International Workshop

Peer Review: future challenges for reseach funding and performing organisations in selecting research excellence

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Evaluating broader impacts in EU Framework Programmes: Some experiences from FP6 and FP7

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Outline

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- **Linking ex-ante and ex-post impact assessment**
  - Experiences from the 10-years impact assessment in the area of *"Food, Agriculture, Biotechnologies and Fisheries"*
- **Questions, synthesis and some conclusions**

Background 1
FP6 and FP7 evaluation criteria

FP6 (2003-2006)

1. **Relevance**
2. **Potential impact**
3. **S&T excellence**
4. **Quality of the consortium**
5. **Quality of the management**
6. **Mobilisation of resources**

Background 2
FP6 and FP7 evaluation criteria

FP6 POTENTIAL IMPACT

- The extent to which the proposed project is suitably ambitious in terms of its strategic impact on **reinforcing competitiveness** (including that of SMEs) or on solving **societal problems**.
- The extent to which the **innovation-related activities** **and** **exploitation and/or dissemination** plans are adequate to ensure optimal use of the project results.
- The extent to which the proposal demonstrates a clear **added value** **in carrying out the work at European level** and takes account of research activities at national level and under European initiatives (e.g. Eureka).

FP6 ADDITIONAL CRITERIA (not scored, only commented)

- Are there **gender issues** associated with the subject of the proposal? If so, have they been adequately taken into account?
- Have the applicants identified the potential **ethical and/or safety aspects** of the proposed research regarding its objectives, the methodology and the possible implications of the results?
- To what extent does the proposal demonstrate a readiness to **engage with actors beyond the research community and the public as a whole**, to help spread awareness and knowledge and to explore the wider societal implications of the proposed work?
- Have the **synergies with education** at all levels been clearly set out?
- If **third country participation** is envisaged in the proposal, is it well justified and the participation well integrated in the activities?

Background 3
FP6 and FP7 evaluation criteria

FP7 (2007-2013)

1. S&T Quality (relevant to the topic of the call)

- Concept, objectives, progress beyond state-of-art, S&T methodology and work-plan

2. Implementation

- Quality of individual participants and consortium as a whole
- Appropriateness of the management structure and procedures
- Appropriateness of the allocation and justification of resources

3. Impact

- Contribution to **"expected impacts"** (see work programme)
- Plans for dissemination and exploitation of results, IP management

For two-stage procedure, outline proposals are evaluated on two evaluation criteria only (S&T quality and impact)

Background 4
FP6 and FP7 evaluation criteria

FP7: practical guidance for IMPACT criterion:

- **To what extent would the proposed research and research results contribute to achieving the goals outlined in the topic description and in the work programme?**
- **To what extent would the project have wider scale impacts (such as SMEs, training young scientists and other key staff, spreading of research excellence in the scientific community, contribution to international initiatives, etc.?**
- **When appropriate (relevant to the topic):**
  With regard to the innovation dimension, describe the potential areas and markets of application of the project results and the potential advantages of the resulting technologies/solutions compared to those that are available today.

Background 5
"Impact"

Oxford Dictionary:

1. **the action of one object coming forcibly into contact with another, e.g.**
   - *there was the sound of a third impact*
   - *bullets which expand and cause devastating injury on impact*
2. **a marked effect or influence, e.g.**
   - *our regional measures have had a significant impact on unemployment*

