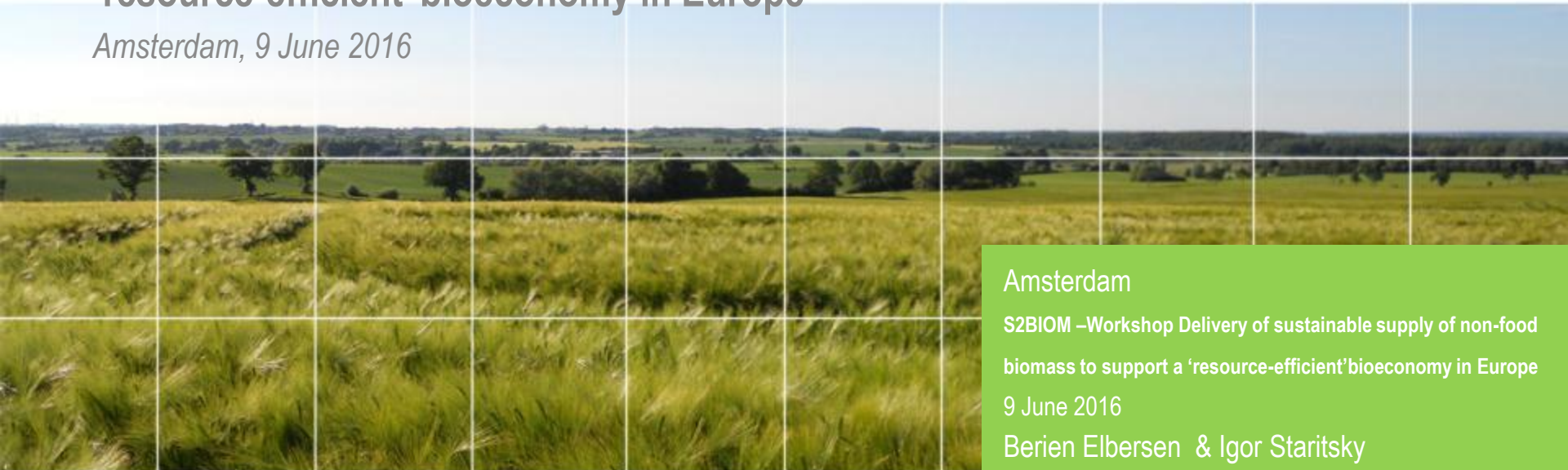


## OVERVIEW OF S2BIOM TOOL BOX

Workshop Delivery of sustainable supply of non-food biomass to support a 'resource-efficient' bioeconomy in Europe

*Amsterdam, 9 June 2016*



Amsterdam

S2BIOM –Workshop Delivery of sustainable supply of non-food biomass to support a 'resource-efficient' bioeconomy in Europe

9 June 2016

Berien Elbersen & Igor Staritsky

# Task 4.7: General User Interface

Help

Scenarios

Supply

Cost

Logistics

Pre-treatment

National full chain assessments

Regional full chain assessments

Demand

Conversion pathways

Roadmaps

## Biomass cost-supply

Data viewer, download & analysis (4.1)

## Full chain assessments

Tool for Integrated and optimal biomass delivery chain network design and evaluation at national and European level (4.4)

Tool for integrated and optimal design and evaluation of regional biomass delivery chains (4.5)

## Biomass demand, pre-treatment and conversion technologies

Tool for viewing main characteristics of technologies and matching biomass to pre-treatment and conversion technologies (4.2)

Market demand for bioenergy and biobased products (4.3)

External data/tools on biomass supply and cost following GIES approach (1.1)

## Task 4.6: Central database

Biomass supply (1.1, 1.3, 1.6) in type, quantity, and quality (2.2) parameters

**Biomass cost data** (1.2, 1.3)

Technical, economic parameters of biomass conversion-end use combinations (2.1, 2.2)

Technical and economic parameters of biomass pre-treatment (3.1)

Environmental parameters of biomass types, conversion and pre-treatment technologies (1.3, 2.1, 3.1)

