

## Press Release

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### EU-India Strategic Research Agenda on Biomass and Bio-waste Published

The recently published EU-India Strategic Research Agenda (SRA) compiles a shared vision for the EU and India on the latest developments in the bio-based economy, and the research needs in this context. Based on a thorough assessment of the availability of biomass and bio-waste resources, and existing research projects and programmes in both India and Europe, this important document defines specific needs, scientific expertise, research tools required, and the size of demonstration and pilot plants necessary, in order to pave the way towards a future sustainable bio-based economy.

The SRA was elaborated within the SAHYOG project, in close cooperation with representatives from leading research organisations and energy agencies from both India and Europe. Policy makers and industry leaders from both continents were also consulted through several stakeholder workshops. A recommendation survey was set-up and addressed to potential stakeholders. The conclusion from this survey allowed to refine the recommendations of the SRA and to design a roadmap for EU-India collaboration on research and development in the next years.

The SRA follows the whole value chain, from (a) biomass production to (b) conversion into bio-refineries and (c) utilisation in markets. For each part of the value chain the present status and strategic research needs for efficient collaboration between Europe and India in the specific domains are described. This work has resulted in a set of comprehensive research recommendations for the bio-based economy and further cooperation between India and Europe. These research recommendations address the areas of biomass and bio-waste resources, their conversion technologies, and bio-refinery systems, as well as markets, products and policies.

With respect to **biomass and bio-waste resources** significant differences were identified between India and Europe. While the dominant resource in Europe is biomass from forestry, followed by domestic and industrial organic waste, sewage, and cereal residues, in India the most abundant and available feedstock are domestic and industrial organic and bio-degradable waste fractions, and cereal residues; this is due to India's important agricultural sector. Priority research areas for EU-India cooperation include the development of uniform biomass resource databases, low input and intensified (biomass) production, harvesting and logistics (of residues), waste collection, separation and treatment, as well as sustainable algae production systems.

Research priorities in the area of **conversion technologies and bio-refinery systems** identified for both India and Europe include lignocellulosic bio-refineries, anaerobic digestion, and the demonstration of bio-refinery concepts. Specific research activities of common interest include the development of enzymes, micro-organisms, and processing equipment, efficiency improvements for anaerobic digestion and thermal conversion by gasification and pyrolysis, as well as the development of full bio-based value chains for energy and chemicals production.

With respect to **markets, products and policies** it was found that in India food security (excluding the use of food crops for energy production) and energy production from biomass resources are of the highest priority number. In Europe, on the other hand, stronger emphasis is placed on the development of new markets (e.g. for bio-based chemicals), within a bio-based economy.

Both continents do acknowledge the need for increased valorisation of biomass and bio-waste resources and an integrated bio-refinery approach in the future. Joint EU-India activities in this field include the development of a common political framework, stimulating a global bio-based economy, the elaboration of standards for performance criteria of bio-based products, as well as well-targeted public awareness programmes and training and education initiatives for researchers and engineers. It is clear that by using the specific strengths from both Europe and India, it is possible to carry out more effective and efficient research, and thereby enhance the bio-based economy as a whole.

The SAHYOG Strategic Research Agenda is available at:

[www.sahyog-europa-india.eu/rtd-roadmaps-a-sra/](http://www.sahyog-europa-india.eu/rtd-roadmaps-a-sra/)

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SAHYOG was launched in December 2011 supported by the European Commission in the 7th Framework Programme and by the Department of Biotechnology (DBT) of the Indian Ministry of Science and Technology. The SAHYOG partnership comprises 13 partners from Europe and India. The partners of SAHYOG are ENEA (Italy, Coordinator), TERI (India, Coordinator), ARTI (India), CSIR (India), DLR (Germany), GP Pant University (India), Jawaharlal Nehru University (India), NTUA (Greece), Netherlands Enterprise Agency (The Netherlands), Tezpur University (India), VITO (Belgium), Wageningen University (The Netherlands), and WIP (Germany). The main objective of SAHYOG was to bring together leading organisations in the field of biomass production and bio-waste conversion research carried out within EU research programmes and related programmes by Indian national institutions.

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