

European Knowledge-Based Bio-Economy: Food, Agriculture and Biotechnology (Towards the 7th Framework Programme)

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EUROPEAN CONFERENCE on BIOREFINERY RESEARCH

19 and 20 October 2006

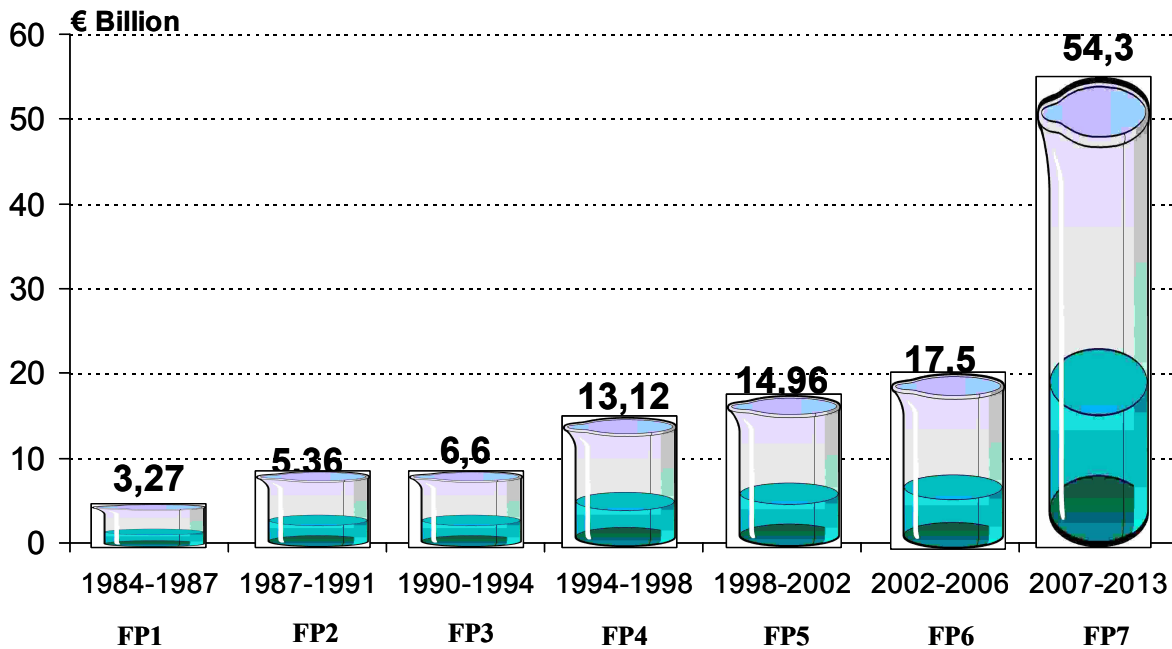
Helsinki – Marina Congress Center



*A major conference on biorefinery research organised
by the European Commission with the support of the Finnish Presidency*



Budgets of the EU Framework Programmes



Life Sciences and Biotechnology

A Strategy for Europe

COM(2002)27 - January 2002

Life sciences
and
biotechnology

A strategy
for Europe



EUROPEAN COMMISSION

How can Europe best attract the human, industrial and financial resources to develop and apply these technologies to meet society's needs and increase its competitiveness ?

How can Europe deliver effective, credible and responsible policies, which deliver the confidence and support of its citizens ?

How can Europe best respond to the global challenges, develop its domestic policies with a clear international perspective and act internationally to pursue its interests ?

Technology Platforms

Industry-Driven, Competitiveness - Focused

European Technology Platforms - Concept

Stakeholders, led by industry, get together to define a Strategic Research Agenda on a number of strategically important issues with high societal relevance where achieving Europe's future growth, competitiveness and sustainable objectives is dependent upon major research and technological advances in the medium to long term.

Technology Platforms in Food, Agriculture and Biotechnology

➤ **Plants for the Future**

www.epsoweb.org/Catalog/TP/index.htm

➤ **Innovative and Sustainable Use of Forest Resources**

www.forestplatform.org

➤ **Global Animal Health**

www.europa.eu.int/comm/research/agriculture/index_en.html

➤ **Animal Breeding**

www.fabretp.org

➤ **Food for Life**

<http://etp.ciaa.be/asp/home.asp>

➤ **Industrial Biotechnology (Sustainable Chemistry)**

www.suschem.org/

Proposed FP7 structure: Four Specific Programmes

Cooperation – Collaborative research

Ideas – Frontier research

People – Human Potential

Capacities – Research Capacity

In addition there will be a specific programme for the Joint Research Centre (non-nuclear activities) and one for Euratom (nuclear research and training activities)

Budget – Indicative and Not Final (in billion Euros)