Market demand (WP7.3)

Biomass hubs and yards

Scenario parameters

Roadmaps

# General User Interface



Tools for biomass chains

My Sites Berien Elbersen

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

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)

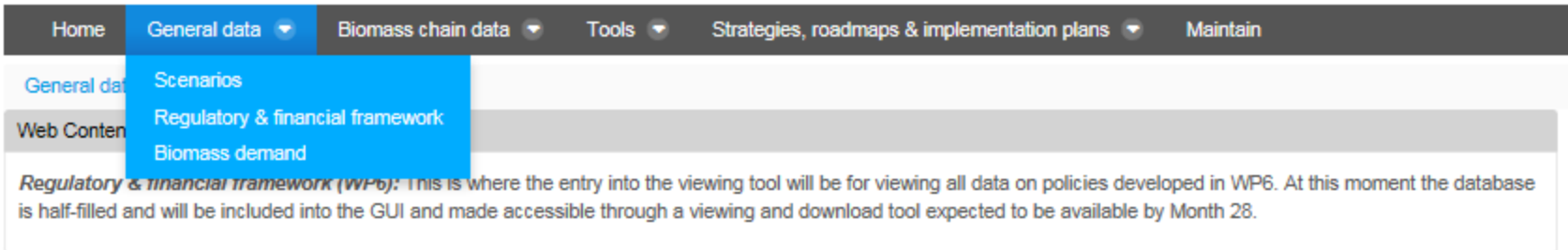
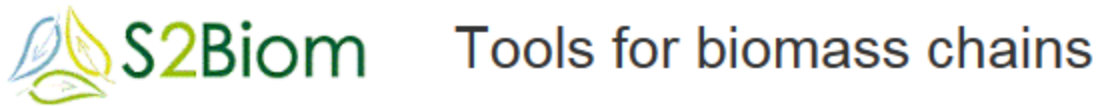
At this moment these tools work for the most recent data included in the WP1 database which is the 2012, 2020 and 2030 supply for the base potential. The base potential equals the sustainable technical potential, considering agreed sustainability standards in CAP (Common Agricultural Policy) for sustainable 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 cost



# General user interface



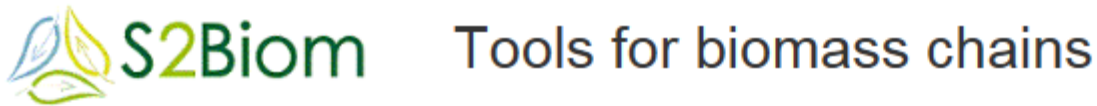
## General data

- Scenarios (WP7)

- Regulatory & financial framework (WP6)

- Biomass demand (WP7)

