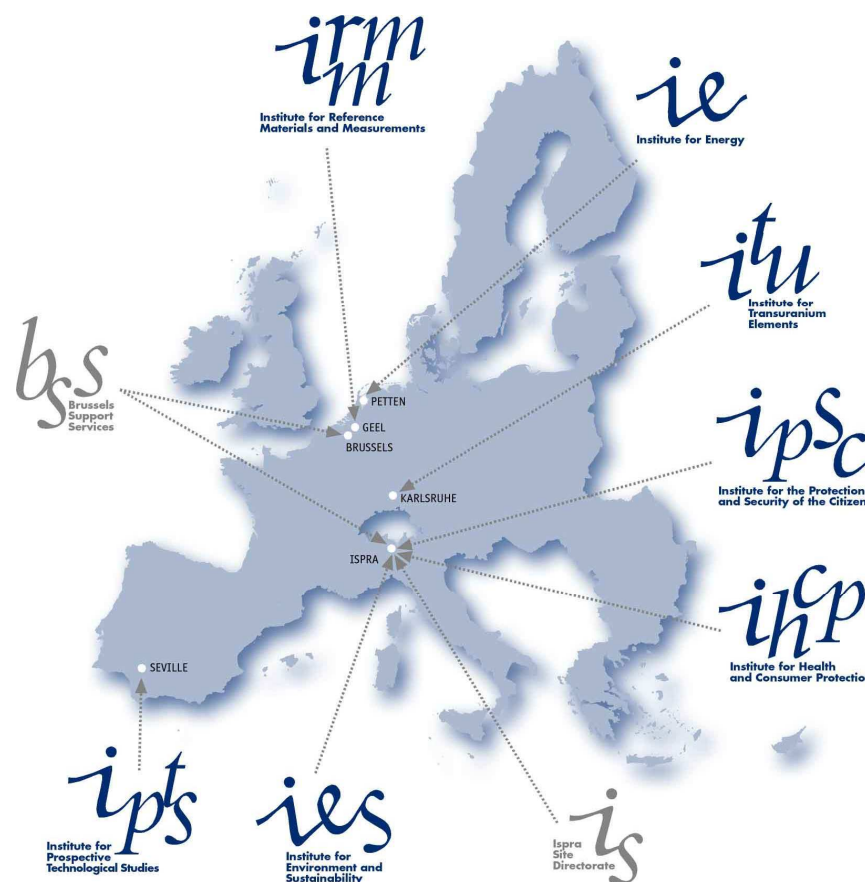
Institute for Health and Consumer Protection

IPTS - *Seville, Spain*

Institute for Prospective Technological Studies

~ 2700 staff ~ 340 M€/y budget

(+ 50 M€/y competitive income)



