

Analysis of EU Framework Program's General Criticism

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AGENDA

- **Project Proceeding Steps (Methodology)**
 - Orientation, Literature Search, Problem Definition...
- **About EU Framework Programs (FP) (First 5 Fps)**
 - When & Why Launched, What it is, How it works...
- **Analysis of EU Framework Program's General Criticism (First 5 FPs)**
 - Criticisms gathered and organized
 - Critical issues from the criticisms
 - ETM Matrix for analyzing them in terms of ETM
- **6th Framework Programme (Not in depth)**
 - Which of the above criticisms are covered/addressed by 6th FP
- **Recommendations/ Conclusions**

Project Proceeding Steps (Methodology)

● Orientation & Literature Search

- Dr. Rosalie Zobel (European Commission)
 - Guidance for related reports and other documents by email
 - Her Paper for Picmet'99
 - Jesús Villasante (European Commission)
 - His Presentation Video (Picmet' 01) on picmet's website
- Several other on-line documents

● Conceptual Model

- Critical Issues and Strategic Directions of Technology Mgmt
- ETM Life Cycle Dimension and System Dimension
- Commercialization of Technology

● Problem Definition

● Analysis

About EU Framework Programs (1)

Foundation of European Union (EU) – 1967

One of the objectives of the formation of EU

To improve the scientific and technological basis of Community businesses.

1984 – First Framework Programme

1987 – Single European Act

1993 – Maastricht Treaty

About EU Framework Programs (2)

Activities under RTD policy

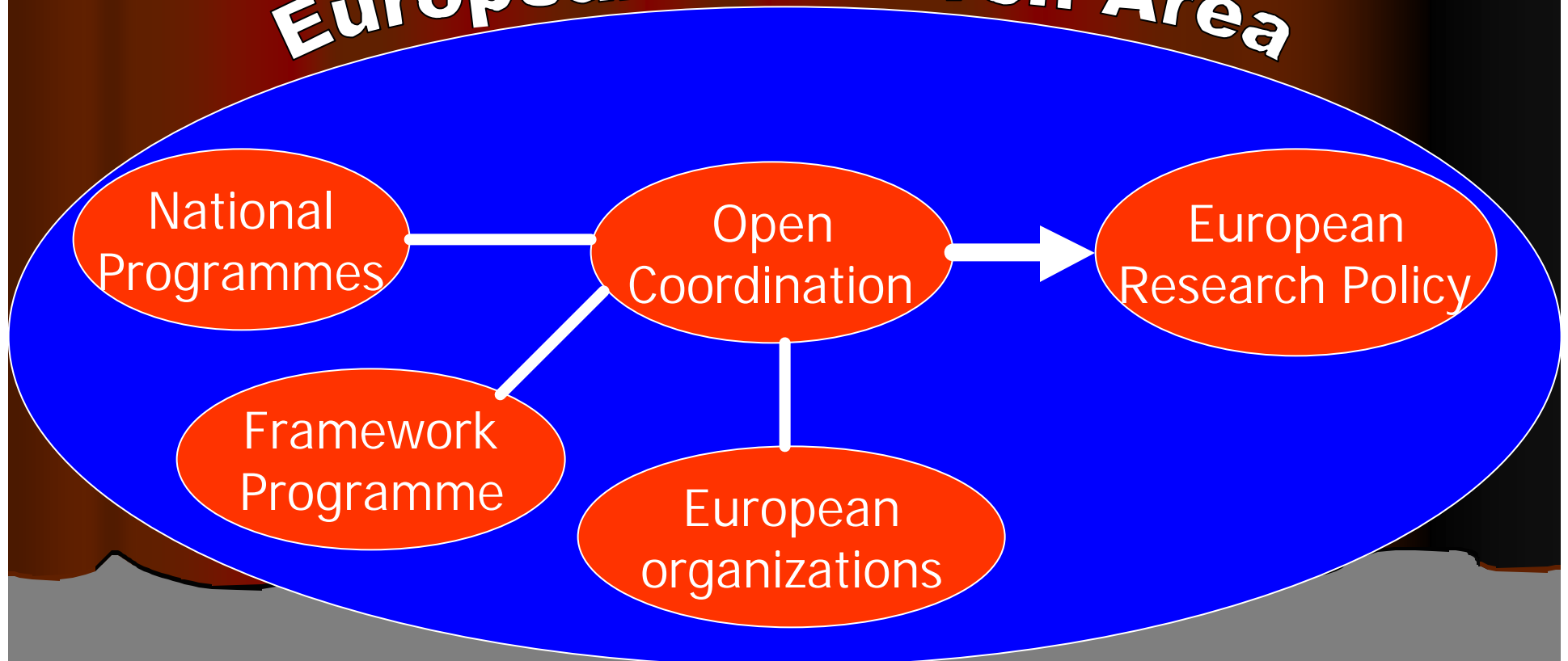
- Implementation
- Promotion
- Dissemination and optimization
- Stimulation

