



Delivery of sustainable supply of non-food biomass to support a “resource-efficient” Bio-economy in Europe

[www.s2biom.eu](http://www.s2biom.eu)





# S2Biom Project

## Project overview

The S2Biom project supports the sustainable delivery of non-food biomass feedstock at local, regional and pan European level through developing strategies, and roadmaps that will be informed by a “computerised and easy to use” toolset (and respective databases) with updated harmonised datasets at local, regional, national and pan European level for EU28, Western Balkans, Ukraine, Moldova and Turkey.

This target will be reached by comparing and making use of the most recent relevant information from recent and on-going EU projects by a set of carefully selected validation case studies and in concise collaboration with key stakeholders from policy, industry and markets.

The project fits under the overall umbrella of the Europe 2020 strategy for the building of a bio-economy, as well as the targets for deployment of renewable energies and reduction of greenhouse gas emissions.

The project will build up a concise knowledge base both for the sustainable supply and logistics of non-food biomass (quantities, costs, technological pathway options for 2020 and beyond), for the development of technology and market strategies to support the development of a “resource efficient” bio-economy for Europe.

## Project Activities

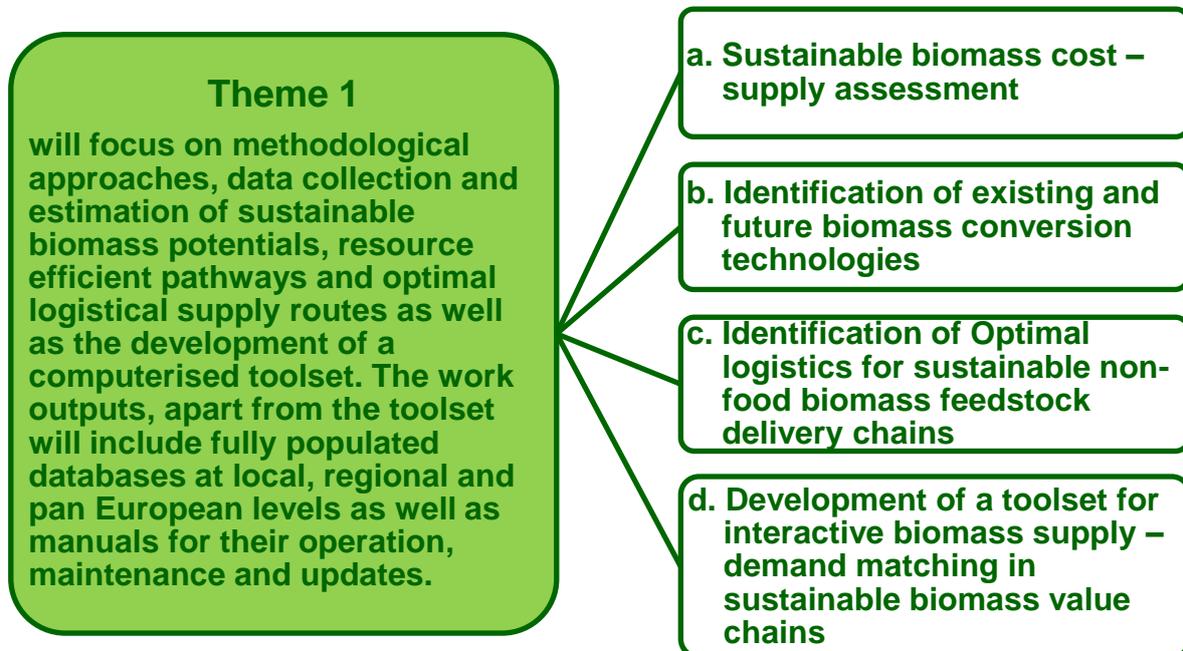
The research work foreseen will cover the whole biomass delivery chain from primary biomass to end-use of non-food products and from logistics, pre-treatment to conversion technologies. All these aspects together will be elaborated to facilitate the integrated design and evaluation of optimal biomass delivery chains and networks at European, national, regional and local scale in order to support the development of strategies for best ways to realise a bio-based economy.

The project activities will be implemented in three individual but strongly interrelated Themes.



## Theme 1 - Methodological approaches

A key issue of the S2Biom analysis is to build up a concise knowledge base both for the efficient resource mobilisation (sustainability criteria, costs, logistics, availability) and for the assessment of resource efficient biomass value chains (with a set of consistent technical indicators).