Review of the socio-economic dimension in FP6

Concept, results, conclusions

Review of socio-economic dimension*) in FP6
Concept

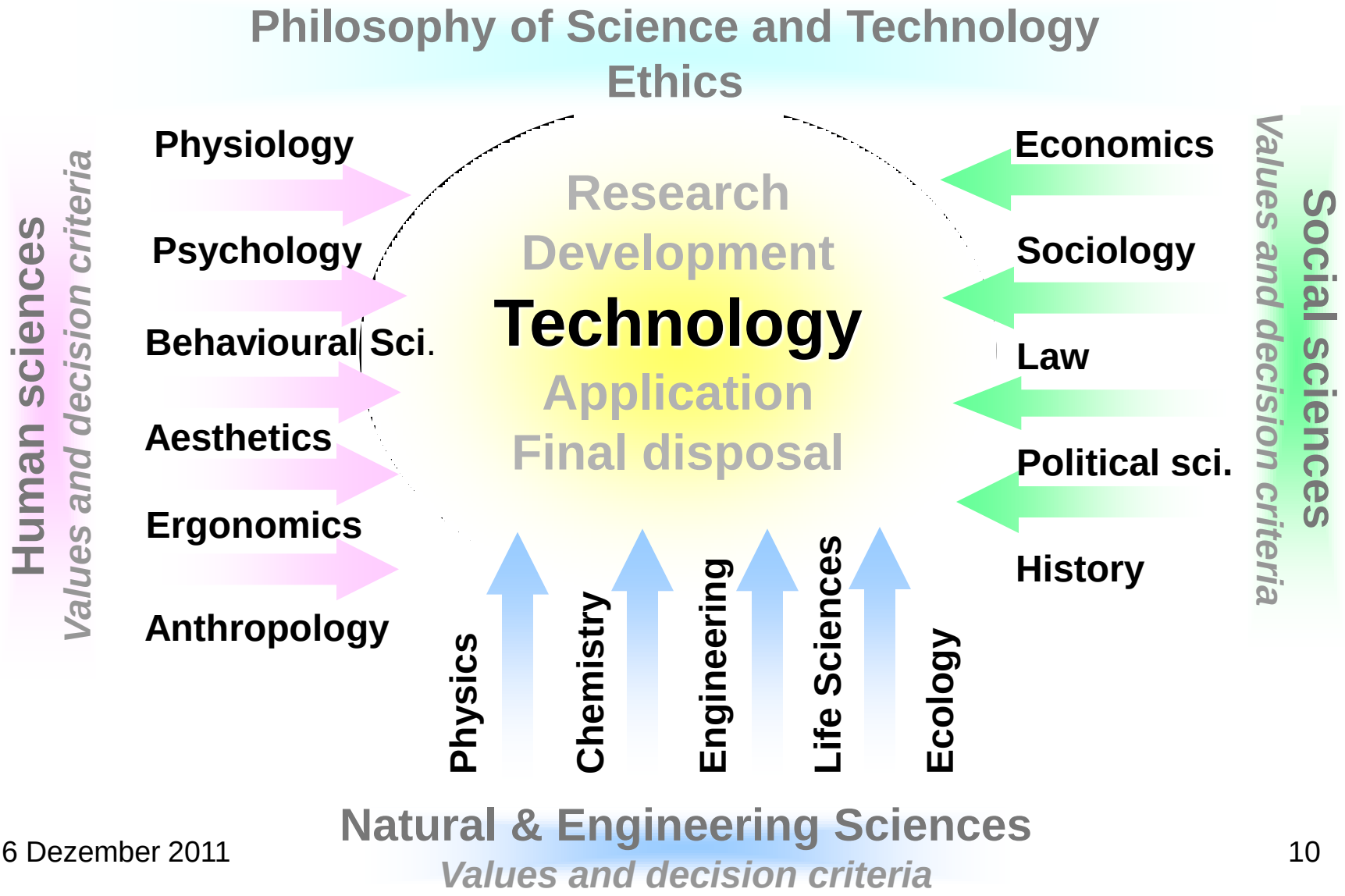
- **Action-oriented concept of research and technological development**
  - R&D: human action involving decisions about alternative path ways based on assessments of impacts (values, criteria)
  - Categories of assessment (and impact) criteria, starting point for analysis **)
    - Functionality (feasibility, methodology)
    - Environmental quality
    - Economic efficiency (micro-economic)
    - Prosperity and wealth (macro-economic)
    - Security and Safety
    - Health
    - Personal development & Societal Quality
  - Interdisciplinarity, multi-dimensional approach

*) Socio-economic dimension: SED

**) see also: VDI-Guideline: Technology Assessment: Concepts and Foundations. VDI 3780. March 1991

Review of socio-economic dimension in FP6

A multi-dimensional approach towards technology



Review of socio-economic dimension in FP6

Findings at mid-term: Evidence from examples

Analysis of proposal abstracts of some 100 proposals

Impact areas:

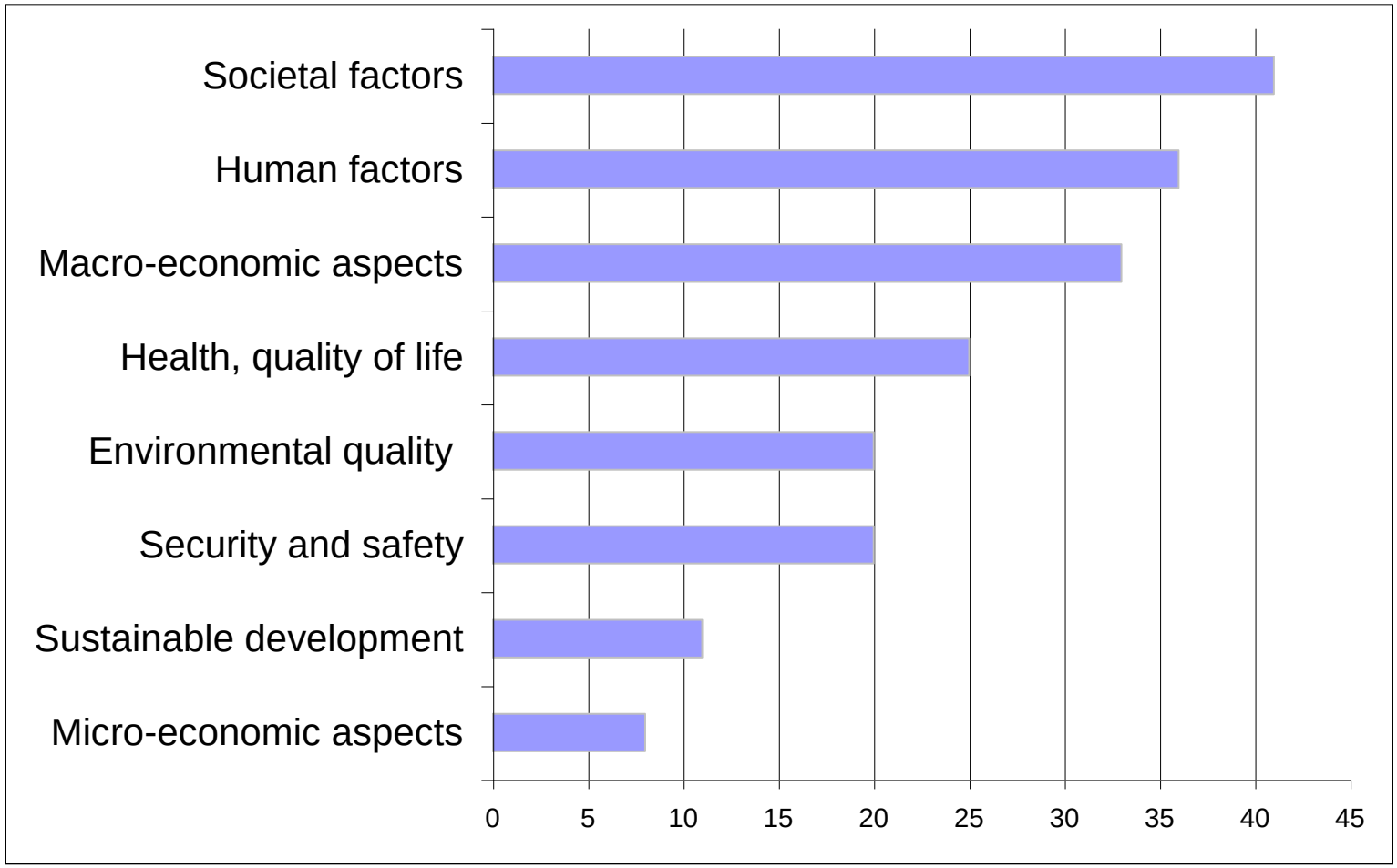
- S&T, functionality, feasibility
- Sustainability
- Environmental impact
- Societal & human factors
- Health, quality of life
- Security and safety
- Macro- and micro-economic aspects
- ...

Processes with potential impact:

- Interdisciplinary interaction, cooperation
- Stakeholder involvement
- Public awareness
- Exploitation and dissemination of results
- Foresight, policy support
- Education & training
- …