JRC in FP7: Indicative Budget Breakdown

683 M€ 'Prosperity'

- Chemicals
- Biotechnology
- Energy and Transport
- Information Society

517 M€* 'Nuclear'

- Nuclear Energy, Safety and Security

88 M€ 'World Partner'

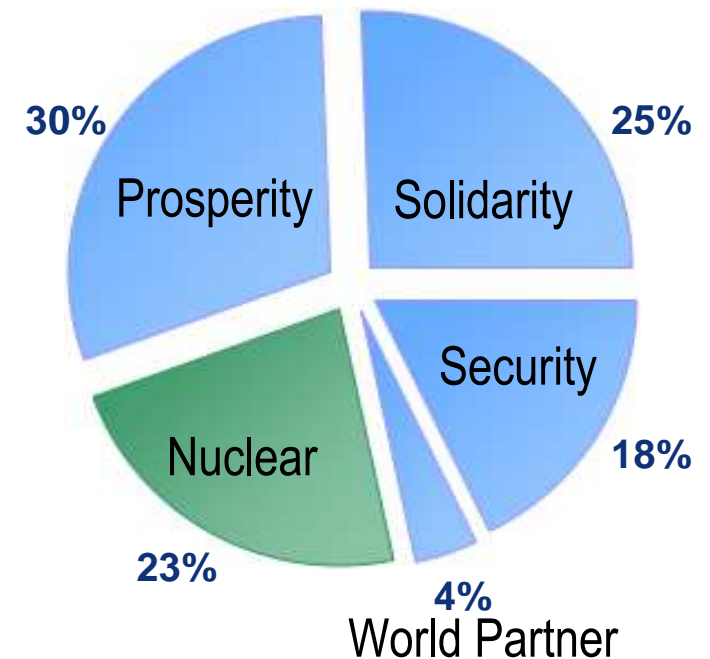
- Global Security

578 M€ 'Solidarity'

- Environment
- Health
- Climate Change
- Rural Development

403 M€ 'Security'

- Natural Disasters
- Internal/External Security
- Food Chain



Board of Governors

- Representatives of Member States
- Opinions on strategic and major management issues (appointment of senior management staff)

Commission

- “High-level Users’ Group” (Commission DGs) - work programmes
- All major decisions and initiatives, in particular the JRC Multi-Annual Work Programme
- External assessments

European Parliament

- Specific Framework Programmes and Budget
- Interface with Parliament

Council

- Council Working Groups / Competitiveness (Research part) Council



JRC typology of activities

- **EU Policy support: (60-70%)**
 - Identification of emerging issues (horizon scanning)
 - Direct scientific/technical input into legislative process
 - Operational support: alert/anticipation, quick response functions
 - Monitoring of compliance (e.g., crop declarations under Common Agricultural Policy)
 - Scientific-technical reference systems (...next slide)
- **Basic Research: (20-30%)**
 - Exploratory research, modelling and other analytical work to create new knowledge
- **Specific actions** towards New Member States and Candidate Countries (10%)

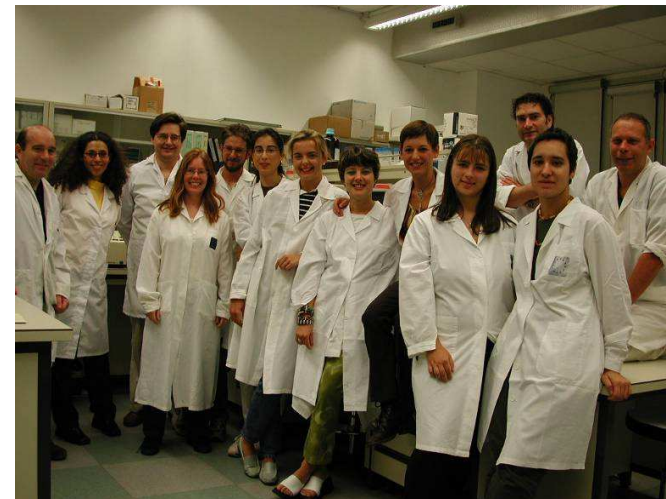
JRC typology of activities (cont'd)

- **Scientific-technical reference systems** (often in strong partnerships with key organisations in Member States)
 - Establish standardised methodologies and measurement protocols (GMO, BSE/TSE, environmental quality, nuclear safety etc); development of certified reference materials
 - Validation of data and measurements (Community Reference Laboratories, European Centre for the Validation of Alternative Methods, ...)
 - Establishment of norms for directives and pre-normative research (EURO norms for vehicle emissions, hydrogen storage, building standards,....)
 - Harmonization of data (European Soils Bureau, Infrastructure for Spatial Information in the European Community (INSPIRE)), best practices (European Bureau for Integrated Pollution Prevention and Control, European Clearing House for Operational Feedback from Nuclear Reactor Operators,...), reference data (European Bureau for Wine, Alcohol and Spirit Drinks...)

