

# FISSAC Project Update

---

## PROJECT UPDATE

The work in WP1 (*From current models of industrial symbiosis to a new model*) was developed during the first 18 months of FISSAC project. It has been focused on the definition of the Baseline for the new model of Industrial Symbiosis (IS) through the development of FISSAC methodology and FISSAC Software platform tool. The following objectives were achieved:

- Establishment of networks of stakeholders and evaluation of best practices carried out in other Industrial Symbiosis National Programs and other Industrial Symbiosis experiences
- Establishment of the key process aspects hampering current IS through the assessment of processes and the flow values of the considered industrial sectors (Metallurgic, Ceramic, Glass, Chemical and Natural stone sectors)
- Identification of Best Available and emerging Techniques of the considered industrial sectors to stimulate cross sectorial Industrial Symbiosis
- Identification and development of Eco-innovation waste and IS indicators (environmental, economic and social dimension).
- Definition of target social groups and audience as beneficiaries of FISSAC model and to define strategies for social engagement and acceptance.
- Implementation of the industrial symbiosis model among industrial sectors to move from a linear to a circular economy model by the improvement of material flows

The work in WP2 (*Closed-loop recycling processes to transform waste into secondary raw materials*) has been also focused on innovative technological and non-technological processes to transform waste into valuable secondary raw materials.

Work has been also performed in WP3 (*Product eco-design and certification*) regarding product eco-design and certification. The evaluation of the proposed processes and value chains from a life cycle perspective in order to ensure their environmental and economic sustainability has been achieved in this reporting period.

In WP6 (*FISSAC model for industrial symbiosis*) FISSAC is developing an integrated Industrial Symbiosis Management Software Tool (FISSAC ICT Platform) to be able to support decision making in material flow analyses and industrial clustering. During this first reporting period the system requirements of the FISSAC ICT Platform have been defined.

Regarding the exploitation of the project solutions, the “First version of the Exploitation Plan” was submitted and outlines FISSAC envisioned Exploitation procedures, plans and strategies.



Dissemination and communication activities are supported by a “Dissemination Plan” that was submitted in February 2016 and includes all elements required in a successful dissemination plan. During the first Reporting Period the work was focused to achieve the main objective: to make stakeholders aware of the project and to disseminate the project results towards its future exploitation.

## Deliverables:

In February 2017 several deliverables were submitted:

### D1.7 Strategies for social engagement and acceptance

The research activities for the development of ***Strategies for social engagement and acceptance*** aims to highlight the importance of non-technical and social aspects of IS as a key for achieving successful Industrial Symbiosis projects. A five-step approach was used to establish the objectives of stakeholder engagement and indicates how the involvement of stakeholders can be achieved at each stage of the project. The study included a vision for the social engagement and acceptance has been developed; the Map stakeholders (described in the previous reports); the analysis of various tasks with a social aspect in order to identify the FISSAC partners that will implement the social engagement and acceptance. The next steps will be focused on actions to be implemented thanks to the support of the Social Advisory board; and the selection of Indicators to monitor and evaluate the social aspect when it is possible.

FISSAC will contribute to increase the awareness of the importance of the social aspects for the implementation of Industrial Symbiosis project. The dissemination of the results will be supported by a final report and by guidelines on sustainable construction and will highlight the link with the UN Sustainable Development goals.

### D1.8 Initial outline of FISSAC Industrial Symbiosis Model and Methodology

The ***Initial outline of FISSAC Industrial Symbiosis Model and Methodology*** sets up the baseline of FISSAC model and methodology. The new model will covers a methodology that consists of the procedure to implement the Industrial Symbiosis model that is applied in the construction value chain scenario and it will be supported by a software platform.

The main achievements from WP1 (*From current models of industrial symbiosis to a new model*) are highlighted in the study including a specific FISSAC context analysis of Industrial Sectors and Secondary Raw Material definition. Starting from this baseline, the project aims to pave the way for FISSAC Model and the final Methodology and Model.



## D2.2 Characteristic of waste streams and requirements for recycling processes.

The characterization works of the industrial waste streams covered in FISSAC identified the potential technical barriers to be improved within the ongoing task through the implementation of enhanced recycled routes. The FISSAC project works to define the innovative technological processes for obtaining cost-effective secondary raw materials from different industrial waste streams (industrial sectors) to be used in the design and manufacturing of eco-innovative construction products.

