

## Launch of the European Technology Platform Strategic Research Agenda “Plants for the Future”

### "Plants for the Future - 'BioEnergy'"

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It is now widely acknowledged and has become an inevitable fact that there is a strong need for an intensification of the use and impact of bio-mass to maintain a high and healthy lifestyle in a sound environment.

To reach these goals, the range of industrially used plant varieties must be enlarged, better adapted to regional environmental needs and optimized in input/output ratios.

To fulfill the most important and urgent research needs, five strategic challenges and goals have been identified and defined:

- Healthy, safe and sufficient food and feed
- Plant based products: Chemicals and BioEnergy
- Sustainable agriculture, forestry, and landscape
- Vibrant and competitive basic research
- Competitiveness, consumer choice and governance

In the following the research needs on “BioEnergy” will be outlined:

Most renewable energies including those based on water, wind or sun are contributing to meet essentially electric energy demands. **BioEnergy** from renewable resources, however, is a staple energy with the potential to be used on demand in all major energy consumption areas such as:

- Heating
- Electricity
- Transportation and
- Process energy

To enable the future replacement of non-renewable combustibles in these applications, the use of plants must be extended for which they must be optimized.

The usage of dry bio-mass like wood and straw for heating purposes and process energy including electrical energy is a growing market. For transportation purposes, however, liquid or gaseous combustibles have to be provided. This can only be achieved by converting bio-mass to liquid or gaseous fuels and optimizing the whole chain from the fields up to the fuel deliveries and finally vehicles and other engines.

In order to meet the future challenges, an optimization in greenhouse gas emissions, optimized energy input to output ratio and a high supply security are of greatest importance. Whereas the energy needed to convert bio-mass into bio-fuels has been dramatically reduced in the past decades through improved technologies, the input/output ratio for the plants as such has still to become more productive. This is one of the most challenging topics of “**Plants for the Future**”.

It implies that

- a wide range of stress tolerant plants
- with high growth yields
- and less fertilizer demands

have to be developed and further optimized.

Bio-fuel production requires "only" the "carbon" from photosynthetic CO<sub>2</sub> fixation. The remainder bio-mass including fixed fertilizer such as potassium, nitrogen and phosphate - can be recycled, e. g. for further plant growth allowing an agricultural energy production based essentially on self-recycling.

To make optimum use of BioEnergy, the discussion about "bio-diesel or bio-ethanol" versus so-called second generation bio-fuels like "BtL" is secondary. The major challenge for the future is the usage of many different resources to as many purposes as possible and in an ecologically compliant production. A broad range of different plants with optimized input/output ratios to efficiently provide energy for all need and in particular transportation is a strong and challenging research demand.

However, to reach these goals all stakeholders like different entrepreneurs, industries, scientists from various research areas, politicians and others have to contribute.

In that sense a new opportunity can be generated by the European Institute for Technology (EIT). First plans on Knowledge and Innovation Communities in the Field of Bio-economy are developed that aim for a new integrated approach including trans-disciplinary research and industry as well as education of a new generation of young scientists trained in all related areas including economics and entrepreneurship.

I am convinced that the development of the knowledge-based bio-economy – involving a global industry based on renewable plant resources as an alternative to the current fossil fuel based industry – constitutes by far the most challenging and promising opportunity in terms of economic, environmental and societal potential.

**"Plants for the Future"** will pave the way for this future.