About EU Framework Programs (3)

Today's European RTD policy

1. National programmes
2. Framework programmes
3. European organizations

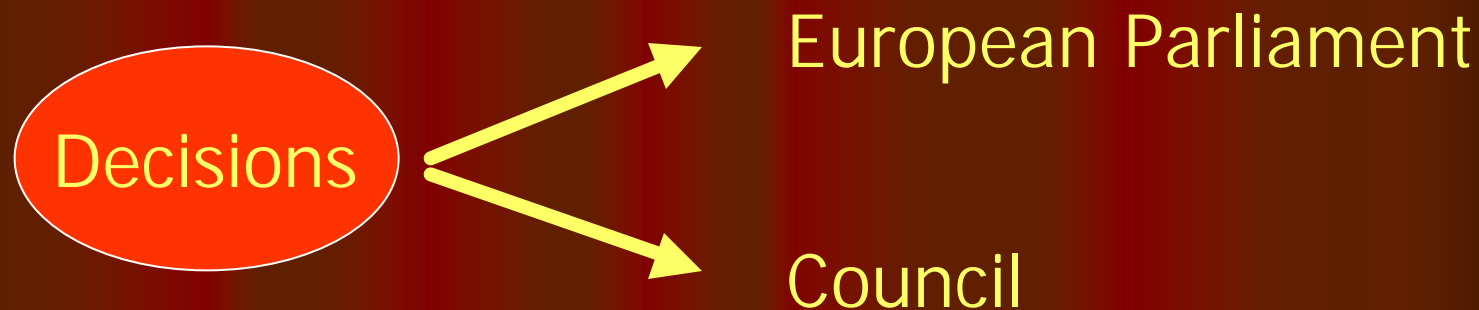
European Research Area



About EU Framework Programs (4)

So, what is FP?

Instruments which reflect the scientific and technological priorities of their particular time, as well as the prevailing economic and political circumstances.



About EU Framework Programs (5) Implementation

1. Shared cost contract projects;
2. Concerted actions,
3. The Commission's own research activities
(the Joint Research Centre)

Most of the
RTD funding



Shared cost
contracts

Companies, Institutions



50 %

Universities, Research Institutes



100 %

About EU Framework Programs (6)

- Who can participate ?
- Project Proposal
- Project Evaluation & Selection
- Project Follow-up

About EU Framework Programs (7)

FPs in brief- What is special in each FP?

The 1st FP (1984-87): RTD activities in a single structured manner

The 2nd FP (1987-91): Development of the future technologies

The 3rd FP (1990-94):

1. the dissemination of research findings
2. life sciences and technologies
3. training and mobility activities

About EU Framework Programs (8)

FPs in brief- What is special in each FP? (Cont'd)

The 4th FP (1994-98):

Several important innovations (e.g. a new programme on targeted socio-economic research)