Cooperation	→	32.3
Ideas	→	7.5
People	→	4.7
Capacities	→	4.3
Joint Research Centre	→	1.8
Euratom	→	4.1
TOTAL	→	54.3

Cooperation – Collaborative research

Collaborative research

(Collaborative projects; Networks of Excellence; Coordination/support actions)

Joint Technology Initiatives

Coordination of non-Community research programmes

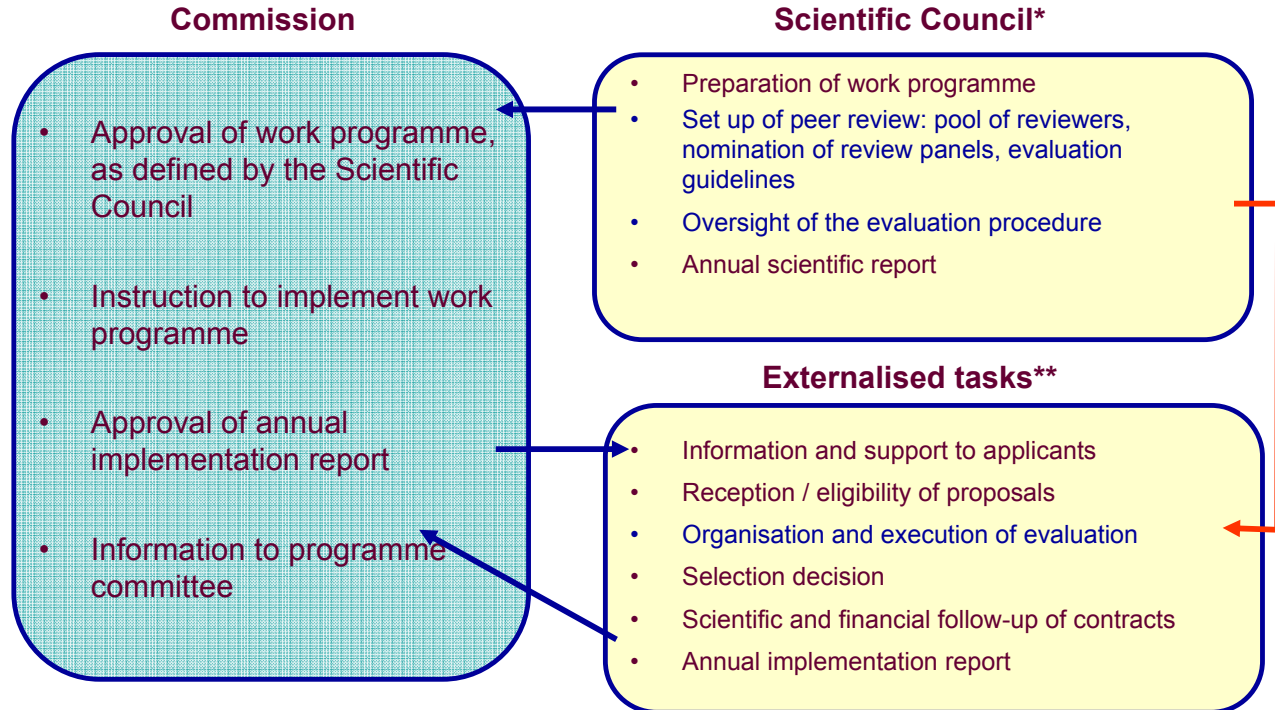
(ERA-NET; ERA-NET+; Article 169)

International Cooperation

- Under each theme there will be sufficient flexibility to address both ***Emerging needs*** and ***Unforeseen policy needs***
- Dissemination of knowledge and transfer of results will be supported in all thematic areas

Ideas – Frontier Research

ERC – European Research Council



* Created by Commission decision

** Under the responsibility of the Commission

People – Human Potential

Initial training of researchers

Marie Curie Networks

Life-long training and career development

Individual Fellowships

Co-financing of regional/national/international programmes

Industry-academia pathways and partnerships

Industry-Academia Scheme

International dimension

Outgoing International Fellowships; Incoming International Fellowships

International Cooperation Scheme; Reintegration grants

Specific actions

Excellence awards

Capacities – Research Capacity

1. Research Infrastructures

2. Research for the benefit of SMEs

3. Regions of Knowledge

4. Research Potential

5. Science in Society

6. Activities of International Cooperation

Cooperation



Themes

1. Health
2. Food, agriculture and biotechnology (1 935 M€)
3. Information and communication technologies
4. Nanosciences, nanotechnologies, materials and new production technologies
5. Energy (2 265 M€)
6. Environment (including climate change)
7. Transport (including aeronautics)
8. Socio-economic sciences and the humanities
9. Security and space

FP7 Theme

«Food, Agriculture and Biotechnology»

