Delivery of sustainable supply of non-food biomass to support a "resource-efficient" Bioeconomy in Europe

S2Biom Project Grant Agreement n°608622

D10.17e
Policy Brief: Biomass Potentials in the S2Biom project

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About S2Biom project

The S2Biom project - Delivery of sustainable supply of non-food biomass to support a “resource-efficient” Bioeconomy in Europe - 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 “computerized and easy to use” toolset (and respective databases) with updated harmonized datasets at local, regional, national and pan European level for EU28, western Balkans, Turkey and Ukraine. Further information about the project and the partners involved are available under www.s2biom.eu.

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About this document

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About S2Biom policy briefs

S2Biom (www.s2biom.eu) is a European funded project aiming to improve evidence on the availability, cost supply, technologies and framework conditions (sustainability, policy, financing) for lignocellulosic non-food biomass in Europe[1] by 2030.

The work planned includes also a series of dedicated policy briefs to ensure effective dissemination of the project results to policy and decision makers at European, national and regional level. These are regarded as important, since the project intends to provide support for the development and implementation of future policies on sustainable supply of non-food biomass.

The information presented in this policy brief outlines the types of biomass potentials addressed in the S2Biom project.

Methodological approach

Methods described in the BEE handbook (BEE, 2011) to determine biomass potentials for energy have been used as a general reference besides further methodological references, since the approach to determine potentials for energy and those for bio-based products does not differ. Four types of biomass potentials are commonly distinguished:

- Theoretical potential
- Technical potential
- Economic potential
- Implementation potential

The types of potentials differ with respect to the constraints that are considered including sustainability issues (Figure 1). Within S2Biom, the focus will be on the sustainable technical potential and the sustainable economic potentials. The single constraints that are actually considered are described in this report in the section on the technical potential and are specific per biomass type.

[1] EU28, Western Balkans, Moldova, Ukraine, Turkey

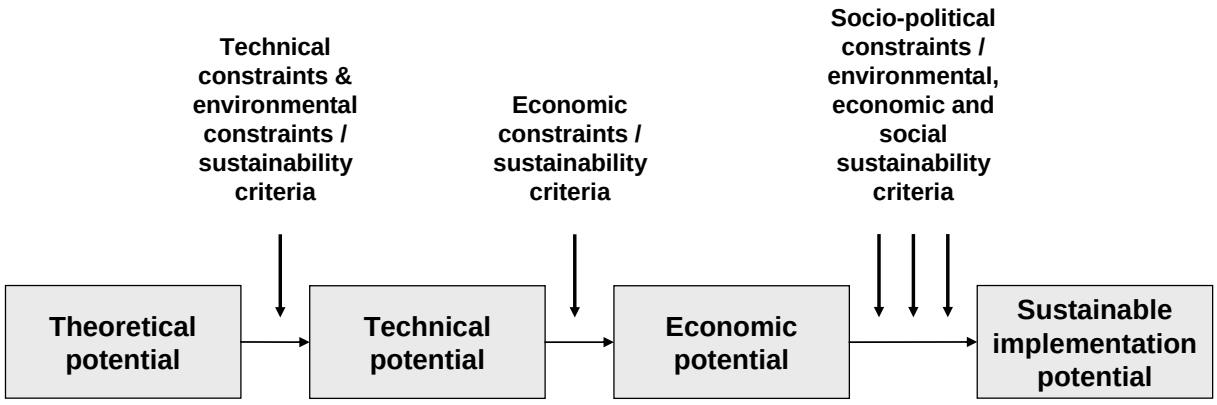

Figure 1 The integration of sustainability criteria in biomass potential assessments

Source: Vis & Dees (2011).

The different types of potentials can be determined using different types of approaches and general methodologies (Table 1) (see Vis & Dees (2011)).

The cost supply approach selected for the S2Biom database allows the determination of an economic potential and thus provides substantially more information compared to the majority of studies on potentials available to date.

Table 1 An overview of the combinations of approaches and methodologies that are used in the best practice handbook

General approach	General methodology	Type of biomass potential	
		Theoretical-technical biomass potentials	Economic-implementation biomass potentials
Resource-focused	Statistical methods	Yes	No
Resource-focused	Spatially explicit methods	Yes	No
Resource-focused	Cost-supply methods	No	Yes
Demand-driven	Energy-economics and energy-system model methods	No	Yes
Integrated assessment	Integrated assessment model methods	Yes	Yes

Lignocellulosic biomass assessed by S2Biom includes biomass originating from the following:

- Primary residues from agriculture

- Dedicated cropping of lignocellulos biomass on agricultural area
- Wood production and primary residues from forests
- Other land use
- Secondary residues from wood industry
- Secondary residues of industry utilising agricultural products
- Waste collection/ tertiary residues

Status and future potentials

The status is referring to the year 2012. Future potentials are provided for 2020 and 2030.

Spatial disaggregation

Besides EU28, the western Balkan countries, Ukraine, Turkey and Moldova are included.

The data are provided for NUTS 3 statistical units that are formally defined for EU28 only. For the non-EU other countries included equivalent administrative units have been defined per country.

Type of Potential

Within S2Biom potentials with several levels of constraints are determined, that are labelled technical, base and user defined potentials. They differ in the type of constraints that are considered. Two of them, the technical potential and the base potential are provided applying assumptions that are defined consistently across the different major origins, whereas the third type can be “composed” by the user applying selected constraints: The basic generic definitions are:

The technical potential represents the absolute maximum amount of lignocellulosic biomass potentially available for energy use assuming the absolute minimum of technical constraints and the absolute minimum constraints by competing uses. This potential is provided to illustrate the maximum that would be available without consideration of sustainability constraints.