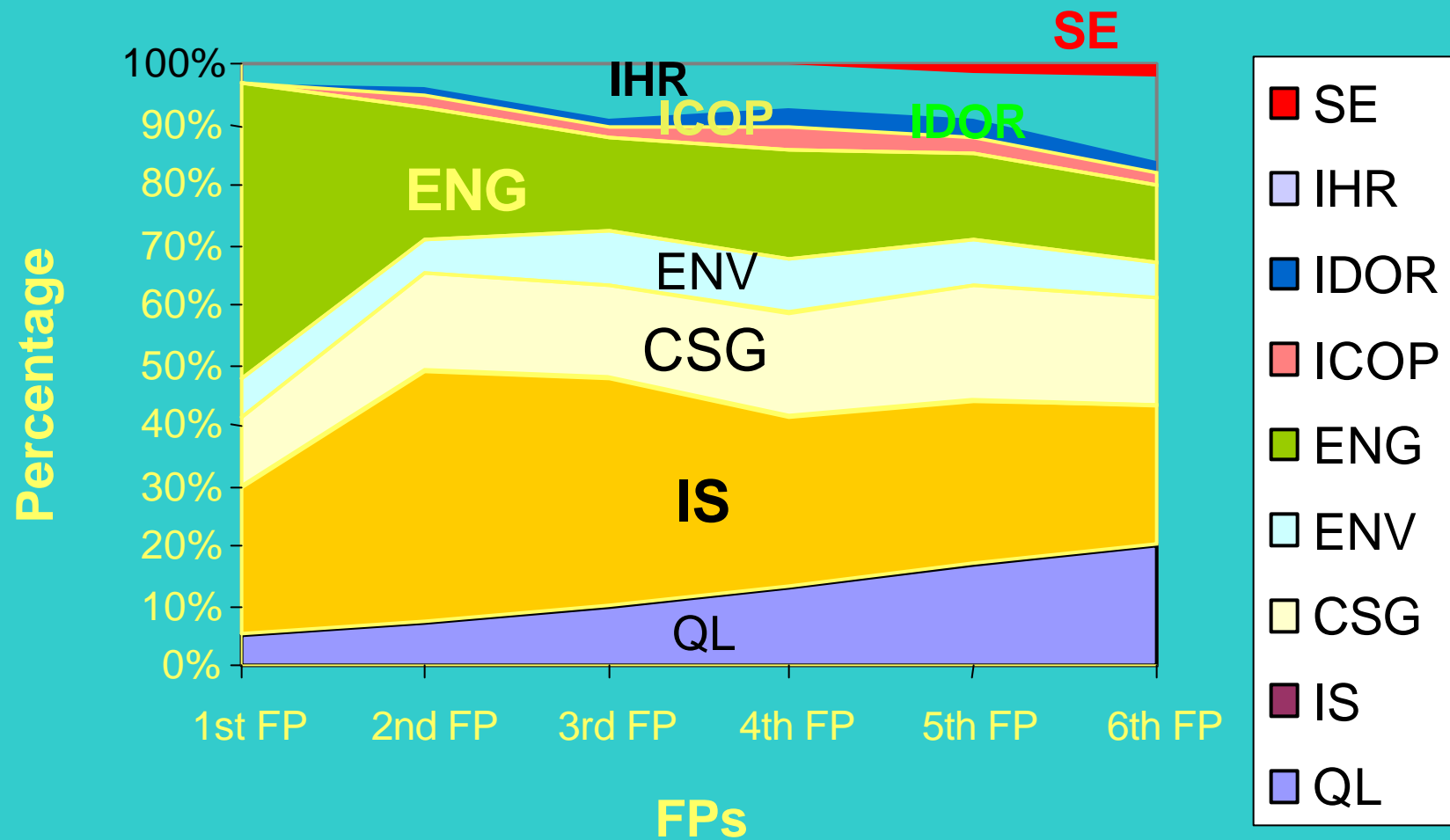
The 5th FP (1998-2002):

Mainly prepared to solve the problems and to aid the major socio-economic challenges existing in Europe

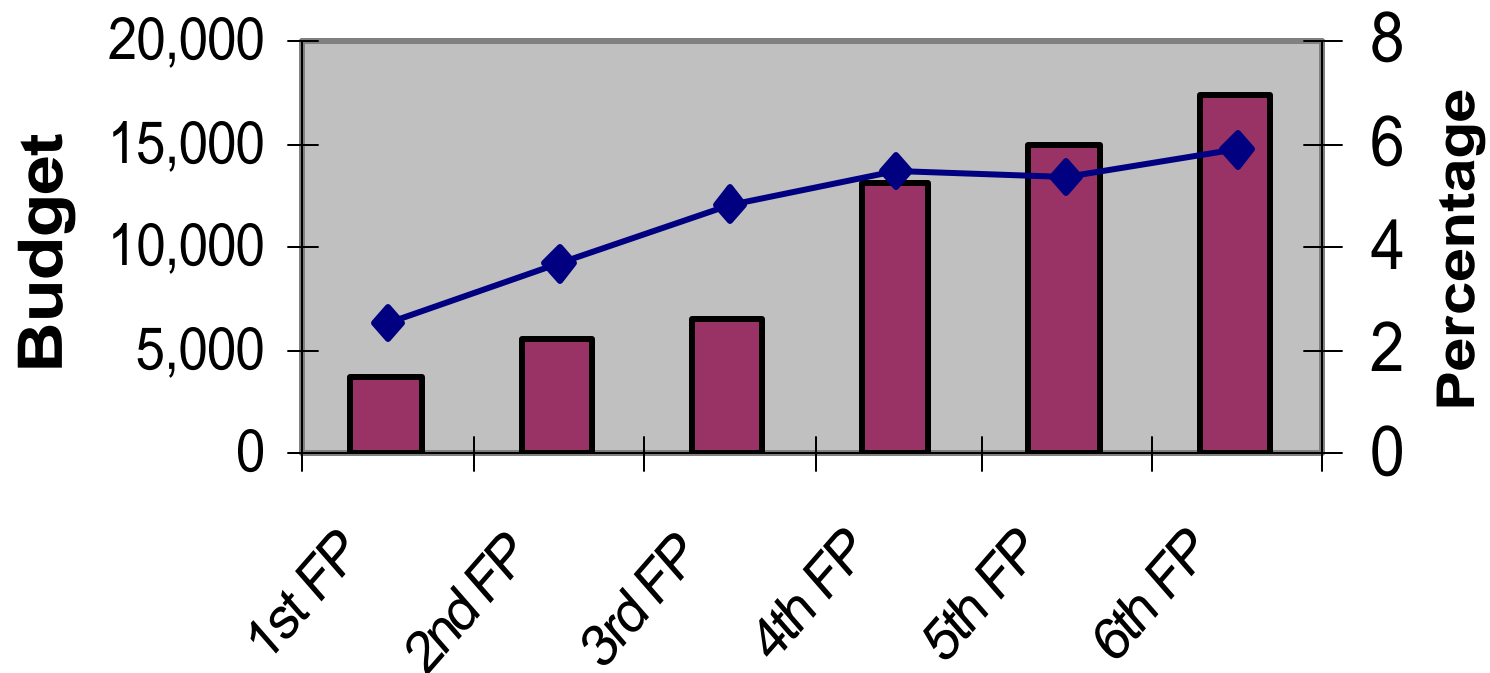
A limited number of objectives and areas combining industrial, technological, economic, social and cultural aspects.

