



Holistic processes and practices for clean energy in strengthening bioeconomic strategies (INDO-NORDEN)

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We are proud to introduce the project, INDO-NORDEN, funded in response to the Science and Technology call of the INNO INDIGO Partnership Program (IPP) on Biobased Energy. The project is scheduled to begin from April 2017. The proposed project aims to address both subtopics of the call, Biofuels and From Waste to Energy with research partners from Finland (coordinating unit), India and Estonia. The EU and India share common objectives in enhancing energy security, promoting energy efficiency and energy safety, and the pursuit of sustainable development of clean and renewable energy source. The main objective of INDO-NORDEN is to investigate, evaluate and develop efficient processes and land use practices of transforming forest and agricultural biomass, agricultural residues and farm waste into clean fuels (solid, liquid or gas), by thermochemical or biochemical conversions.

Forestry and agriculture are the major bioenergy sectors in Finland. Intensive forest harvesting techniques are being used in Finland to enhance the share of bioenergy in the total energy consumption in the future. However, there are no clear indications how environmentally safe are these intensive forestry practices in Finland. We address this issue through field studies addressing the climate impacts on the ecosystem carbon balance and detailed life cycle assessment. The role of agriculture in Finland is expected to grow significantly in the years to come. Here, we follow a holistic field experimental approach addressing several major issues relevant to Nordic agriculture under changing climatic conditions – soil nutrient management, recycling of nutrients, farm and agricultural waste management, biogas production potentials, greenhouse gas inventorying and entire production chain analysis. There is a considerable potential for process integration in the biofuel sector. This project plans to develop biofuel production processes adopted in Estonia and India with a major aim of enhancing biofuel yields. Additionally, the effects of biomass raw material on ash characteristics and behavior as well as on the fine particle and gas emissions in biomass-fired combustion plants will be evaluated. Thus, the project goes an extra mile in addressing both technological and environmental effects of bioenergy production with combustion processes. Finally, with a voluntary participation of companies with excellent track record in biogas production and CHP technology in participating countries, the project aims to bridge the gap between science, technology and industries.