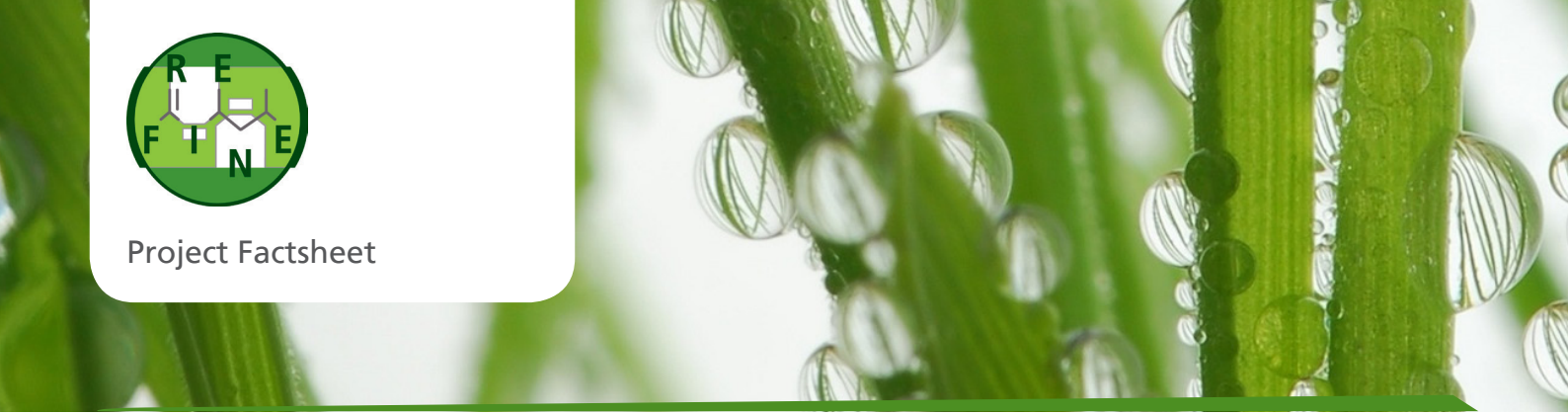


Project Factsheet

REFINE

REnewable FunctIoNal matErial – Training material scientists for a sustainable polymer industry

Background

The materials industry in Europe is traditionally reliant on petrochemically derived raw materials. However, recent developments in the USA show the first steps to a shift towards greener and more sustainable technologies, for example polymers derived from natural resources (bioplastics) and/or green biotechnological routes such as the fermentative synthesis of 1.3-propane diol for polyesters and lactide (NatureWorks) for poly(lactides).

Under economic, legislative and market pressure many sustainability projects within the globally important chemical industry have been initiated. However, sustainability investment in the economically key sectors of new materials and polymer/plastics industry is lagging behind. To significantly progress in sustainable polymers and materials development we need to adopt a very different approach compared to other chemical industries.

Biotechnology is seen as one of the most potent enablers for the shift from petrochemical to a sustainable chemical industry but is largely underutilised in polymer/materials science. However, in each process, the application of green technologies to each of the individual elements, synthesis, building blocks, raw materials and processing, must be investigated independently and then combined in a coherent green approach. New opportunities need to be assessed in combination with specific application tests and socio-economic process analyses.

Objectives

Our overall objective of the REFINE network is to develop new sustainable materials and methodologies, and trained researchers with multidisciplinary thinking, planning and the drive to tackle the challenging demands for a leading European polymer/materials industry. More particularly, REFINE will:

- Educate a new generation of materials researchers, who are aware of the environmental impact of their work and can apply the tools of sustainability in their future positions
- Develop sustainable routes to functional materials (green routes) for various polymer applications.

REFINE aims thus at improving scientific integration of European countries and the development of breakthrough technologies and human resources capable of leading Europe into a challenging technological future.

Funding Programme:

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement N°289253.