Some major innovations

CHANGING PRIORITIES



FP Budget and Its % in EU Total Civil R&D Budget



■ Total Budget (Million Ecu) —◆— % EU Total Civil R&D Budget

Analysis of EU Framework Program's General Criticism (1)

Problem Definition

Our Problem Definition:

Even though Europe's educational and scientific research base is acknowledged to be of high quality,

EU has been failing to transform this strong scientific and technological potential into viable innovations, and hence into improved technological and economic *performance*.

>>>>Commercialization of Technology<<<<<<<<

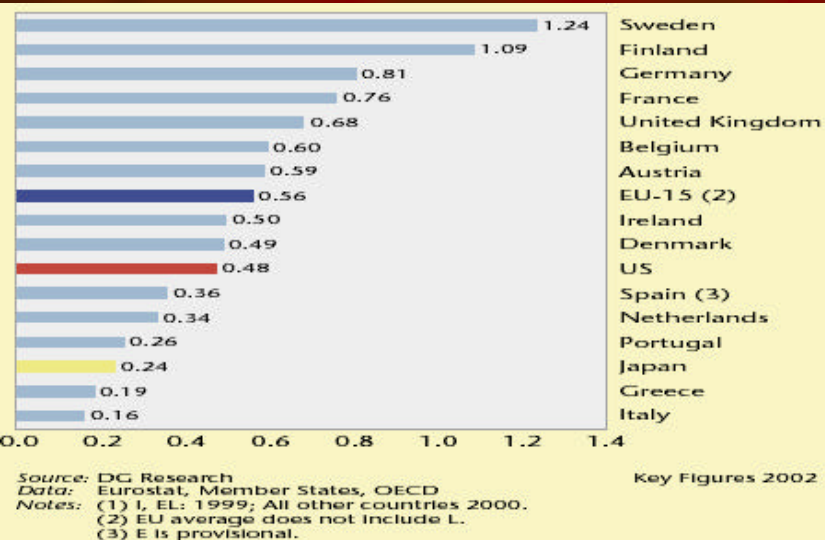
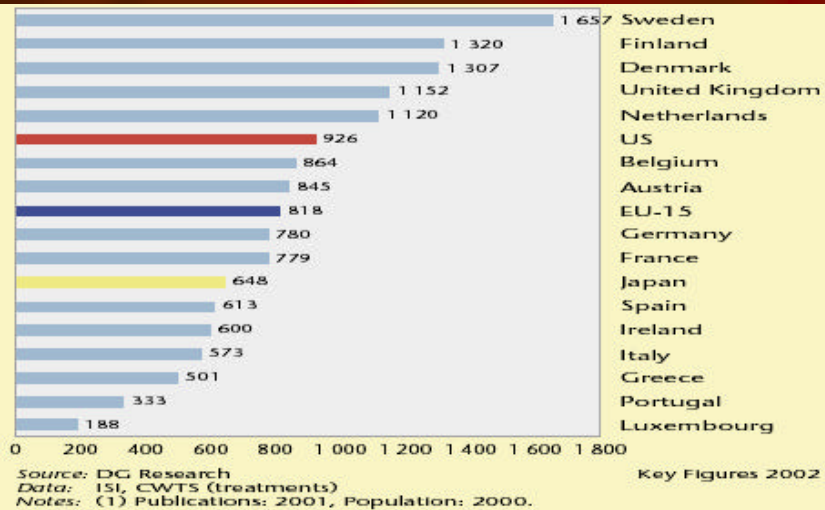
Framework Programmes have not done considerable contribution to the main problem stated above at all.