The JRC works with over 1,000 public and private organisations, institutions and expert groups in more than 250 major networks

JRC activities in support of ERA:

- Robust science for policy-making
- Common scientific reference systems
- Training and mobility of researchers
- Providing access to infrastructures
- Support to enlargement
- Support to Era Policy



Example: Chemicals Legislation (REACH) or “from the European Chemicals Bureau (JRC) to the European Chemicals Agency”



- New EU chemicals legislation entered into force 2007 (REACH)
- Goal: simplification of regulation, improved health and environmental protection
- JRC activities under old legislation: managing the risk assessment process, the Global Harmonised System (GHS) for the classification and labelling of hazardous chemicals, the development of guidance documents and tools (IT-notification system) in support of the REACH Regulation, support to setting up EChA
- Continuing activities: development of computational toxicology (QSARS); managing the evaluation process under the Biocidal Products Directive; coordination of harmonisation of testing methods as EU's input to OECD Test Guideline Programme
- Some results over 15 years: 350 meetings organised; ca. 50,000 data sets in chemicals' databases (IUCLID5 developed by JRC and adopted by OECD); 85 Risk Assessment Reports; 40 Monographs and Guidance Documents; 150 peer reviewed scientific papers; 10 book chapters

Towards a European Energy Research Area

- Policy issues: energy security ; energy efficiency (saving 20% of projected energy consumption by 2020); sustainability (cutting greenhouse gas emissions by at least 20% by 2020 and increasing to 20% by 2020 the share of renewable energies in overall energy consumption) and competitiveness, internal market;
- Policy response (technologies): SET-Plan (2007/2008), Joint Technology Initiatives...
 - what are strategic low-carbon energy technologies whose development and deployment needs to be accelerated ?

Towards a European Energy Research Area (cont'd)

- Role of JRC
 - Analysis of status and prospects of key technologies and of EU research capacities (published); SETIS (information system) to go online in April 2009; input from MS organisations will be crucial to keep it up-to-date and useful
 - Well-to-wheels: a broad study on present and future fuel/vehicle combinations to calculate their greenhouse-gasses emissions, energy consumption and associated costs, done with car and oil industry associations and representatives of biofuels industry: <http://ies.jrc.ec.europa.eu/WTW>
 - Pre-normative research on performance and safety of fuel cells and hydrogen storage (reference centre in Joint Technology Initiative on Hydrogen and Fuel Cells)
 - Development of (International Electrotechnical Commission) performance standards for photovoltaic electricity; JRC calibrates roughly 60% of all photovoltaic modules worldwide
 - JRC coordinates EU input to “Generation IV” initiative to design the 4th generation of nuclear power plants; supported by JRC research programme into safety of nuclear fuel cycle...

GMOs: the Community Reference Laboratory for GM Food and Feed



- CRL runs European Network of GMO Laboratories (ENGL): 120 laboratories in 27 Member States+NO+CH
- So far, 74 cases received;
- 34 validation reports published (+ 17 validations completed for which reports will be published within 2008);
- 4 reports for emergencies / non-approved GMOs published (Maize (BT10, “event 32”), Rice (LL601,Bt63));
- The CRL is ISO 9001:2000 certified and ISO 17025 accredited;
- It carries out extensive training programs in co-operation with the WHO.



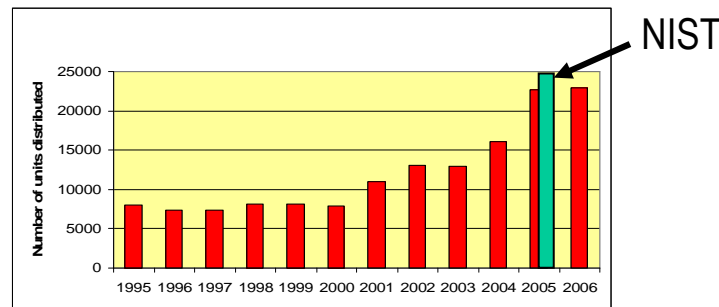
European Network of GMO Laboratories

Validity Assessment of the Detection Method of Maize Event Bt10 through Investigation of Its Molecular Structure; *J. Agric. Food Chem.*, March 24, 2009 (web)



