

SUSTAINABLE BIOMASS POTENTIALS IN SEE, Piran, 16 June, 2016

Overview of S2BIOM Tool Box and demonstration of tools for mapping of the biomass availability and cost supply curves

Berien Elbersen & Igor Staritsky



- **Should contain all results of the project**
 - Well structured
 - Interactive
 - Practical and to the point
 - No need to read long reports, but background reports should also be accessible through the tool

General User Interface

Home

Introduction to S2BIOM GUI

Home: Here general information on the S2BIOM project and on the S2BIOM tool box is placed. It now provides short descriptions of the different items and tools (to be) included in the GUI.

General data: Under this item the following output will be included:

Scenarios (WP7): A short description will be placed of the central scenarios used in the project. For more detailed information on the scenarios and how they are used a link will be placed here to the final deliverable explaining the scenarios in detail.

Regulatory & financial framework (WP6): This is where the entry into the viewing tool will be for viewing all data on policies developed in WP6. At this moment the database is half-filled and will be included into the GUI and made accessible through a viewing and download tool expected to be available by Month 28.

Biomass demand (WP7): Under this item access will be provided to the demand analysis results assessed in WP7 with the ReSolve model taking account of scenario specifications and specific EU and national targets for renewable energy production by 2020/2030. Results for this task are to be included by month 30.

Biomass chain data

In this part of the GUI the data and knowledge base is to be accessed that is generated in WP1 on biomass cost-supply, WP2 on biomass conversion technology characteristics, WP3 on the characteristics of main logistical chain components and indicators for sustainability and resource efficiency developed in WP5.

Biomass cost-supply (WP1): Biomass cost-supply data generated in the project is to be viewed in the biomass cost supply tool which enables easy viewing and further analysis capabilities for data on biomass cost-supply at different spatial resolution levels (Nuts 0, 1, 2, 3). The viewing of this information is facilitated for 2 tools:

- 1) **Biomass supply data viewer** (most recent version accessible via GUI from 25 September 2015)
- 2) **Biomass cost-supply data viewer** (accessible via the GUI as from 8 October 2015)

At this moment these tools work for the most recent data included in the WP1 database which is the 2012, 2020 and 2030 supply for the base potential. The base potential equals the sustainable technical potential, considering agreed sustainability standards in CAP (Common Agricultural Policy) for sustainable agricultural farming practices and land management and in agreed (national and regional) forestry management plans for forests management which also consider legal restrictions from management plans in protected areas.

Other biomass supply potentials still to be included (but still under development in WP 1) are for:

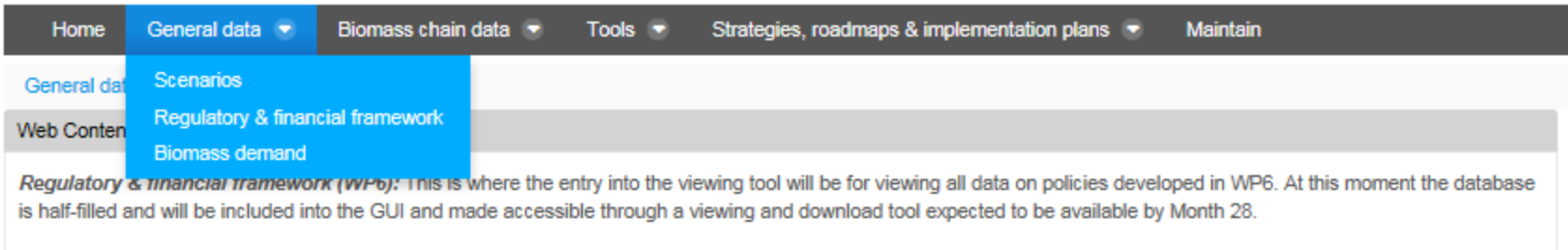
- Technical potential = represents the absolute maximum amount of biomass assuming the absolute minimum of technical constraints and the absolute minimum of



General user interface



Tools for biomass chains



The screenshot shows the S2Biom user interface. At the top, there is a navigation bar with the following items: Home, General data (expanded), Biomass chain data, Tools, Strategies, roadmaps & implementation plans, and Maintain. The 'General data' dropdown menu is open, showing three options: Scenarios, Regulatory & financial framework, and Biomass demand. Below the navigation bar, there is a section titled 'Regulatory & financial framework (WP6)' with a text description: 'This is where the entry into the viewing tool will be for viewing all data on policies developed in WP6. At this moment the database is half-filled and will be included into the GUI and made accessible through a viewing and download tool expected to be available by Month 28.'

