



Grant Agreement Number 241535

Star-COLIBRI

Strategic Targets for 2020 – Collaboration Initiative on Biorefineries

Final Publishable Executive Summary

Start date of project: 01/11/2009

Duration: 24 months

Project coordinator name:

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Project coordinator organisation name:

CEI-Bois, European Confederation of Woodworking Industries

Motivation of the Project

Simply put, a biorefinery is a facility that integrates biomass conversion processes and equipment to simultaneously make at least two products such as fuel, power, materials, fibres, food, feed and value-added chemicals. In different forms (e.g. beer and wine making, starch production, pulp and paper) biorefineries have existed for a significant time. However, as a sustainable alternative to the petroleum-based refineries of today, the biorefinery concept requires new perspectives and innovation through research, development, demonstrators and full-scale exploitation.

Flexible and multiproduct/multipurpose biorefineries will play a key role in fulfilling the European policy goals related to creating the bioeconomy, renewable energy, sustainability and industrial leadership. The benefit of flexible (i.e. integrated) biorefinery concepts is the optimised use of biomass and diversified product range.

The multidisciplinary nature of research and innovation related to biorefineries requires a coordinated multidisciplinary approach. Cooperation across research areas and traditional sector borders is more complex than cooperation within a specific research area or value-chain. The concept of biorefineries could therefore greatly benefit from a concerted effort aimed at making research in the field more efficient by promoting information exchange and cross fertilisation of ideas.

The Coordination and Support Action Star-COLIBRI was funded by the European Commission under the 7th Research Framework Programme.

The project consortium and project plan was formed to help Europe utilise the results of cooperative research more efficiently and to identify actions of particular importance for such as balancing market demand and raw material supply. Its aim was to offer advice on future research investments, and to propose a joint European research road map pointing out the opportunities as well as create awareness of shared interests.

Project consortium

Project Beneficiaries	Short name
European Confederation of Woodworking Industries	CEI-Bois
Plants for the Future ETP represented by European Plant Science Organisation	EPSO
Sustainable Chemistry ETP represented by EuropaBio	EBio
Biofuels ETP represented by Fachagentur Nachwachsende Rohstoffe e.V.	FNR
Agricultural Engineering and Technologies MANUFUTURE sub-platform represented by Technische Universitaet Dresden	TUD
University of York	UoY
Technical Research Centre of Finland, VTT	VTT
Association Industries et Agro-Ressources	IAR
Stichting Dienst Landbouwkundig Onderzoek, Wageningen University	DLO
German Biomass Research Centre	DBFZ
Forest-Based Sector ETP	FTP

The project management team consisted of the five Work-Package Leaders*:

WP1 –European Confederation of Woodworking Industries (CEI-Bois)

WP2 –University of York (UoY)

WP3 –Association « Industries et Agro-ressources » (IAR)

WP4 –The Biofuels ETP (FNR)

WP5 –The Sustainable Chemistry ETP (EBio)

(*Plants for the Future and AET Manufuture ETPs participated in the management team to ensure representation of all involved sectors)

The Participation of five European Technology Platforms (ETPs) has guaranteed that the conclusions are as representative and relevant as possible for the fragmented European biorefinery area. ETP stakeholders were engaged in several public consultations as well as trusted with supplying information and advice.

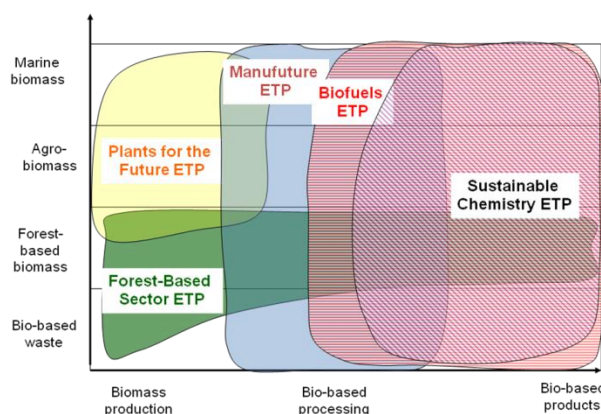


Figure 1: Value-chain and biomass coverage of Star-COLIBRI ETPs

An *External Reference Group* consisting of 15 experts from industry, the research community, and civil society fulfilled an important advisory role during the work on the key deliverables.