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### **a. Sustainable biomass cost – supply assessment**

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The objective of this activity is to deliver state-of-the-art data on current and future sustainable lingo-cellulosic biomass costs and supply (domestic and imports) in EU28, Western Balkans, Ukraine and Turkey and Moldavia at regional, national and European wide scale by:

- Specifying data requirements for regional and national data collection as well as identifying, collecting and processing existing data.
- Identifying gaps in existing data and designing and implementing modelling and post-model analysis procedures and remote sensing based approaches and spatial disaggregation procedures to fill the gaps.
- Designing and populating a database with latest available and improved data.
- Developing of an approach for biomass crop selection and estimation of future biomass crop potential.
- Developing best practice guidelines and a concept for long term utilisation and regular updates of the data.

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### **b. Identification of existing and future biomass conversion technologies**

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The work in this activity focuses on identifying and extensively characterising existing and future non-food biomass conversion technologies for energy and bio-based products, developing a standardised methodology according to which the different biomass categories identified and quantified need to be characterised and assessing the optimal match of biomass categories of different quality with the existing and future non-food biomass conversion technologies.





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### c. Identification of optimal logistics for sustainable non-food biomass feedstock delivery chains

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Under this activity the objectives are:

- To identify and characterise the main logistical components as storage, pre-treatment and transportation technologies.
- To identify and assess existing and develop new logistical concepts (e.g. hubs and optimal transportation routes) to optimize sustainable non-food biomass feedstock delivery chains.
- To translate theoretical logistical concepts to specific cases, and design the most promising logistic supply-chains for cases at local, regional and pan-European level.





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### **d. Development of a toolset for interactive biomass supply – demand matching in sustainable biomass value chains**

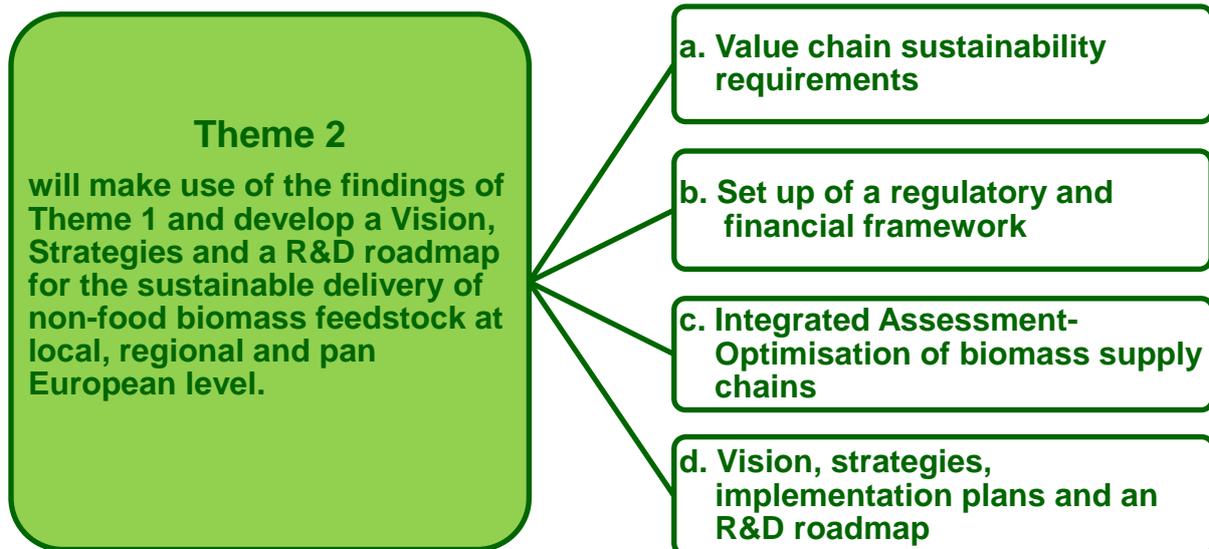
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The objectives of this activity are:

- To provide easy access to a systematic, visually attractive and readily understandable spatially specific overview of data on cost-supply and of biomass and other related technical, environmental and economic parameters of the biomass categories in EU28, Western Balkans, Ukraine, Turkey and Moldova at regional, national and European wide scale.
- To develop a tool that supports the development of the best practice strategies for sustainable lingo-cellulosic biomass production with woody and grassy crops while maintaining and even improving the overall environmental quality of a region.
- To provide access to a systematic overview of the data main technical, economic and GHG emission parameters of current and future pre-treatment and conversion technologies.
- To provide technical support to end-user for identifying the best match between a given amount of biomass with specific characteristics and the conversion or pre-treatment technology.
- To provide a systematic, geographically specific overview and description of policies implemented towards biofuel production and wider development of a bio-based economy and the interrelations between these policies.
- To develop an integrated toolset enabling stakeholders to design and evaluate sustainable biomass value chains for their own regional and national territories.
- To apply, test and improve the sustainable value chain development and optimisation toolset in a selection of regions in EU28, Western Balkans, Ukraine and Turkey to contribute to the market deployment of these value chains as a basis for developing strategies for the transition to a European Bio-based Economy (non-food biomass to bioenergy, fuels and chemicals/materials).
- To develop a general user interface enabling easy access and use of all the tools, roadmaps and strategies developed in this project and integrated in the central toolset developed in this activity.