General data

- Scenarios (WP7)

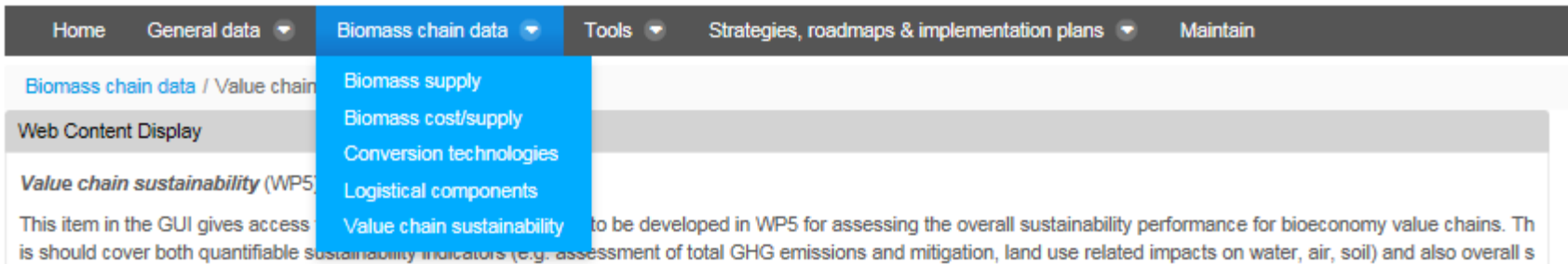
- Regulatory & financial framework (WP6)

- Biomass demand (WP7)

General user interface



Tools for biomass chains



The screenshot shows the S2Biom web interface. The top navigation bar includes 'Home', 'General data', 'Biomass chain data', 'Tools', 'Strategies, roadmaps & implementation plans', and 'Maintain'. The 'Biomass chain data' dropdown menu is open, showing options: 'Biomass supply', 'Biomass cost/supply', 'Conversion technologies', 'Logistical components', and 'Value chain sustainability'. Below the menu, a text box explains that the 'Value chain sustainability' item provides access to tools for assessing sustainability performance for bioeconomy value chains, covering both quantifiable indicators and overall sustainability.

Biomass chain data

- Biomass supply viewer
- Biomass cost-supply viewer
 - Domestic biomass
 - Imported biomass

- Conversion technologies (WP2.1 & WP4.2)

 - Thermal conversion processes

 - Chemical conversion processes

 - Bio-chemical conversion processes

 - (Biobased) products/building blocks

- Logistical components (WP3.1 & WP4.2)

- Value chain sustainability (WP5)

Cost-supply viewing tool

Home General data **Biomass chain data** Tools Strategies, roadmaps & implementation plans Maintain

Biomass chain data / Biomass supply

2020 - Production from forests - Stemwood from final fellings & thinnings - Final fellings from nonconifer trees - base potential - energy value - area weighted