Project Objectives

In the Description of Work, the objectives and sub-objectives of Star-COLIBRI were formulated as follows:

1. To facilitate information exchange, overcome fragmentation and promote cross-fertilization in the area of biorefineries research

- 1.1 To provide an IT-platform that facilitates information handling and to collect and exchange information between all relevant biorefinery stakeholders
- 1.2 Identify large and small high-impact R&D projects of actual relevance in the area of biorefineries
- 1.3 Identify gaps and overlaps in on-going research efforts to make way for a better use of resources

2. To support innovations by speeding up and facilitating industrial exploitation of research results in the biorefinery field

- 2.1 Create critical mass and synergy by initiating and supporting transparent collaborations between on-going biorefinery R&D projects (StarClusters)
- 2.2 Contribute to the development of European and national policy initiatives, including legislation, standardisation, labelling and certification
- 2.3 Create awareness of new research results and technologies and thereby facilitate the exploitation by European industry

3. To promote coordination in the field of future R&D funding and facilitate the creation of Public-Private Partnerships in the area of biorefineries

- 3.1 Enable collaboration between established trans-national research programmes
- 3.2 Produce a Vision 2030 Document and a Strategic Research Roadmap for Biorefineries 2020
- 3.3 To facilitate the creation of European Public-Private Partnership Initiatives as a form of intensified European cooperation

Main exploitable results

The Star-COLIBRI project managed to reach all set objectives. It looks set to become the seed for a strengthened European collaboration with the required critical mass to significantly speed up the development of the biorefinery concept. The most promising results for future exploitation are described below.

1. The Star-COLIBRI Biorefinery Portal (www.star-colibri.net)

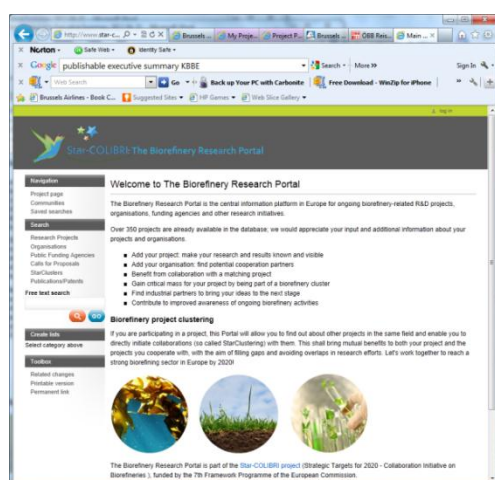


Figure 2: www.star-colibri.net

Having one central information portal accessible on the web is useful for industry, researchers and policy makers alike. It allows for statistical analysis as well as finding detailed information about on-going research and innovation activities in the area of biorefineries. The user interface is flexible and makes information about biorefineries available to the general public and anyone who requests access to sign in is able to add and edit information.

The mapping of new projects and the completion of the already existing project data continued throughout the Star-COLIBRI project. Major improvements into the project data was made during Task 3.2.

By the end of April 2010, a total of 300 on-going biorefinery and biorefinery-related research projects had been identified and the information collected also included companies, research organisations and public funding agencies.

The Star-COLIBRI Biorefinery Portal can be used to:

- Identify gaps and overlaps in the activities of the research projects
- Make it easier for research initiatives to collaborate
- Identify “winner projects”
- Analyse macro parameters such as the level of public funding and geographical distribution of research efforts for a certain activity

Both the portal software and the information it contains have received attention and it will be the starting point for mapping activities in coming EU projects, such as SAHYOG.

2. Establishing a model for collaboration between on-going research projects

In order to enable win-win collaborations between research projects, the Star-COLIBRI project developed and tested a new and innovative project clustering strategy. Although several challenges have to be overcome and the strategy should be further improved, it sets a suitable framework for the establishment of cross-project collaborations.

The conclusions have been summarised in **deliverable 4.3** “*Guidelines on the best practice of establishing and managing a StarCluster*” and in **D3.1** “*Definition of success criteria for Star-, & Comet projects and StarClusters*” and **D3.2** which describes a suitable selection procedure.