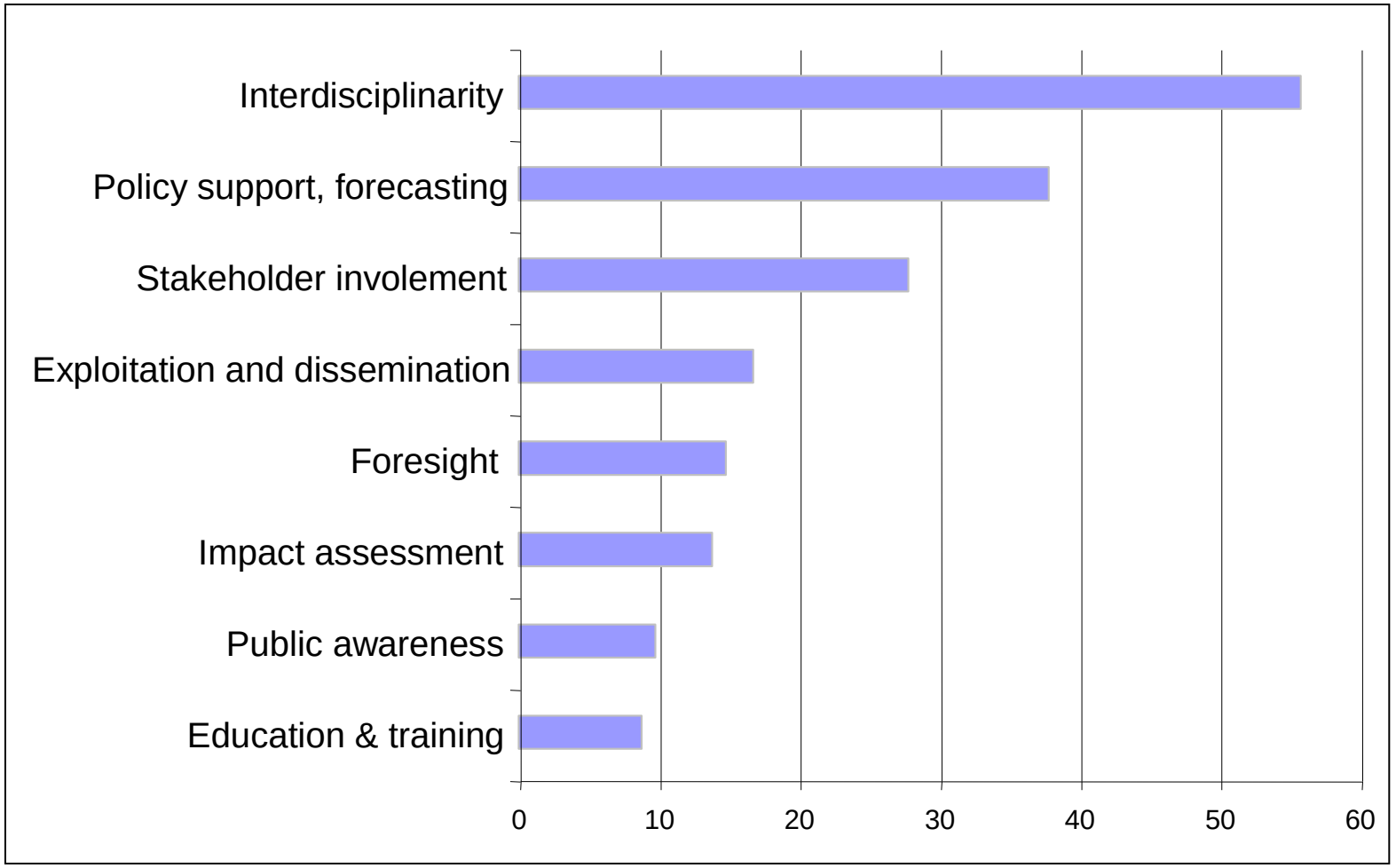
Review of socio-economic dimension in FP6

Evidence from project examples 1: impact areas



Review of socio-economic dimension in FP6

Evidence from project examples 2: processes



Review of socio-economic dimension in FP6

Integration of SED in FP6: Some conclusions

- **General "environment" not really conducive for integration of SED in FP6**
  - SED mostly referred to in rather symbolic terms - if at all
  - No concept of SED integration
  - SED neither part of requirements for proposal preparation nor an integrated part of evaluation criteria
- **Integration of SED: a "burden" for researchers!?**
- **ERA, Lisbon and Barcelona strategy ...**
  - ambitious socio-economic objectives and justification for strengthening R&D
  - RTD in the centre of the Lisbon strategy
  - expected socio-economic impacts of R&D
- **However some "inconsistencies" ...**
  - "pure" natural and/or engineering sciences with symbolic or no "integration" of SED ...
  - ... hoping for another "invisible hand"?
- **But increased awareness of importance of SED**
  - e.g. in FP 5 Year Assessment Report: "Research in social sciences and humanities can help reform European landscape and help Europe respond more successfully to the challenges of the knowledge-based society and globalisation."
- **... and good examples of SED integration in FP6 projects**