GMOs: further reference activities

- JRC is world leader in production of **certified reference materials** for GMOs: 68 CRMs; first CRMs based on DNA copy number ratio quantification



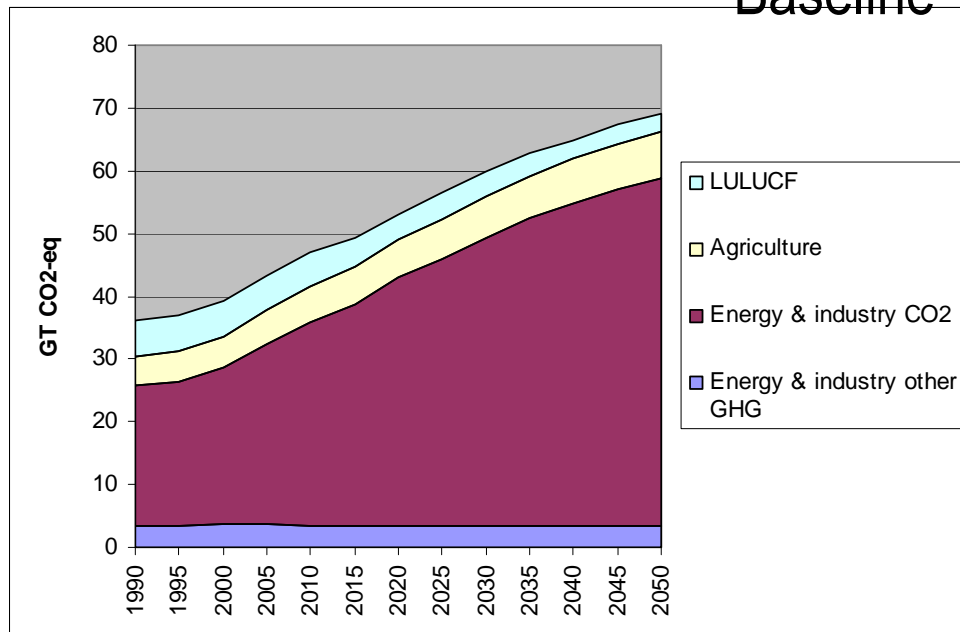
- JRC hosts „**European Coexistence Bureau**“ (ECoB) for GM-bearing crops (2008)
 - best practice for technical segregation measures
 - Elaboration of guidelines for crop-specific measures while ensuring the necessary flexibility for Member States to take account of their regional and local factors
 - **Developed in crop-specific technical working groups**
- socio-economic impact studies** of GM crops

Bt corn in Spain—the performance of the EU’s first GM crop
Manuel Gómez-Barbero, Julio Berbel & Emilio Rodríguez-Cerezo
NATURE BIOTECHNOLOGY
VOLUME 26 NUMBER 4 APRIL 2008