- Some tangible indicators supporting our problem
 - Scientific performance indicators
 - Technological performance indicators
 - Innovation performance indicators

Left: Scientific Perform. Indicators

Top: Number of scientific publications per million population

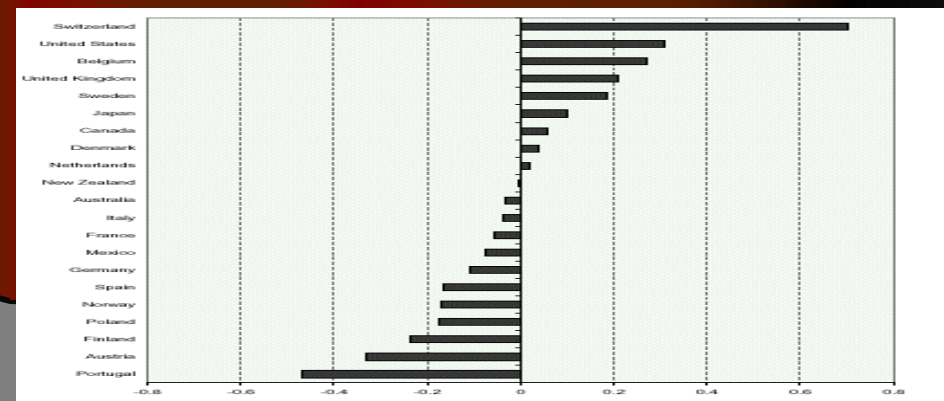
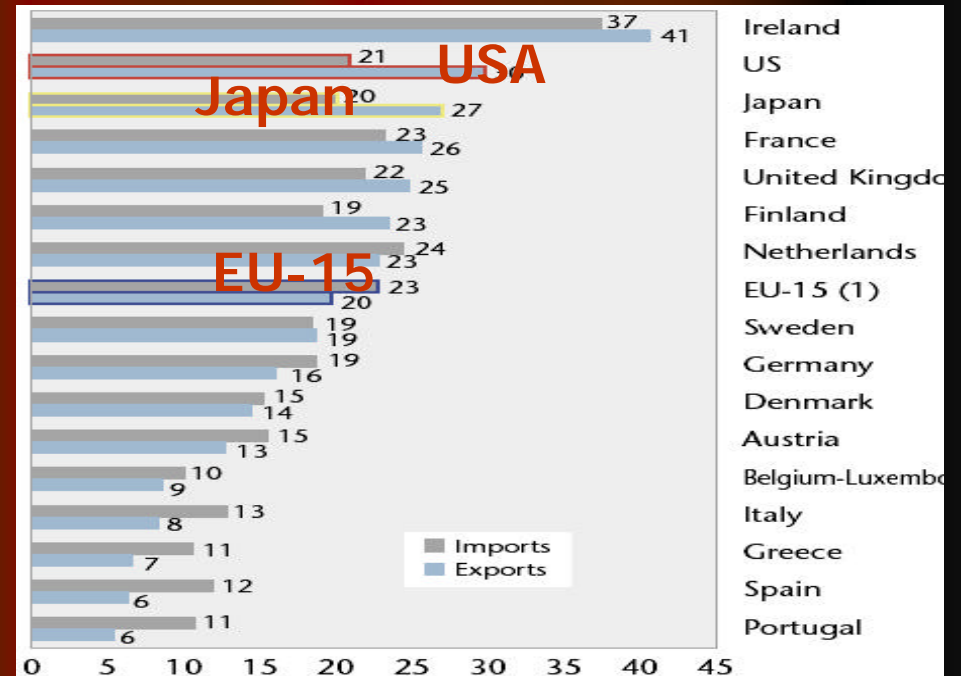
Bottom: New S&T PhDs per thousand population (aged 25-34)



Right: Innovation Perform Indicators

Top: High-tech Trade as a % of Total Trade

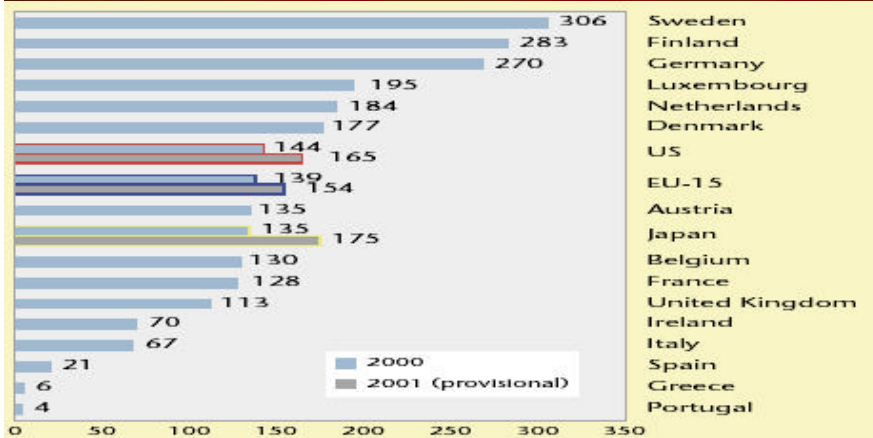
Bottom: Technology Balance of Payments as a % of GDP