## D2.4 Non-technological barriers analysis and mitigation mechanisms

The first results obtained from the analysis of ***Non-technological barriers analysis and mitigation mechanisms*** aimed to identify the non-technological barriers (economic, legislative/regulatory, organizational and social/cultural) that currently impede a broad implementation in the EU of the recycling solutions for obtaining cost-effective SRMs from the considered different industrial waste streams. The barrier analysis was performed for each waste generating sector discussed in the FISSAC scenario, in such a way, steel slag, aluminium slag, marble slurry, ceramic waste, glass waste and wood/plastic/rubber have been considered. In addition, each waste has been assessed taking into consideration the industrial framework where the valorisation takes place, namely, cement and concrete industry, ceramic industry and WPCs. This assessment considers both the barriers and the potential drivers to overcome them.

The approach was based on the comparison of the referenced barriers and drivers and the results of the face-to face meetings, interviews and questionnaires. As a result, the study provides a direct view of all the stakeholders existing around each value chain, waste generators, waste managers, final users or manufacturers and regulators.

Further analysis of non-technological barriers and drivers of the various represented industries in FISSAC will be carried out from 2018 and will look at creating industrial symbiosis and lay path for a circular economy model of the given industries.

## D3.1 Life-Cycle Assessment of new processes, materials and products (Eco cement Green Concrete, ceramic tile, rubber wood plastic composite)

## D3.2 Life Cycle Costing of new processes, materials and products (Eco cement Green Concrete, ceramic tile, rubber wood plastic composite)

***Lifecycle assessment*** (LCA) was performed at an early stage, the possible improvements in the environmental performance of new processes and products developed within the FISSAC project can be identified and adverse environmental effects can be avoided in order to improve the sustainability.

The results from the product screening LCAs provide some preliminary results on how the industrial symbiosis affects the environmental performance of the products. These



results help to guide further production development as well as serving as a basis for an updated life cycle assessment at a later stage in the project during a real-scale demonstration.

The aim of this study is to conduct and present a first screening evaluation of the economic sustainability, using life cycle cost methodology, of products developed in the FISSAC project. A **life cycle cost assessment** (LCC) was conducted from a manufacturer's perspective, and had focused on defining the problem, the methodology and the models needed in order to assess the relevant costs for the different products. The study had, apart from the presentation and evaluation of the results generated, tried to indicate where the lack of data is in connection to the methodology suggested.

## D6.1 FISSAC Software Platform Requirement Analysis Report

FISSAC project is developing an integrated Industrial Symbiosis Management Software Tool (FISSAC ICT Platform), to be able to support decision making in material flow analyses and industrial clustering. The fundamental aim of the ICT Platform to be developed under FISSAC project is to demonstrate and maximize environmental, social and financial benefits of IS networks to support circular economy structure. Furthermore, the FISSAC ICT Platform should facilitate formation and operation of IS networks by following the FISSAC IS Methodology.

FISSAC ICT Platform aims to go beyond the existing platforms by integrating capabilities of EPESUS and GEO-CLUSTERING software and adding network analysis functionalities to assess the roles of partners within the industrial symbiosis network and evaluate the success of overall operation using social network analysis (SNA) methodologies. The FISSAC Industrial Software Platform therefore will be able to respond to resource efficiency and environmental performance concerns (by the help of LCA), logistic issues (GIS data) and support decision-making processes.

This Analysis Study **Software Platform Requirement Analysis Report** identifies and presents the known requirements of the FISSAC Platform.

## D8.3 First version of the Exploitation Plan

This **First version of the Exploitation Plan** drafts the strategy and the concrete actions for exploitation of the results, as well as information about particular results and partners' expectations and claims on the exploitable results of the FISSAC project.

The report presents an overview of exploitable results as they have been refined and altered throughout the project so far. The Assessment of Exploitable results Technology Readiness Level (TRL) for each result was conducted to provide an overview of the technology maturity. The exploitation plans and strategy for each partner are summarized in the Exploitation claims and aims (BFMULO) followed by their Individual Exploitation Plans. Then, a detailed analysis of the main risks that could affect the accomplishment as well as the exploitation of the results is provided through Risk Register tables for each



Exploitable Result (ER). Finally, results from Preliminary Market Assessment are presented, focusing on patent mapping and competing products/projects or other commercial initiatives.

The **1<sup>st</sup> FISSAC Project Exploitation Workshop** took place during the project meeting in Brussels (5-6 October 2016). After the first day of the meeting (5 October), where progress within the particular project work packages was presented, the second day (6 October) was dedicated to the exploitation workshop (short report in Annex 1).

FENIX as exploitation leader managed the workshop, involving all consortium partners. The aim of the workshop was to discuss exploitable results progress, introduce IPR issues related to exploitation, present summary of preliminary market assessment conducted by FENIX and discuss other relevant topics and exploitation activities to facilitate successful progress of the project results exploitation.

The outcomes of this workshop are relevant inputs for this deliverable. All results and discussed changes were taken into consideration and integrated into this report.

For further information please check the [FISSAC project website](#).