Administrative level	Scenario
nuts1	2012
nuts2	2020
nuts3	2030

Category

- Production from forests
- Primary residues from forests
- Other land use

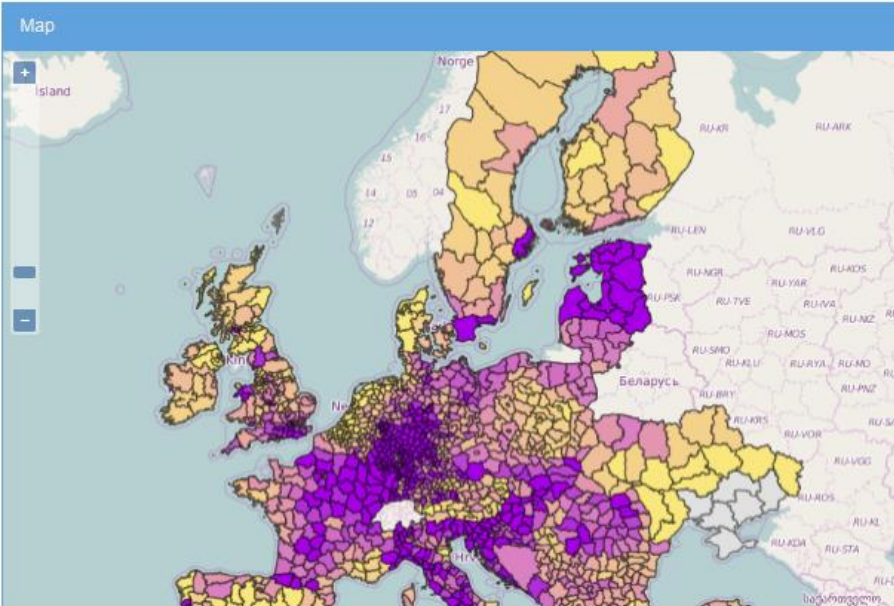
Subcategory

- Stemwood from final fellings & thinnings

Type

- Final fellings from nonconifer trees
- Final fellings from conifer trees

Map



energy value weight volume

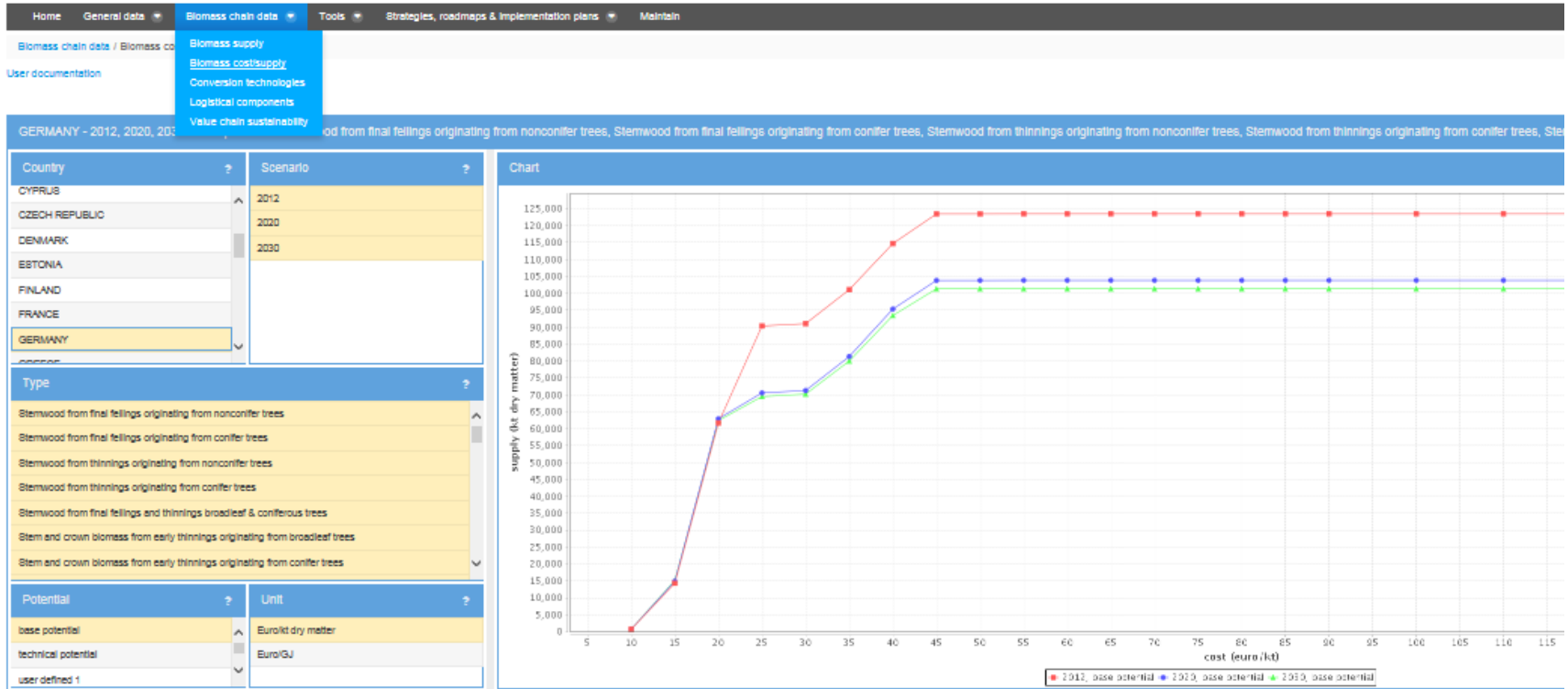
area weighted absolute

Unit: GJ/km²

0
0 - 50
50 - 100
100 - 150
150 - 200
200 - 250
250 - 300
300 - 350
350 - 400
400 - 450
450 - 500

Current selection Identify result Se

Cost-supply viewing tool



Web Content Display

The cost-supply data viewer available here is a first version. It enables the user to make selections of biomass types for which cost levels can be displayed in a cost-supply graph. The graph displays the total accumulated biomass (ordered from cheap to expensive) against the average road side cost level for the country/countries selected. Users can select one or more countries, scenarios and biomass types for which they want to display the cost-supply relation. To select more than one country, scenario year or type use the 'ctrl' or 'shift' and select.