## Theme 2 – Vision, Strategies and R&D Roadmap



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### a. Value chain sustainability requirements

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The general objective of this activity is to provide an improved understanding among decision-makers in policy and industry regarding sustainability requirements in the biomass value chains addressed in the methodological approaches. To achieve this, specific objectives are:

- The adaptation of the life cycle-based European Commission Environmental Footprint methods in order to develop a complementary methodology specific to non-food biomass value chains.
- The identification of sustainability criteria and indicators (C&I) for non-food biomass value chains, gap analysis of respective legislation, regulation and voluntary schemes at international, European and MS level.
- The compilation of consistent sustainability C&I for the short- and medium-term bio-economy, and an outlook for long-term developments.
- The development of guideline for the evaluation of the environmental performance with the toolset developed of all lignocellulosic feedstocks for the various industrial routes, building on existing tools, and extending to bio-based products (chemicals; materials, etc.), and their interrelations.



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### **b. Set up of a regulatory and financial framework**

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The regulatory and financial framework to mobilise non-food biomass to bio-based products and bioenergy markets will provide a structured overview of all elements of economic and regulatory frameworks that relate to the sustainable delivery of non-food biomass at different levels of governance across Europe (i.e. local, regional and pan-European) and will develop coherent policy guidelines (with a set of indicators) that will allow policy makers from the respective levels of policy determination to quickly appreciate the support frameworks that exist and the most efficient ways to apply them for the future use of biomass in a sustainable manner.

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### **c. Integrated Assessment - Optimisation of biomass supply chains**

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This activity will define the optimal pathways (by employing the RESOLVE model) towards a low-carbon bio-based economy that focuses on stimulating the prioritised biomass applications for 2020 and 2030.

The outcome of this integrated assessment will be:

- The total primary biomass demand(s) to reach the bio-based economy targets in comparison to the sustainable biomass supply (supply-demand balance)
- Total GHG emissions and avoided GHG emissions
- Total costs

The modelling results will form the basis for integrated assessment and the roadmap towards a low-carbon, partly bio-based economy that stimulates the prioritised biomass applications.

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### **d. Vision, strategies, implementation plans and an R&D roadmap**

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The main aim of this activity is to develop a vision, strategies, implementation plans and a R&D roadmap for the sustainable delivery of non-food biomass feedstock at pan-European level. The strategies and implementation plans will be further adjusted so that it can be used at the regional level.

