

**Presidency compromise proposal on the Framework Programme  
LEADERSHIP IN ENABLING AND INDUSTRIAL TECHNOLOGIES**

**1.4. Key Enabling Technologies – Biotechnology**

**Specific objective for biotechnology**

The specific objective of biotechnology research and innovation is to develop competitive, sustainable, safe and innovative industrial products and processes and contribute as an innovation driver in a number of European sectors, like agriculture, forestry, food, energy, chemical and health as well as the knowledge-based bio-economy.

A strong scientific, technological and innovation base in biotechnology, will support European industries securing leadership in this key enabling technology. This position will be further strengthened by integrating the **health and safety assessment**, **the economic and environmental impact of use of the technology and the management aspects of the overall and specific risks** in the deployment of biotechnology.

**Rationale and Union added value**

Powered by the expansion of the knowledge of living systems, biotechnology is set to deliver a stream of new applications and to strengthen the Union's industrial base and its innovation capacity. Examples of the rising importance of biotechnology are in industrial applications including **biopharmaceuticals, food and feed production and bio-chemicals**, of which the market share of **the latter** is estimated to increase by up to 12 %-20 % of chemical production by 2015. A number of the so-called twelve rules of *Green Chemistry* are also addressed by biotechnology, due to the selectivity and efficiency of bio-systems. The possible economic burdens for Union enterprises can be reduced by harnessing the potential of biotechnology processes and bio-based products to reduce CO<sub>2</sub> emissions, estimated to range from between 1 to 2.5 billion tons CO<sub>2</sub> equivalent per year by 2030.

In Europe's biopharmaceutical sector, already some 20 % of the current medicines are derived from biotechnology, with up to 50 % of new medicines. **Biotechnology will play a major role in the transition towards a bio-based economy by developing new industrial processes.** ~~Cutting edge technologies such as synthetic biology hold promise for sustainable and carbon neutral fuels, production of fine chemicals including pharmaceuticals, environment friendly production methods, new health applications and bionanomaterials.~~ Biotechnology also opens new avenues for **the development of a sustainable agriculture, aquaculture and forestry and for exploiting the huge potential of marine resources for producing innovative industrial, health, energy, chemical and environmental applications.** The emerging sector of marine (blue) biotechnology has been predicted to grow by 10 % a year.

Other key sources of innovation are at the interface between biotechnology and other enabling and converging technologies, in particular nanotechnologies and ICT, with applications such as sensing and diagnosing.

## **Broad lines of the activities**

### *1.4.1. Boosting sustainable cutting-edge biotechnologies as a future innovation driver*

Development of emerging technology areas such as synthetic biology, bioinformatics and systems biology, which hold great promise for innovative products and technologies and completely novel applications.

### *1.4.2. Biotechnology-based industrial products and processes*

Developing industrial biotechnology and industrial scale bio-process design for competitive industrial products and sustainable processes (e.g. chemical, health, mining, energy, pulp and paper, fiber-based products and wood, textile, starch, food processing) and its environmental and health dimensions, including clean up operations.

### *1.4.3. Innovative and competitive platform technologies*

Development of platform technologies (e.g. genomics, meta-genomics, proteomics, metabolomics, molecular tools, expression systems, phenotyping platforms and cell-based platforms) to enhance leadership and competitive advantage in a wide number of economic sectors having economic impact.