Three activities

- 1) Sustainable production and management of biological resources from land, forest, and aquatic environments**
- 2) “Fork to farm”: Food, health and well being**
- 3) Life sciences and biotechnology for sustainable non-food products and processes**

Activity 1:

Sustainable biological resources from land, forest, and aquatic environments

- Enabling research ('omics', converging technologies, biodiversity) for micro-organism, plants and animals
- Improved crops and production systems incl. organic farming
- Sustainable, competitive and multifunctional agriculture, forestry and rural development
- Animal welfare, breeding and production
- Infectious diseases in animals, including zoonoses
- Policy tools for agriculture and rural development



Activity 2: “Fork to farm”- Food, health and well being

- Consumer, societal, industrial and health aspects of food and feed
- Nutrition, diet related diseases and disorders
- Innovative food and feed processing
- Improved quality and safety of food, beverage and feed
- Total food chain concept
- Traceability



Activity 3:

Life sciences and biotechnology for sustainable non-food products and processes

- Improved crops, feed-stocks, marine products and biomass for energy, environment, and high added value industrial products; novel farming systems
- Bio-catalysis; new bio-refinery concepts
- Forestry and forest based products and processes
- Environmental remediation and cleaner processing



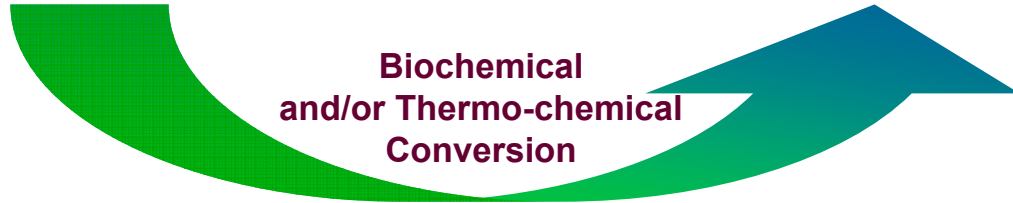
Possible topics in the area of Biorefinery to be considered in the first call FP7

- **Development of new tools and processes to support R&D in crop plants: molecular breeding**
- **Genomics for cereal improvement for food and non-food us**
- **Novel forest tree breeding**
- **PLANT CELL WALLS - Understanding Plant Cell Walls for optimizing Biomass potential**
- **ENERGY PLANTS - Novel plants for energy production**
- **GREEN OIL - Plants providing oils of the future**
- **FOREST PRODUCTS - New forest based products and processes**
- **BIOPOLYMERS - Biological Polymers from plants**
- **FUTURE CROPS - Technical, socio-economic, geographic and regulatory aspects of future non-food crop systems in particular related to co-existence and safety of agri-food chains**
- **BIOMASS SUPPLY - Identification of optimal terrestrial and aquatic biomass and waste for Bioproducts**

Biorefineries

Wood, Crops, Grasses
Forestry or Agricultural Residues
Animal or Municipal Waste

Heat, Electricity, Fuels
Chemicals
Materials
Food, Feed, Fibre



**will be supported in two FP7 Themes:
Food, agriculture and bio-technology and Energy**

The Bio-Economy

The term “bio-economy” includes all industries and economic sectors that produce, manage and otherwise exploit biological resources (e.g. agriculture, food, forestry, fisheries and other bio-based industries);

The European bio-economy has an approximate market size of over €1.5 trillion, employing more than 22 million people

Sector	Annual turn-over (billion €)	Employment (million)	Data source
Food	800	4.1	CIAA
Agriculture	210	15	COPA-COGECA
Paper/Pulp	400	0.3 direct (4 ind.)	CEPI
Forestry/Wood ind.	150	2.7	CEI-BOIS
Industrial Biotech.	50 (est.)		McKinsey*
Total	1610	22.1	

* estimated to be around €100-160 million by 2010

THE EUROPEAN KNOWLEDGE-BASED BIOECONOMY

NUTRITION (nutrigenomics) - PATHOGENS
CONTAMINANTS - ALLERGENS

CONSUMER CHOICE

STABILITY - BIODEGRADABILITY
FUNCTIONALITY (Chirality)



TRACEABILITY SYSTEMS
ADVANCED FOOD TECHNOLOGIES

PROCESSING

WHITE BIOTECH
CLEAN BIOPROCESSES
RAW MATERIALS/WASTE

LOW INPUT FARMING - BIODIVERSITY
ANIMAL HEALTH - RURAL DEVT.

PRODUCTION

GREEN / BLUE BIOTECH
OPTIMISED RAW MATERIALS

SUSTAINABLE MANAGEMENT OF BIOLOGICAL RESOURCES



(LAND, FOREST, MARINE)