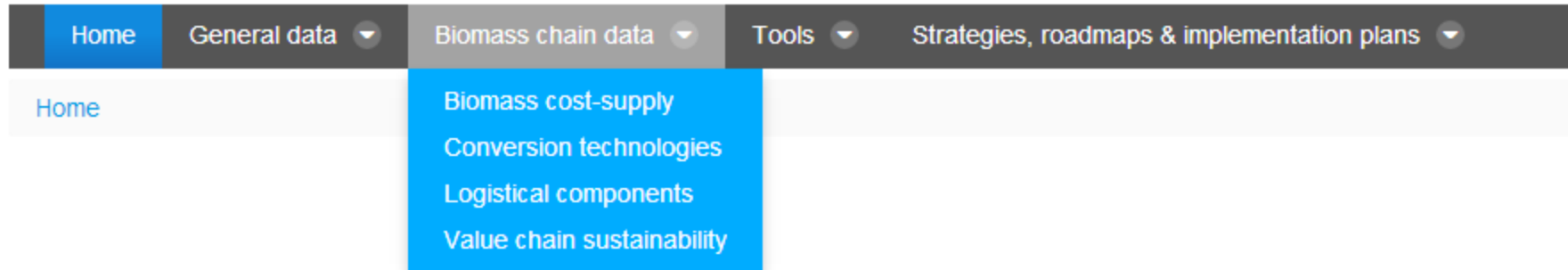
The user can select the potential type and one or more scenario years to be displayed in more curves in the same graph.

[://s2biom.alterra.wur.nl/web/quest/biomass-cost](http://s2biom.alterra.wur.nl/web/quest/biomass-cost)

General user interface



Biomass chains



Biomass chain data

Biomass cost-supply (WP1)

Domestic biomass

Imported biomass

Conversion technologies (WP2.1 & WP4.2)

Thermal conversion processes

Chemical conversion processes

Bio-chemical conversion processes

(Biobased) products/building blocks

Logistical components (WP3.1 & WP4.2)

Value chain sustainability (WP5)

Database screen 1

Edit Example with explanation (please do not change)

GENERAL PROPERTIES

Commercial name	<i>(required)</i> Example with explanation (please	Level of commercial application	mention general description of the status
Main category	Comminution (size reduction)	Year of first implementation in practice	2005
Subcategory	Chipping: disk chipper	Estimated number of systems in operation since introduction	200
Image url	www.producer.com/example_machine/picture.jpg	Current Technology Readiness Level in 2014	Level 9, System ready for full scale
Most common/suitable applications	processing wood residues after harvesting	Expected Technology Readiness Level in 2030	Level 9, System ready for full scale
Main operating principle	In this box may include any information about the operating principle of the logistical component, but also about relevant information that you cannot enter in the other data fields	References	commercial: www.producer.com/description_machine_type scientific: authname(s), year (the full references of scientific papers will be stored in external reference word doc) other: websites, magazines, etc.

TECHNICAL PROPERTIES

Energy demand	3.2 MJ/t	Number of full load hours per year	(h) 1600
Type of energy needed	Diesel	Maximum load volume of transport system	(m ³)
Other input demand	none	Maximum load weight of transport system	(t) 0
Pre-treatment efficiency	0.96 (output/input)	Typical lifetime of equipment	(years) 7
Input processing capacity	150 m ³ /h	Labour requirements pre-treatment	0.0133 h/t
Storage capacity for input	m ³	Labour requirements storage	h/t
Storage capacity for output	20 m ³	Labour requirements transport	h/t
		Transportability	Mobile

Save and proceed Cancel

Database screen 2

BIOMASS INPUT SPECIFICATIONS

Acceptable biomass input groups: Wood

Received (intermediate) biomass type: Branches

Minimum particle size input: length (mm) 1000, width / diameter (mm) 50, height (mm) 50