# General user interface



## 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



Tools for biomass chains

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

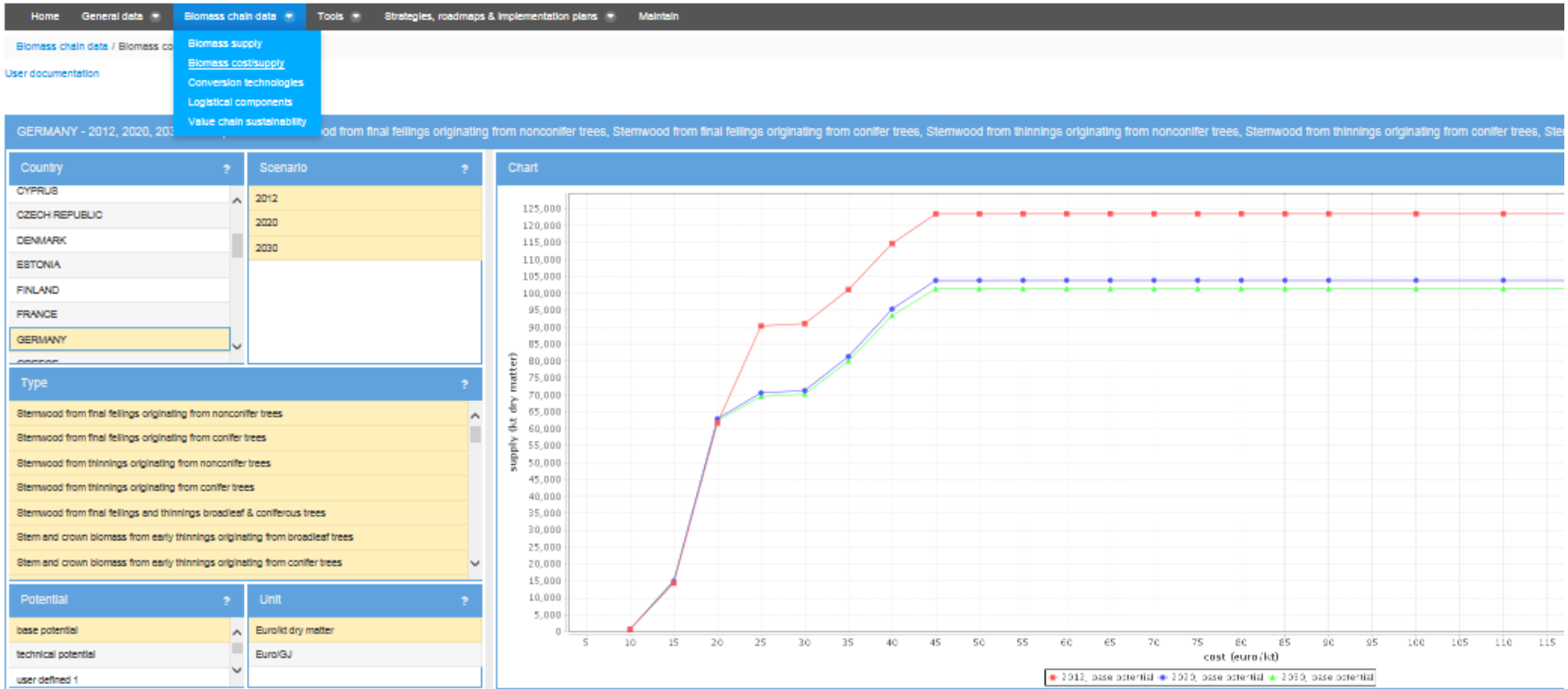
area weighted absolute

Unit: GJ/km<sup>2</sup>

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.

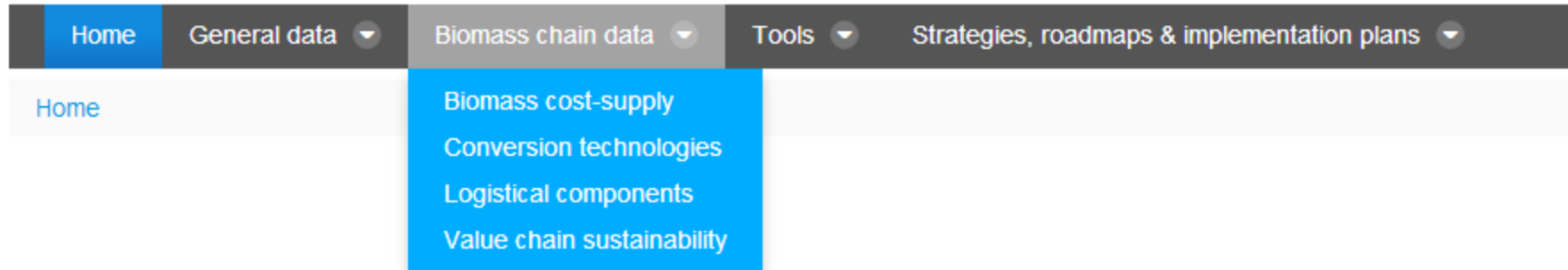
[://s2biom.alterra.wur.nl/web/quest/biomass-cost](http://s2biom.alterra.wur.nl/web/quest/biomass-cost)