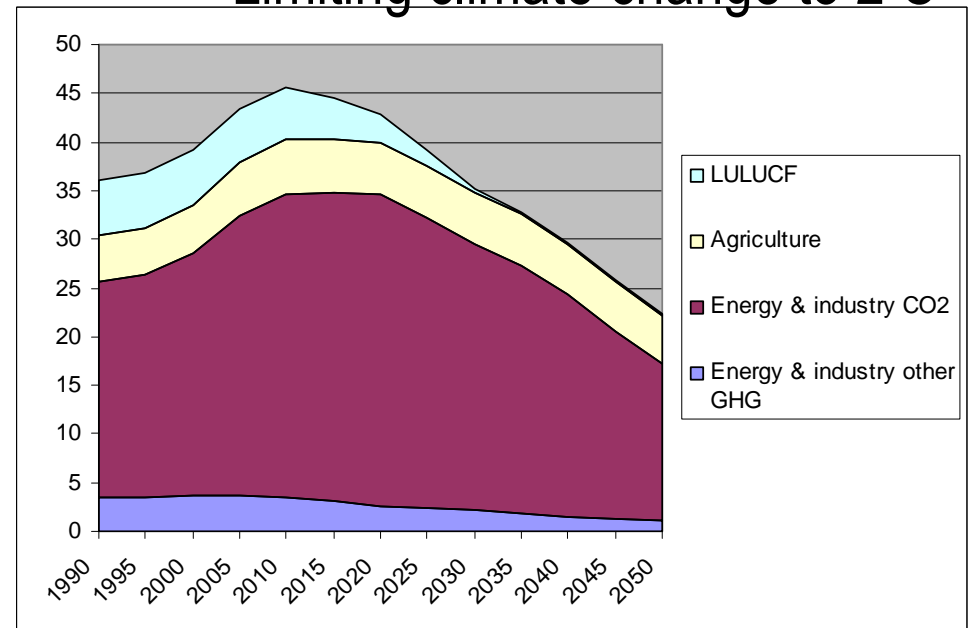
JRC role in addressing climate change

- Currently: helping to prepare EU position in negotiations in Copenhagen, December 2009, for post-Kyoto agreement
- Focus of current work: benefits and trade-offs of scenarios (air pollution, climate change policies) for macro-economy, agriculture, land- use/forestry, air pollution
- JRC utilizes tools developed in the European Research Area for integrated impact assessment of Greenhouse gas emission scenarios that meet the target of limiting climate change to 2 C

Baseline



Limiting climate change to 2 C



Integrated assessment of climate policies has to include the impact on nature and humans: the role of air pollution

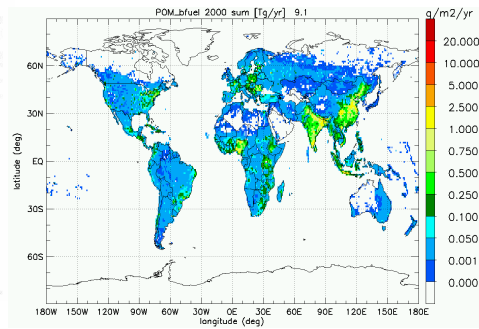
JRC REFERENCE REPORTS



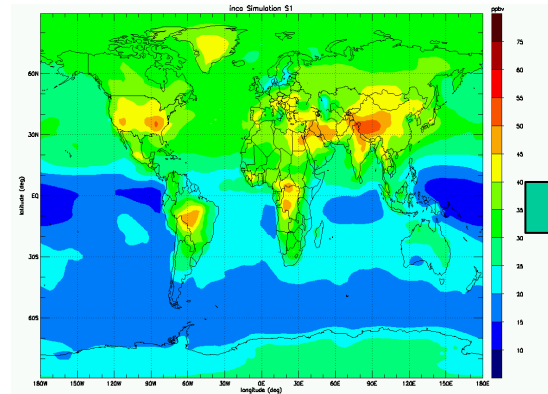
Global Climate Policy Scenarios for 2030 and beyond



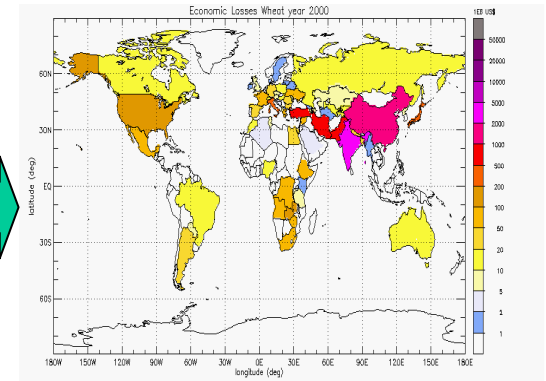
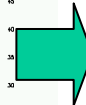
Global energy scenario's world regions
POLES