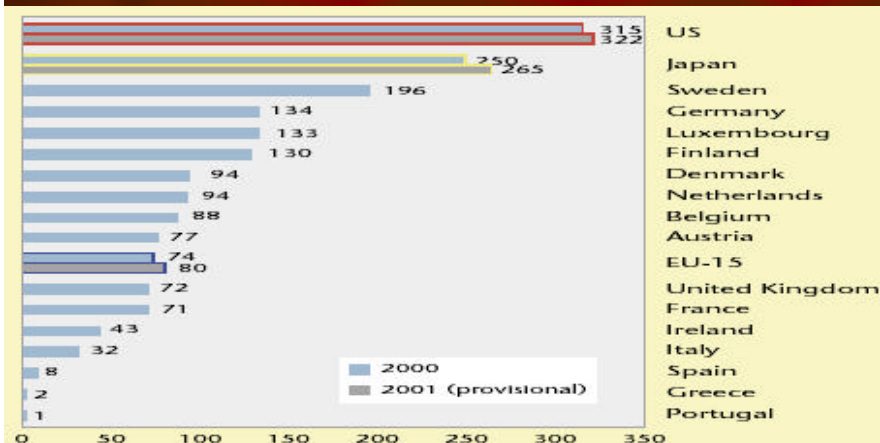
Technology Performance Indicators

Left Top: Number of Patents at European patent Office

Left Bottom: Number of Patents at US Patent Office



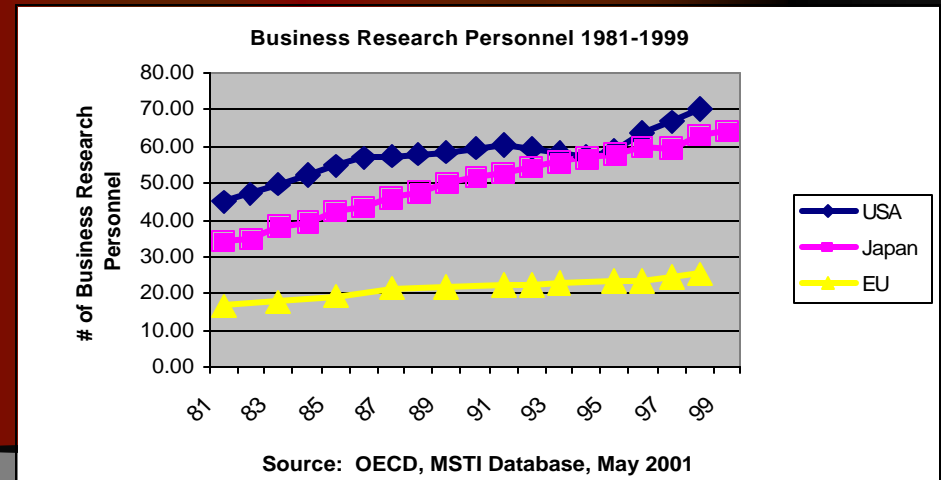
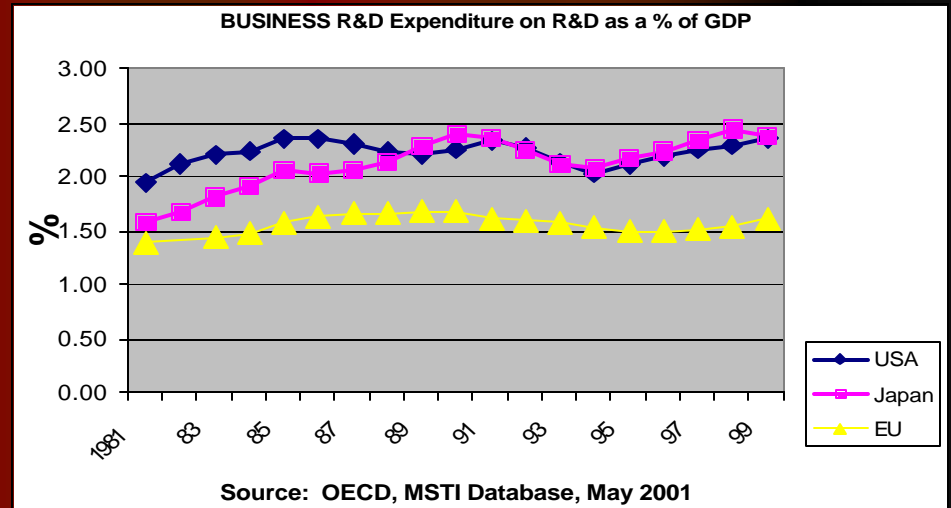
Source: DG Research
Data: EPO, OST (treatments & calculations)
Notes: (1) EU, JP, US: 2000 and 2001 (provisional). All other countries: 2000.