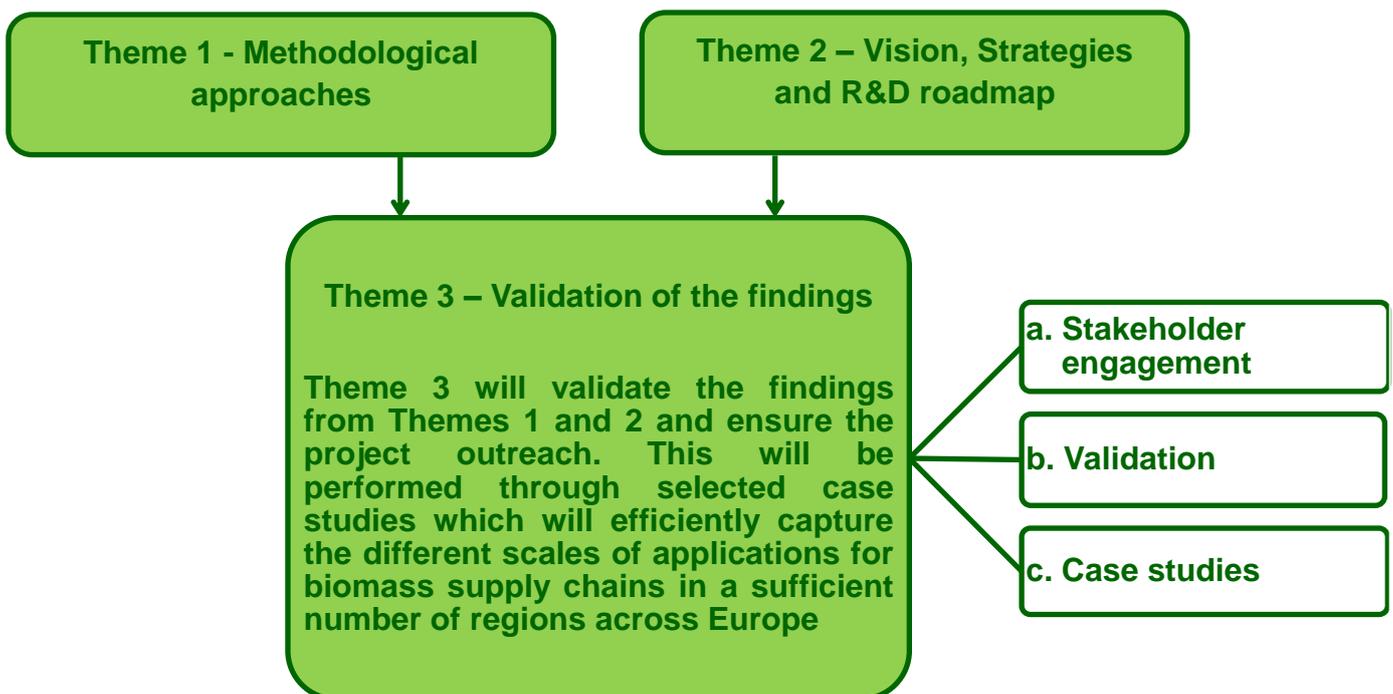


## Theme 3 – Validation of the findings

The validation of the findings from Themes 1 and 2 will be implemented within this theme as well as the project outreach throughout its duration. This will be done through the engagement of stakeholders and implementation of a set of representative case studies to ensure that the Strategies, Roadmaps and Toolbox (SRT) will be offered to Member States, Associated and neighbouring countries in a sufficient number of regions for testing and validation.

The interaction mechanisms and communication channels with stakeholders across the supply chain and different regional and sectorial levels will ensure the validation of SRTs and implementation plans. Stakeholders will provide input at early stages of development and the project team will integrate their input in the final set of deliverables. The work will involve partners from 13 countries with the aim to reach regions in 21 states in north, central, south-west and south-east Europe.

This activity will also ensure effective cooperation with existing initiatives, designing and performing appropriate information campaigns for the wide dissemination of the project activities and outputs among stakeholders, and exploit project results.





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### **a. Stakeholder engagement**

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The S2BIOM partnership is committed to developing inclusive relationship with the multifaceted audience of stakeholders participating in the sustainable biomass value chain and debate, with extensive consultations implying openness to bottom-up input.

To this end, S2BIOM developed specific interaction mechanisms and communication channels with stakeholders across the biomass value chains at different regional and sectorial levels. Having developed an original Stakeholders Engagement Plan in the first months of implementation, the partnership will continue broadening the network of contacts, with particular regards to Pre-Accession and Neighbouring Countries.

To establish direct dialogue with the community of practitioners, the experts and the corporate players, the Consortium established the S2BIOM Policy and Industry Advisory Committee (PIAC), which will gather on a regular basis to confront with the project on key developments in the sector, providing useful feedback on the outputs and deliverables. The Consortium has agreed upon extending the PIAC to stakeholders from the supply and logistics, as well as experts in sustainability issues. In addition, the stakeholders involved in this activity will provide support to undertake capacity management and gap analysis.

The input provided at different stages of implementation will be integrated in S2BIOM deliverables. Stakeholders will also play an important role in the validation of SRTs and will be a crucial interlocutor for the implementation of case studies.

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### **b. Validation**

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The partnership will mobilize stakeholders, particularly members of the extended PIAC and a limited number of other actors selected according to their specific capacity or geographical representativeness, in order to collect their feedback on the S2BIOM toolset.

In order to assess the functionality and usability of the toolset, and collect indications and recommendations for its further improvement, the consortium will organize two dedicated workshops.



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### c. Case Studies

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An extensive set of case studies will be performed in the framework of S2BIOM in order to complement the Strategies and Roadmaps with bottom-up information, and to test the toolset in a close to real life environment.

Three different types of case study will be implemented, divided according to the geographical scope of the assessment. The activity has been designed so to involve a variable number of stakeholders from different areas: regions that have more advanced biomass value chains, typically EU28, will feed predominantly Theme 1, while, Central, East and South-East European Countries will provide data for Theme 2.