Emissions of GHGs & air pollutants
EDGAR (JRC)



Air pollution & Climate global chemistry/climate models
TM5 (JRC); ECHAM5 (MPI, Germany)



Health/Agriculture/Climate Impacts & economic costs

POLICYFORUM
Climate Assessment: What's Next?
Frank Raes and Rob Swart
30 November 2007 VOL 318; SCIENCE

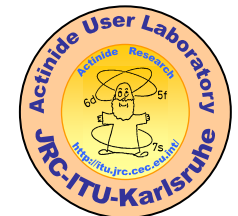
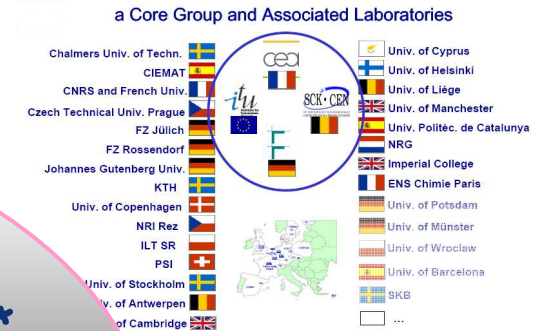
Global nitrogen deposition and carbon sinks; D.S. Reay, F. Dentener, P. Smit, J. Grace & R.A. Feely;
Nature Geoscience 1, 430 – 437. 2008

Impacts of Atmospheric Anthropogenic Nitrogen on the Open Ocean
R. A. Duce et al.
SCIENCE VOL 320 16 MAY 2008

Carbon accumulation in European forests; P. Ciais et al.;
Nature Geoscience, 1, pp 425 - 429

ACTINET Network of Excellence

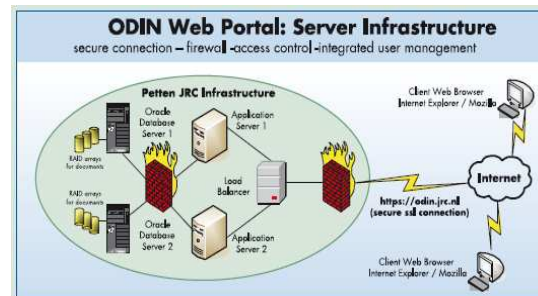
- Summer Schools
- Trainees, PhD students, Post-Docs
- Visiting scientists
- User Facility
- Network of excellence
- Workshops
- Conferences
- Training courses
- nuclear databases
- Information portals
www.nucleonica.net



ESARDA COURSE ON NUCLEAR SAFEGUARDS AND NON-PROLIFERATION

Online Data & Information Network for Energy

The ODIN platform provides a central repository for results of European nuclear safety R&D, in collaboration with DG-RTD and the IAEA. <https://odin.jrc.nl/>



JRC has many unique laboratories and research facilities open to co-operations, some with dedicated training programmes or run as user facilities, e.g.:

- Seven Community Reference Laboratories (CRLs)
 - CRL for GMOs in food and feed; CRL for feed additives; CRL for food contact materials; CRL for heavy metals in feed and food; CRL for mycotoxins in food and feed; CRL for polycyclic aromatic hydrocarbons
- The Vehicle Emissions Laboratory (VELA) – JRC-IES (Ispra)
- Geel Linear Accelerator (GELINA) – JRC-IRMM (Geel)
- High Flux Reactor (HFR) – JRC-IE (Petten)
- Hot Cell Laboratory – JRC-ITU (Karlsruhe)
- European Laboratory for Structural Assessment (ELSA) – JRC-IPSC (Ispra)
- ...and many others

- Extension of JRC networks cover needs of New Member States and Candidate Countries
 - *30% of JRC network partners are coming from NMS/CC*
- Joint Submissions to FP calls
 - *65% of JRC proposals to FP include partner(s) from NMS/CC*
- Visiting Staff at JRC Institutes selected via open calls
 - *40 posts of Seconded National Experts reserved to NMS/CC*
- Workshops & training courses on S&T bases of EU Acquis
 - *50-80 workshops organised every year for NMS/CC*
- Support for short visits for senior staff (1-5 day)
 - *Some 100 visits / year of NMS/CC Directors to the JRC Institutes*