Source: DG Research
Data: USPTO, Fraunhofer-ISI (treatments & calculations)
Notes: (1) EU, JP, US: 2000 and 2001 (provisional). All other countries: 2000.

Right Top: Business R&D % in GDP

Right Bottom: Business R&D Personnel per 10 000 labor force



Analysis of EU Framework Program's General Criticism (4)

Criticisms--Critical Issues—ETM Matrix

- **Criticism A:**

The diffusion of project results and knowledge transfer are not at satisfactory level.

- **Critical Issues:**

- Marketing of Project Results
- Technology Diffusion
- Knowledge Transfer

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation						
Basic R.						
Applied R.						
Develop						
Design						
Impl.						
Market.		A1	A3		A2	A4

Analysis of EU Framework Program's General Criticism (5)

Criticisms--Critical Issues—ETM Matrix

- **Criticism B:**

Many projects did not take into account

i) the market needs and social considerations ii)
young researchers iii) SMEs

- **Critical Issues:**

- Evaluation and Selection of Projects
- Technology Push-Innovation Policy
- Management of Engineers and Scientists
- Unfair resource Allocation

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation	B2	B1		B3		B6
Basic R.		B4				
Applied R.		B5				
Develop.						
Design						
Impl.						
Market		Λ1	Λ2		Λ2	Λ4

Analysis of EU Framework Program's General Criticism (6)

Criticisms--Critical Issues—ETM Matrix

- **Criticism C:**

Insufficient progress in adapting the structures of the Community's economy to the changing technological, social and international environment

- **Critical Issues:**

- Management of Organizational Change

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation	B2	B1	C1	B3, C3		B6, C5
Basic R		B4				
Applied R.		B5				
Develop.						
Design						
Impl.			C2	C4		
Market.		A1	A3		A2	A4

Analysis of EU Framework Program's General Criticism (7)

Criticisms--Critical Issues—ETM Matrix

- **Criticism D:**
Subjectivity to some extent in project evaluation and selection process
- **Critical Issues:**
 - Evaluation and Selection of Projects
 - Dominance of research people as the chiefs of the different committees

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation	B2	B1	C1	B3, C3		B6,C5
Basic R.		B4				
Applied R.	D3	B5, D1				
Develop.						
Design						
Impl.	D2		C2	C4		
Market.		A1	A3		A2	A4

Analysis of EU Framework Program's General Criticism (8)

Criticisms--Critical Issues—ETM Matrix

- **Criticism E:**
Dispersed distribution of means & resources and unwarranted multiplication of objectives
- **Critical Issues:**
 - Ineffective Utilization of Resources
 - Low level of project selection ratio

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation	B2	B1	C1	B3, C3, E1		B6,C5, E4
Basic R.		B4		E2		
Applied R.	D3	B5, D1		E3		
Develop.						
Design						
Impl.	D2		C2	C4		
Market.		A1	A3		A2	A4

Analysis of EU Framework Program's General Criticism (9)

Criticisms--Critical Issues—ETM Matrix

- **Criticism F:**
Management Structure and Inefficiency: A slow, costly and inefficient process for enterprise and public laboratories
- **Critical Issues:**
 - Management of People (Commission Staff)
 - Management of organizational change

	People	Project	Org.	Resource	Tech.	Strategy Policy
Innovation	B2	B1	C1	B3, C3, E1		B6,C5,E4
Basic R.		B4		E2		
Applied R.	D3	B5, D1		E3		
Develop.						
Design			F1			F4
Impl.	D2, F3		C2, F2	C4		
Market.		A1	A3		A2	A4

6th Framework Programme(1)

Main components-

Integrating European research

7 thematic priorities
(biotechnologies, IT,
Nanotech,
Aeronautics, etc.)