Pre-case studies will be performed in selected locations in EU 28 in order to complement datasets with additional empirical data, also building on existing regional platforms and in collaboration with ongoing EU-funded projects. The SRTs will be then tested in the framework of Advanced Case Studies, performed in the same locations so to generate a measurable outcome during real-time testing on biomass pathways. Pre- and Advanced case studies will be performed in the Upper Rhine Region, the Netherlands, France (Burgundy), Spain (Miajadas and Aragon region) and Scandinavia (Eastern Finland).

Strategic case studies are being designed to allow better insight in the specific environment of the Danube Region, the Balkan Region, the (eastern) Alpine Region, Germany and Poland, and Ukraine, basing on the assumption that these areas represent large underutilized reservoirs of biomass with excellent potential to develop sectorial markets and pre-treatment/conversion industry in the upcoming period.

Looking into areas with technologically less advanced biomass utilization, weaker supply chains, inadequate infrastructures, and relatively poor availability of data, S2BIOM will complement its datasets and highlight bottlenecks in the development of biomass value chains. This will allow addressing “strategic” aspects and key players, including the applicability of SRTs in transnational contexts.

The project will also support alignment with international development policies, and promote interaction of local initiatives with existing cooperation programmes and support to shaping activities in view of future financing opportunities.



# S2Biom Project

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# S2Biom Project

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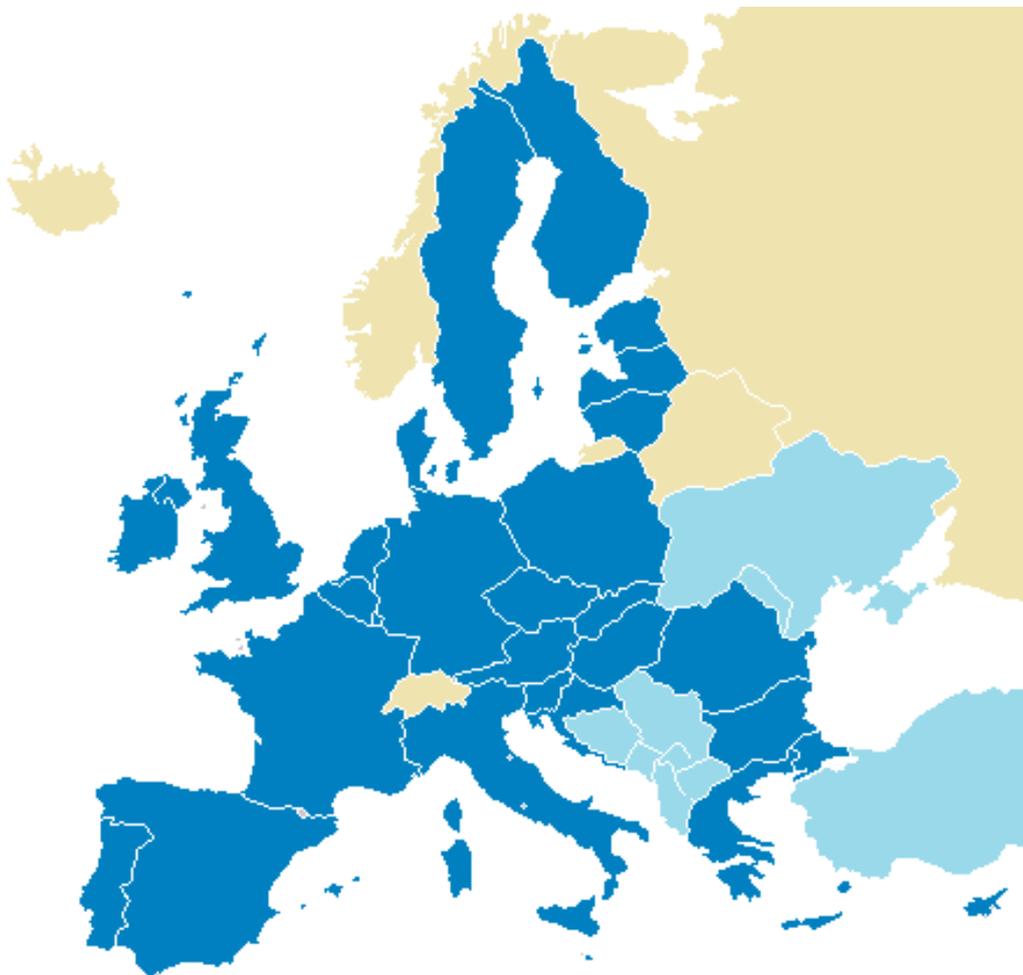




# S2Biom Project

## Target regions

The target countries within S2Biom Project are the EU28 countries as well as Western Balkans, Ukraine, Moldova and Turkey.





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