The base potential can be defined as the technical potential considering agreed sustainability standards for agricultural forestry and land management. The base potential is thus considered as the sustainable technical potential, considering agreed sustainability standards in CAP (Common Agricultural Policy) for agricultural farming practices and land management and in agreed (national and regional) forestry management plans for forests (equivalent to current potentials described in EFSOS II). This also includes the

consideration of legal restrictions such as restrictions from management plans in protected areas and sustainability restrictions from current legislation. Further restrictions resulting from RED (Renewable Energy Directive) and CAP are considered as restrictions in the base potential as well. CAP sustainable agricultural farming practices include applying conservation of Soil Organic Carbon (SOC) (e.g. Cross Compliance issues of 'maintaining agricultural land in good farming and management condition' and avoiding soil erosion).

The user-defined potentials vary in terms of type and number of considerations per biomass type. Following the general nomenclature of potentials, the user defined potentials can also be considered as sustainable technical potentials but differ in the constraints considered vs the base potential and among each other. The user can choose the type of biomass and the considerations he would like to employ and calculate the respective potential accordingly. This flexibility is meant to help the user to understand the effect on the total biomass potential of one type of consideration against the other. These can include both increased potentials (e.g. because of enhanced biomass production) or more strongly constrained potentials (e.g. because of selection of stricter sustainability constraints).

Economic potentials using the cost-supply approach can then be determined using a price assumption and considering the road side costs per single category and NUTS3 area. The type of potentials determined by S2Biom are illustrated in Figure 2. In the S2BIOM tool set the economic potentials are presented in form of cost-supply curves.

In addition, for forestry, a so called "high potential" is available. This shows a potential in between the technical and the base potential in order to demonstrate the potential availability of biomass from forests in the case of less stringent constraints on supply.

The definitions of potential levels are further detailed in the dedicated sections per major origin.

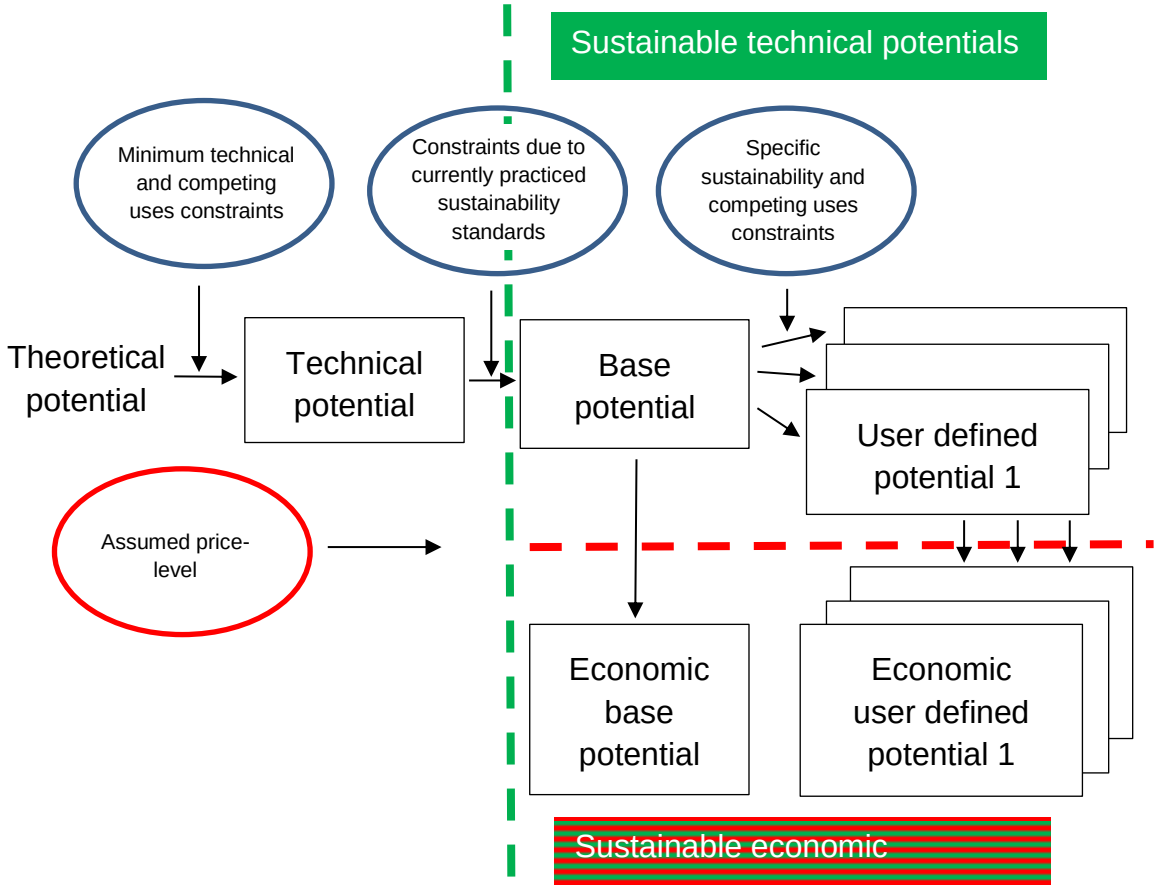

Figure 2 S2Biom potential types