Project Duration:

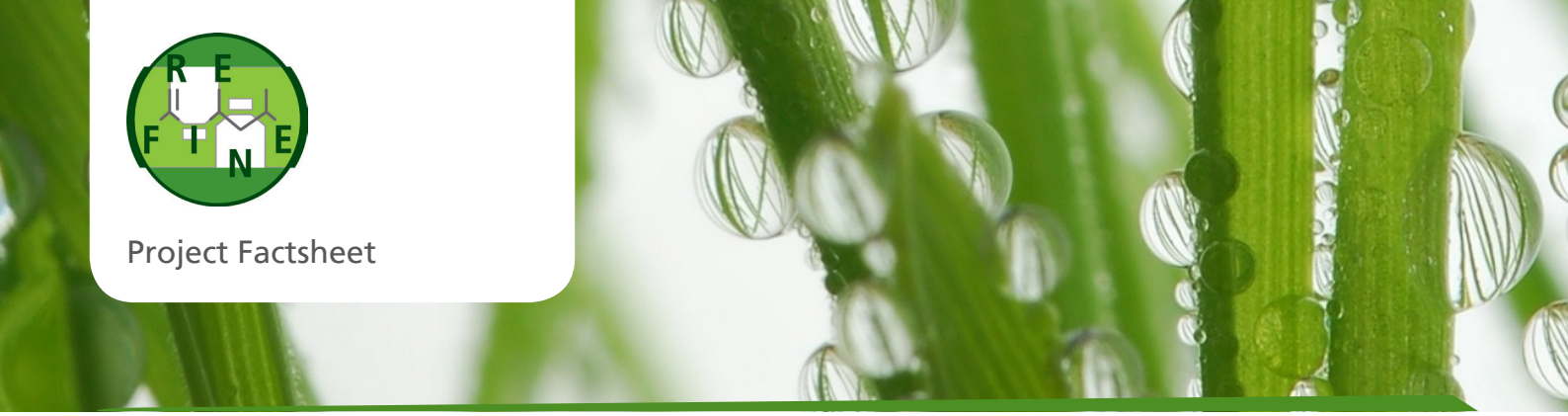
01/01/2012 – 31/12/2015

Project Budget:

4.2 million euro

Project Website:

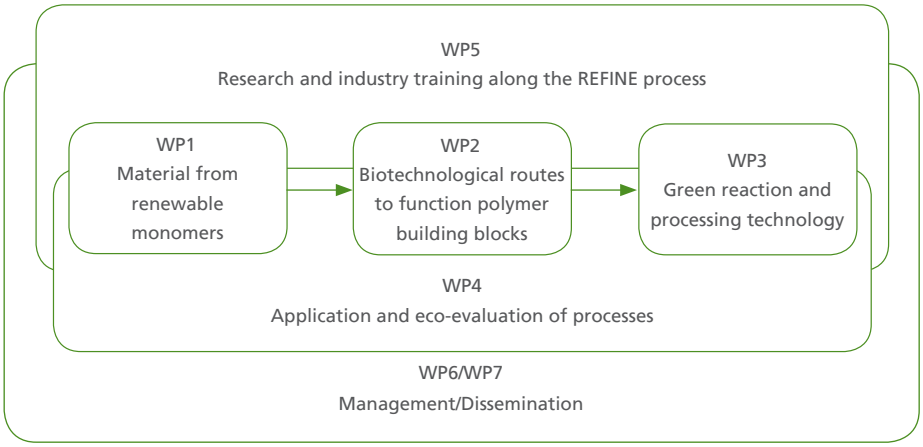
www.fp7-refine.eu



Project Factsheet

Activities

The REFINE project covers the entire chain of knowledge in materials production: raw materials, polymer synthesis, material processing, and applications involving ecological and technical validation by the industry partners.



In an integrated approach the REFINE research and training will be combined with the exploration of routes to commercialisation by the industrial partners, academic organisations like the European Polymer Federation (EPF) and Public-Private-Partnerships like the multinational Dutch Polymer Institute (DPI)

Impact

The chemicals, plastics and rubber industries are among the largest and most dynamic industrial sectors in Europe. Together, they provide about 3.2 million jobs in more than 60,000 companies. The European plastics industry alone generated a total turnover of 300 billion euro in 2008, and Europe accounts for around 25% of global plastic production. The REFINE network will:

- Develop a green technology that can directly be validated and integrated by these industries.
- Train a new generation of materials researchers with the clear goal to strengthen their employability in the bioplastic industry with a predicted growth of >25% by 2020.

REFINE will thus lead towards a greener and more sustainable society.

Project coordinator:

Dr Andreas Heise,
Dublin City University, IE

Project participants:

- Croda International Plc, UK
- DSM Ahead BV, NL
- Swiss Federal Laboratories for Materials Testing and Research, CH
- EPEA Internationale Umweltforschung GmbH, DE
- KTH Royal Institute of Technology, SE
- SPRIN S.p.A., IT
- Eindhoven University of Technology, NL
- University of Natural Resources and Life Sciences, AT
- University of Nottingham, UK