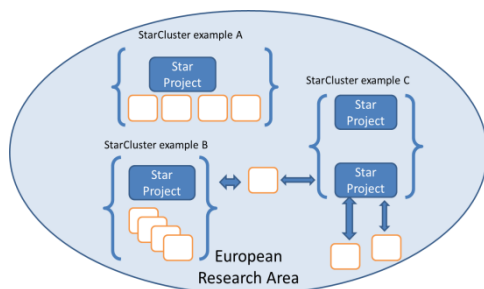


Figure 3: Identify high-impact projects and build new collaborations

The selection process requires publicly available information about ongoing research projects (i.e. the information collected in the Star-COLIBRI portal) and identify projects with a potential impact on a European scale (the Star projects).

The second step is to identify ‘smaller’ projects with complementary work plans and objectives that could benefit from external cooperation while at the same time facilitating the success of the Star project.

By acting as broker and enabler, Star-COLIBRI aimed to establish a mutually beneficial collaboration and information exchange between identified projects.

Around 9 potential Star-projects and several potential Comet projects were contacted by Star-COLIBRI. In one case Star-COLIBRI was able to develop a StarCluster encompassing five partners. The StarCluster is called Bio4Flow and the Star project is called Bio4Energy. The main achievements of this set of activities are: a process developed for selecting high-impact projects, a methodology for establishing win-win collaborations between several ongoing research projects, and one StarCluster developing called “*Bio4Flow*”

3. A joint European biorefinery vision 2030

The Joint European Vision document is supported by the stakeholders of all five participating industry sectors. The vision document will provide a competitive edge for Europe by focusing on sustainable products, a growing integration of biobased industrial sectors, and a renewed, competitive and knowledge intensive rural economy.

A draft vision document, developed by IAR with the active collaboration of all ETP partners, was sent mid October 2010 to the Star-COLIBRI External Reference Group (ERG). The document was discussed during the first ERG meeting, on 28 October 2010. The final Vision Document was discussed during the second ERG meeting on 11 April 2011 and a broad stakeholder consultation mainly through the networks of the ETPs gave many hundreds of comments and suggestions that were processed and addressed in the final document.



Figure 4: A Joint European Biorefinery Vision

4. A joint European Research Roadmap for 2020



Figure 5: A Joint European Research Roadmap

A research roadmap covering the complete area of biorefinery-related research was published in October 2011. The research roadmap describes prioritised research undertakings from biomass to bio-based products. Advice is also given to some strategically important actions to be undertaken by policy makers and industry.

A core issue addressed by this roadmap is integration of the overall programme. To identify and fully understand the key challenges and the corresponding research needs, a **multidisciplinary integration approach** is needed, taking account of needs along the entire value-chain.

The ambition of the document is to focus investments on research and innovation for secure biomass supply and the production of sustainable biobased products that gives Europe's industry a competitive edge. This requires new versatile biorefinery development routes - flexibility is the key. The roadmap also touches upon the economic constraints dictating that biorefineries need to be operated efficiently and at low cost, while at the same time being sustainable.

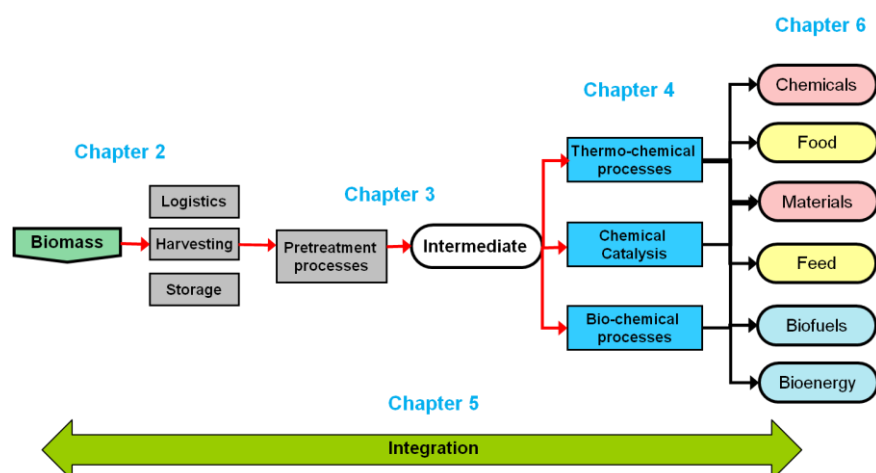


Figure 6: Schematic representation of the biorefinery value-chain and chapter coverage