FP7: some findings about “expected impacts” in Work Programmes and in project evaluation exercises

Categories of impacts, assessments during evaluations

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Expected impacts in Work Programmes
Outcome of analysis

Categories of expected impacts:

- **Achieving scientific and technological goals as defined in the Work Programme**
- **Increasing knowledge and understanding**
- **Supporting competitiveness**
- **Addressing and involving stakeholders**
- **Involving specific target groups, e.g.: SMEs, patient organisations, partners from third countries**
- **Influencing policies, standards**
- **Structuring of S&T communities - ERA**
- **Communicating with non-S&T communities**

Evaluating expected impacts
Some conclusions

- **“Expected impact” often just additional explanation of S&T tasks – few “broader” impacts**
- **Difficulties with evaluating rather general formulations in proposals**
- **Dominance of S&T quality and S&T impact – “If S&T is good …”**
- **Lack of indicators for ex-ante evaluation for expected impacts**
- **Scoring: problem of weighting Impact criterion compared to S&T quality**
- **Importance of consensus meetings**

Linking ex-ante and ex-post impact assessment

Experiences from the 10-years impact assessment exercise in the area of *"Food, Agriculture, Biotechnologies and Fisheries"*

October 2010 – February 2011

The exercise

Analysis of the impacts of activities carried out in the areas of Food, Agriculture, Fisheries and Biotechnology in FP5, FP6, FP7 (2000 – 2010)

October 2010 – February 2011

Involving 36 experts

Four thematic groups, one horizontal group

Method

Survey of FP5-6-7 Project co-ordinators /participants

Analysis of final reports, studies and publications of 1.168 projects (incl. ex-post evaluations)

Statistical anaylses of participations (CORDA data base)

Detailed analyses (template) of samples of projects

Bibliometric analyses, patent analyses, Eurostat, EU Innovation Survey

Analysis of policy impact: EU-Lex document data base

...

Impacts

1. **Scientific and technological impacts**
2. **Impacts on innovation**
3. **Economic and social impacts**
4. **Environmental impacts**
5. **Impact on EU and other policies**
6. **Structural impacts on the European Research Area**
7. **Added value of research funding at European level**

Impacts 1

1. **Scientific and technological impacts, for example:**
   - Overall scientific/technological impact in qualitative terms
     - *What was the overall scientific/technological impact of the complete portfolio of projects funded in qualitative terms?*
     - *Did the projects funded further the state of knowledge in the field?*
     - *How? Did they contribute to reaching the stated scientific/technological objectives? How?...*
   - Contribution to improving the quality of EU research
     - publications and citations impact (bibliometric studies including cross citations), evidence of funding excellence (scientific prizes …)
   - Impact on training of EU researchers
     - *international careers, citation indexes…*
2. **Impacts on innovation, for example:**
   - Patents, new products, new processes developed
     - *Did the results produced by the funded projects eventually give rise to new products and new processes? For how many projects, how many participants was this the case?...*
   - Start-ups, spin-offs / new firms established as a result of research funded in this area
     - *To what extent did the portfolio of projects funded contribute to the creation of new and sustainable firms?*

Impacts 2

3. Economic and social impacts, for example:

- Job creation
  - *How many jobs were created as a result of research funded in this area?*
- Micro economic benefits
  - *Turnover, profitability, etc*
- Macro-economic benefits
- Competitiveness
  - *Improved competitiveness at the firm level: How many firms were able to improve their competitiveness (domestic/international market share, turnover, profit margin, etc.) as a medium/long-term result of participating in the project?*
- Social impacts
  - *Improved social welfare without increasing – or with reducing – the pressure on environment...*
- Gender equality
  - *Trends of participation of female / male researchers and their role in the project...*
- Millennium Development Goals: combating hunger and poverty, ensuring sustainable access to water and environmental sustainability
  - *To what extent did the portfolio of projects funded contribute to food security, poverty reduction, access to water...*

Impacts 3

4. **Environmental impacts, for example**
   - CO2 emissions, biodiversity, resource and energy efficiency..
     - *To what extent did the portfolio of projects funded help to reduce CO2 emissions and the pressure on biodiversity, or to improve resource and energy efficiency?...*
5. **Impact on EU and other policies, for example**
   - Impact on EU policies
     - *Did the results of specific funded projects and/or of the portfolio of projects funded feed into EU policy-making including on EU ex-ante impact assessments? On which specific policies?*
   - Impact on other policies (including international)