Main objective of the activities for ERA-Policy (in co-operation with DG RTD)

- *To provide a EU reference platform for monitoring and analysing research, innovation and human resources in R&D and related policies in order to improve research and innovation policies with evidence-based techno-economic analysis*

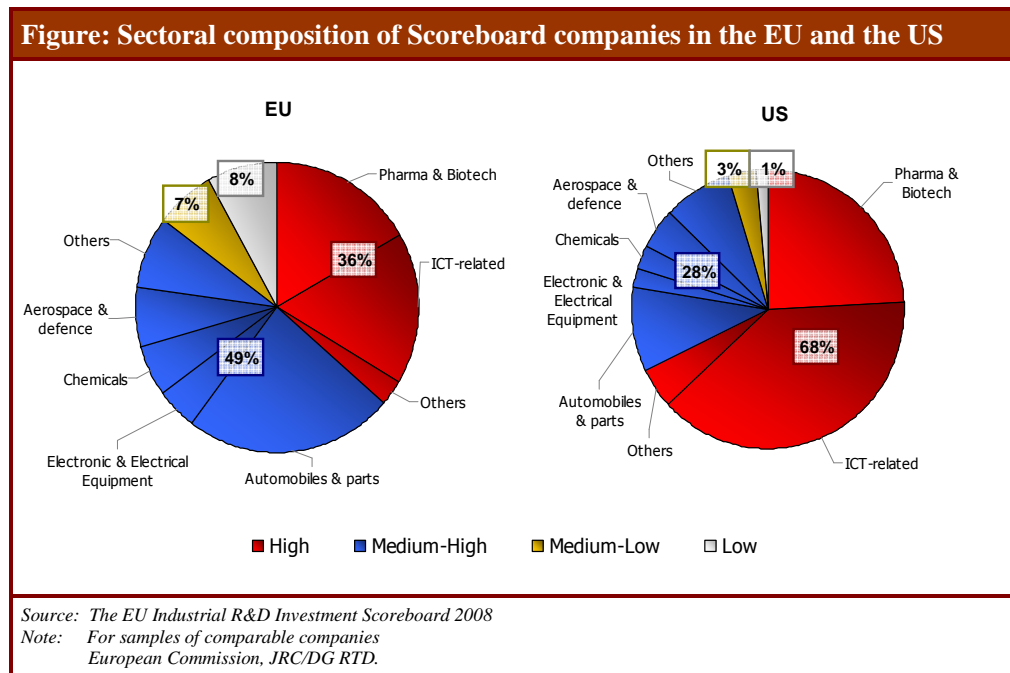


ERAWATCH & ERA Analysis

- ERAWATCH presents information on national and regional research policies, actors, organisations and programmes for the 27 Member States, countries associated with the FP and other countries with a strong scientific production
- ERAWATCH is targeted at decision makers, policy analysts, researchers.
- Examples of studies (available on web): Trends in Business R&D; Analytical Country Reports (14) ; Regional Study Reports (19)
- ERA Analysis monitors implementation of ERA (e.g. Joint Programming, Opening up of research programmes) and what is the potential for further integration

Analysis of private R&D

- The objective is to provide EU policy makers with a better understanding of investment in research and its relation to economic performance (thus helping to design policies to reach the Lisbon targets)
- Examples of products: EU Industrial R&D Investment Scoreboard (annual); sector studies; relation between corporate R&D and productivity; Survey on R&D investment business trends (annual)



R&D investment gap is structural

Joint Research Centre (JRC)

Robust science for policy making

Web: www.jrc.ec.europa.eu

Contact: jrc-info@ec.europa.eu