Maximum particle size input: length (mm) 5000, width / diameter (mm) 300, height (mm) 300

Moisture content input (% wet base): Minimum 20, Maximum 60

Bulk density input (kg/m³ wet base): Minimum 100, Maximum 300

Maximum input level of contamination with exogenous material (% dry base):

Maximum ash content input (% dry base): 1.5

BIOMASS OUTPUT SPECIFICATIONS

Indication of follow up process(es): Transport

Delivered (intermediate) biomass type: Wood chips

Dimensions: P16S: 3,15 mm < P < 16 mm, Fine fraction F05: < 5 %

Moisture content output (% wet base): Minimum 20, Maximum 60

Bulk density output (kg/m³ wet base): Minimum 200, Maximum 400

Maximum output level of contamination with exogenous material (% dry base):

Maximum ash content output (% dry base): 1.5

FINANCIAL AND ECONOMIC PROPERTIES

Specific investment costs of equipment, included auxiliaries: (€) 60000

Operation and maintenance costs: 1.25 €/t

- Calculation method: Effective operation time

Storage costs: €/t

Loading costs: €/t

Unloading costs: €/t

Transport costs per kilometer: (€/km)

Transport costs per tonne: (€/t)

Transport costs per load: (€)

Transport costs fixed: (€)

Infrastructure needed: Connection to road network

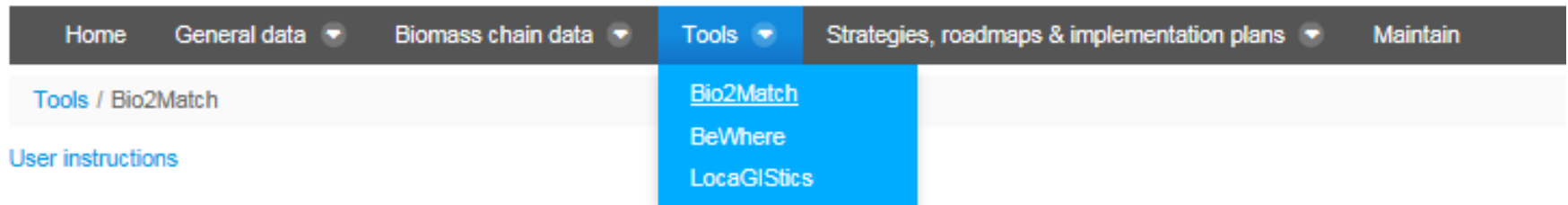
Edited by: Hugo de Groot, Bert Annevelink

Save Cancel

General user interface



Tools for biomass chains



Tools:

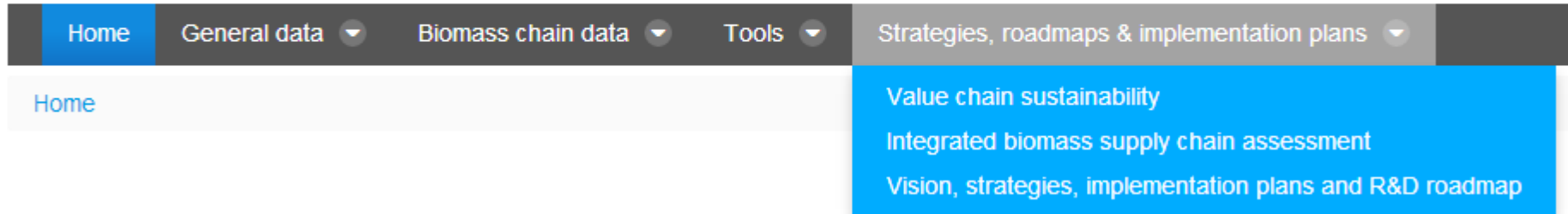
- Bio2Match: Biomass & conversion pathways matching (WP2 &3)
- Full chain assessments (WP4.3&4.4)
 - EU wide-national and regional assessment tool (**BeWhere**)
 - Local assessment tool (**LocaGIStics**)

General user interface



S2Biom

Biomass chains



Strategies, roadmaps & implementation plans

Value chain sustainability (WP5)

Integrated biomass supply chain assessment (WP7)

Vision, strategies, implementation plans and R&D Roadmap (WP8)

Testing the tool:

s2biom.alterra.wur.nl

Test login provided:

demo

helsinki

THANK YOU FOR YOUR ATTENTION!
BERIEN.ELBERSEN@WUR.NL

QUESTIONS?