Impacts 4

6. **Structural impacts on the European Research Area, for example**
   - Durable) changes in the research capabilities of participants
     - *Did participants, especially firms, increase their capabilities to carry out research in the future?*
   - (Durable) changes in the research behaviour of participating firms
     - *Would participants carry out research on a more regular basis, on a larger scale in the future?*
     - *Would they engage more in research cooperation in the future?*]
   - Structural, ERA impacts
     - *Did the portfolio of projects funded contribute to the achievement of a European Research Area in the specific research field? How?*
   - Regional impacts
     - *What impacts did the portfolio of projects funded have at the regional level (e.g. in relation with other EU funding mechanisms i.e. cohesion funds and Competitiveness and Innovation Programme CIP)?*

Impacts 5

7. **Added value of research funding at European level, for example**
   - Additionality
     - *Whether projects could have been carried out at all or in same format without FP funding*
   - Critical mass
     - *Because of the transnational pooling of resources, the project reached minimum efficient scale for addressing more ambitious problems*
     - Increase of competition towards excellence
   - Reduction of risks: research and commercial
   - EU wide dissemination of results
   - Leverage effect of the EC contribution
     - crowding in: amount of private funding mobilised through FP funding
   - Networking
     - *Steps to connect two random entities, clusters of intervention…*
   - Coordination of national policies

Some results 1

- **Bibliometric analysis: Good scientific impact, scientific productivity, combined with technological output**
- **FP plays a role for innovation in firms**
- **FP attracts excellent researchers and innovative firms**
- **FP6 lead scientists show 50% higher relative citation rates than their peers**
- **FP funds "can make a difference": e.g. three key projects in genomic research**
- **Substantial policy impact of FP projects, e.g. CAP and CFP**
- **Effects on structuring ERA**
  - collaborative projects, NoEs, ERA-NETs, ETPs
  - Changes of capabilities and behaviour
- **Compensating lack of national funding**

Some results 2

- **Impact across all impact categories**
- **Scientific and technological impact**
- **Impact on innovation**
- **Impact on society and environment**
- **FP: an important investment in people – developing a European research community, job creation**
- **Collaborative research supports structuring ERA**
- **There is a stronger move towards cooperation and pooling of resources due to crisis**
- **SME participation must be improved**
- **Need for better communication of results to end users**
- **Dissemination and exploitation of results must be improved**

Some problems of impact assessment

- **Timing**
  - Information from Final Reports but impacts only after some time
- **Data: Participants survey and self-reporting …**
- **Reporting and follow up**
  - Final reports: outputs, problems of identifying impacts
  - Mixed quality of reports, considering peer review of final reports
  - No follow-up of projects
- **Attribution**
  - Lack of reference to EU funding in publications or patents
  - Extent of contribution of EU funding to publications and patents?
  - EU funding is rarely the exclusive source of funds …
- **Additionality**
  - Would projects be carried out without EU funding
- **“Breaks with the past” reduce chances of impacts**

Questions, synthesis, and some conclusions

Some questions …

- **Impacts: intended, expected, potential vs. un-expected, non-intended (positive, negative)…**
- **To which extent can impacts be identified or defined in advance – "expected impacts"?**
- **Which potential broader impacts can/should be defined in advance without narrowing the research?**
- **Is targeting research equal to narrowing research?**
- **How far can/should the "steering function" of pre-defined impacts be accepted?**
- **How to link project evaluation, project monitoring and review with ex-post evaluation and impact assessment?**
- **…**

Synthesis

- **Challenges of ex-ante and ex-post assessment**
- **Finding the right balance in scoring of S&T quality and other evaluation criteria**
- **Providing adequate guidance for applicants for proposal writing, project management reporting and documentation**
- **Guidance and quality control is also needed for formulating expected impacts**
- **Need to define requirements for documentation, data, information**
- **Choose the right mix of evaluators and ensure appropriate briefing of evaluators**

Some conclusions

- **There is a need for research or pilot analyses on impact assessment**
  - Ex-ante definition and assessment
  - Monitoring of “emerging” impacts in project reviews
  - Ex-post impact assessment – improving frameworks and indicators
- **Focus on impacts must not endanger excellence and openness towards the unexpected**
- **Finding the right balance between agenda setting and trust in the long-term impacts of excellent research**
- **Ensuring consistency of impact assessment from proposal stage to post-project period**

Thank you for your attention!

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