Structuring the ERA

- Research and Innovation
- Human resources and mobility
- Research infrastructures
- Science and Society

Strengthening the Foundations of the ERA

- Co-ordination of research activities
- Development of research/innovation policies

Basic Principles

Concentration: on
selected priority
Research areas

Structuring effect :
Through a stronger
link with national
Regional and other
European
Initiatives

**Coordination
Simplification**

6th Framework Programme(2)

Structuring the ERA

4 categories of activities

1. Research and Innovation

(Foster innovative performance and to reflect the increasing appreciation of the economic and social importance of innovation)

- Integration between researcher and innovation in European innovation systems
- Give more flexibility in innovation's policy and environment
- Enhance and encourage the propensity to turn research into useful and commercial valuable innovations
- Promote SMEs
- Improve in analysis and better evaluation in selected projects

6th Framework Programme(3)

Structuring the ERA (cont'd)

4 categories of activities

2. Human resources and mobility

(Keep developing abundant and dynamic world-class human resources in the European research system, taking into account the inherent international dimension of research)

3. Research infrastructures

(Promoting the development of a fabric of research infrastructures of highest quality and performance)

- Keep good practice of building research infrastructure
- Transnational access to research infrastructure
- Provide high speed European communication infrastructure
- Work in preparation of the creation of European infrastructure

6th Framework Programme(4)

Structuring the ERA (cont'2)

4 categories of activities

4. Science/Society

(Developing structural links between institutions and activities in the scientific community and society at large)

- Improve synergy of scientific and society (Bringing the research closer to society advice, foresight etc.
- Responsible use of scientific and technological progress: risk, expertise, ethics etc.
- Promote young researcher to involve in scientific career

6th Framework Programme(5)

Strengthen the foundation of ERA

2 categories of activities

1. Co-ordination of research activities

- Encourage the collaboration in improving economic performance through the social and international environment
- Promote the coordination and cooperation in other European co-operation Framework programme

2. Development of research/innovation policies

- Develop and studies in various kind of technologies foresight and indicators
- Benchmarking
- Mapping of excellence
- Improve the regulatory and administrative environment (aim to give more flexibility)

6th Framework Programme(7)

3 new instruments

Networks of excellence
Integrated projects
Programmes implemented jointly

In priority thematic areas, the new instruments

- Will be used from the start of FP6
- As a priority means, while maintaining the use of specific targeted projects and co-ordination action
- Will be assessed in 2004

What are the main differences between FP6 and previous Programmes?

- Tradition actions (such as participation of SMEs)
- The main focus of the creation of European Research Area
- Management method and procedures have been simplified
- Priorities have been reduced
- New support instruments

Lessons Learned (1)

- Technology is NOT a technical matter. Therefore, it should NOT be strictly an engineering issue.
- Firms can NOT easily develop and manage technology by themselves because rapid changes and complexities of technology require significant collaborations among industry, academia and government.

Lessons Learned (2)

- Technical Expertise is a necessary but insufficient condition for technical management success
- If there is not a match between technological and market reality, the endless search for excellence can bleed the company.

Recommendations (1)

1. Become more flexible and responsive to changing circumstances

- Increase flexibility and remove obsolescence in administration and management
- Remove excessive regulations at the national or EU level
- Separate strategic and executive functions central
- Establish Management Information System (MIS)

	Leadership	Change Agent	Liasion	Disseminator
Planning				
Organizing	1	1	1	
Communicating				
Measuring				

Recommendations (2)

2. EU should establish more sophisticated understanding of the Innovation System which is required as a basis for policy

- **Shift towards innovation policy**
- **Improve collaboration**
 - clearer objectives-clearer authority and responsibility relationships
 - Remove the Impediments to knowledge transfer
- **Cultural issues**
 - understanding of importance of technology and innovation
 - Remove cultural misalignments
 - Increase the number of start-ups, spin-offs and entrepreneurs

	Leadership	Change Agent	Liasion	Disseminator
Planning	2	2	2	
Organizing	1	1	1	
Communicating	2	2	2	2
Measuring				

Recommendations (3)

3. Improve project evaluation and selection process

- Bring marketing input into R&D planning process
- Monitoring includes assessment of impacts.
- Align the objectives of the projects proposed by EU companies with those of EU framework programmes

	Leadership	Change Agent	Liasion	Disseminator
Planning	2, 3	2, 3	2	
Organizing	1	1	1	
Communicating	2	2	2	2
Measuring	3	3	3	

Conclusion

Macro
Level



Operational
Level



Micro
level

- EU is good at
 - Understanding long term economic development
 - Understanding how national science and technology infrastructures contribute to competitiveness
 - But NOT good at
 - effectively managing the engineering and research functions in business systems
 - integrating technology strategy into business strategy
- > EU is NOT good at Operational Level and micro level
- > EU has been managed by technology

The End

Questions!