5. Paving the way for a Public-Private Partnership in the area of biorefineries

The concept of creating critical mass through Public-Private Partnerships was investigated in deliverable "D4.1 Report on Public-Private Partnership possibilities in the area of biorefineries". It was found that in the area of biorefineries around which many traditional sectors meet, the PPP concept could be of particular benefits. Using the experiences from the StarClustering strategy and based upon the Joint European Research Roadmap for 2020, a PPP could be developed further as part of the exploitation of Star-COLIBRI results.

Making the results available to a wider audience

The results of Star-COLIBRI have been continuously disseminated on the webpage www.star-colibri.eu and in newsletters. The ETPs involved have disseminated the results to their stakeholders. Talks and presentations have been given at several international conferences. A co-operation for joint dissemination was established with the three other projects from the 2008 Joint Biorefinery Call; EuroBioref, Biocore, Supra-Bio.



Figure 8: Expert Forum Conference

Star-COLIBRI also hosted two conferences of its own: the ‘**Star-COLIBRI Biorefinery Expert Forum Conference**’, 11-13 April 2011 in Budapest, within the framework of the Hungarian Presidency of the European Union. The conference planning started in July 2010, managed by EuropaBio, with support from all ETPs

The ‘**Star-COLIBRI High-Level Policy Maker Conference**’ 6 October 2011 in the Solvay Library,

Brussels received much praise thanks to the good organising team that allowed us to gather a number of high-level speakers, including MEPs Sirpa Pietikäinen and Judith Merkies, both keen supporters of the bioeconomy and biorefinery fields. The event had a good turn-out of about 100 participants from industry, research and policy fields, including several high-level representatives.



Figure 7: High-Level Policy Maker Conference

List of project deliverables

Del. no.	Deliverable Name	WP no.	Lead Beneficiary
5.1	Star-COLIBRI Public Web Page	5	EBio
3.1	Definition of success criteria for Star-, & Comet projects and StarClusters	3	IAR
2.1	Report on the current situation for biorefineries as for: Sustainability, Policy, Biomass Availability, Industry Initiatives	2	UoY
2.2	Technical documentation and user instructions for the information-sharing portal	2	FTP
2.3	Preliminary report on the global mapping of research projects and industrial biorefinery initiatives	2	VTT
3.2	First identification of potential Star Projects	3	FTP
3.3	First analysis of project gaps, overlaps and complementarities	3	IAR
3.4	Report suggesting suitable StarClusters	3	IAR
4.1	Report on alternative Public-Private Partnerships in the area of biorefinery	4	FTP
3.5	European Biorefinery 2030 Vision Document	3	IAR
3.6	Report on analysis of different LCA methodologies and impact assessments	3	DBFZ
3.7	Comprehensive report on the sustainability of the StarClusters taking into consideration important European policies, initiatives that have an impact and/or address aspects of biorefinery processes and products	3	DBFZ
4.2	Report to the Lead Market Initiative Ad hoc Advisory group	4	EBio
5.2	Conference Proceedings - Expert Forum Conference on European BR	5	EBio
4.3	Guidelines on best practice of establishing and managing a StarCluster	4	FNR
4.4	Recommendations for a trans-national research programme in the area of biorefineries research	4	FTP
3.8	European Biorefinery Joint Strategic Research Road Map for 2020	3	IAR
5.3	High-level Policy Maker Conference Agenda and Proceedings	5	EBio
5.4	Newsletters and other continuous dissemination activities	5	TUD
1.3	Report on the activities of the External Reference Group	1	CEI-Bois

Contact Information

For more information about the Star-COLIBRI project please visit the project website www.star-colibri.eu or contact:

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