# General user interface



## S2Biom

## 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	<input type="text" value="(required) Example with explanation (please"/>	Level of commercial application	<input type="text" value="mention general description of the status"/>
Main category	<input type="text" value="Communion (size reduction)"/>	Year of first implementation in practice	<input type="text" value="2005"/>
Subcategory	<input type="text" value="Chipping: disk chipper"/>	Estimated number of systems in operation since introduction	<input type="text" value="200"/>
Image url	<input type="text" value="www.producer.com/example_machine/picture.jpg"/>	Current Technology Readiness Level in 2014	<input type="text" value="Level 9, System ready for full scale"/>
Most common/suitable applications	<input type="text" value="processing wood residues after harvesting"/>	Expected Technology Readiness Level in 2030	<input type="text" value="Level 9, System ready for full scale"/>
Main operating principle	<input type="text" value="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	<input type="text" value="commercial: www.producer.com/description_machine_type&lt;br/&gt;scientific: authname(s), year (the full references of scientific papers will be stored in external reference word doc)&lt;br/&gt;other: websites, magazines, etc."/>

### TECHNICAL PROPERTIES

Energy demand	<input type="text" value="3.2"/>	<input type="text" value="MJ/t"/>	Number of full load hours per year	<input type="text" value="1600"/>
Type of energy needed	<input type="text" value="Diesel"/>		Maximum load volume of transport system	<input type="text" value=""/>
Other input demand	<input type="text" value="none"/>		Maximum load weight of transport system	<input type="text" value="0"/>
Pre-treatment efficiency	<input type="text" value="0.96"/>	<input type="text" value="(output/input)"/>	Typical lifetime of equipment	<input type="text" value="7"/>
Input processing capacity	<input type="text" value="150"/>	<input type="text" value="m3/h"/>	Labour requirements pre-treatment	<input type="text" value="0.0133"/>
Storage capacity for input	<input type="text" value=""/>	<input type="text" value="m3"/>	Labour requirements storage	<input type="text" value=""/>
Storage capacity for output	<input type="text" value="20"/>	<input type="text" value="m3"/>	Labour requirements transport	<input type="text" value=""/>
			Transportability	<input type="text" value="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/m<sup>3</sup> 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/m<sup>3</sup> 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: (€)

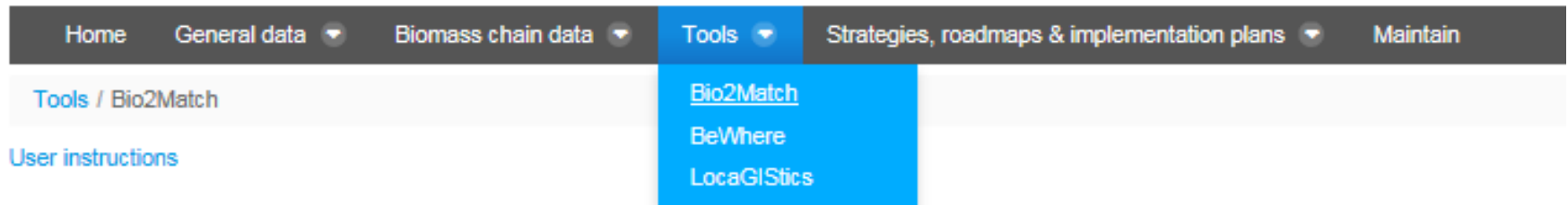
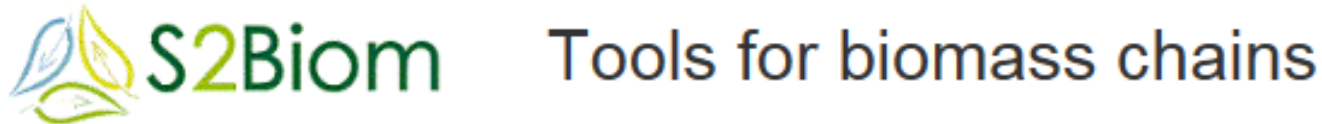
Transport costs fixed: (€)

Infrastructure needed: Connection to road network

Save Cancel

Edited by: Hugo de Groot, Bert Annevelink

# General user interface



## Tools:

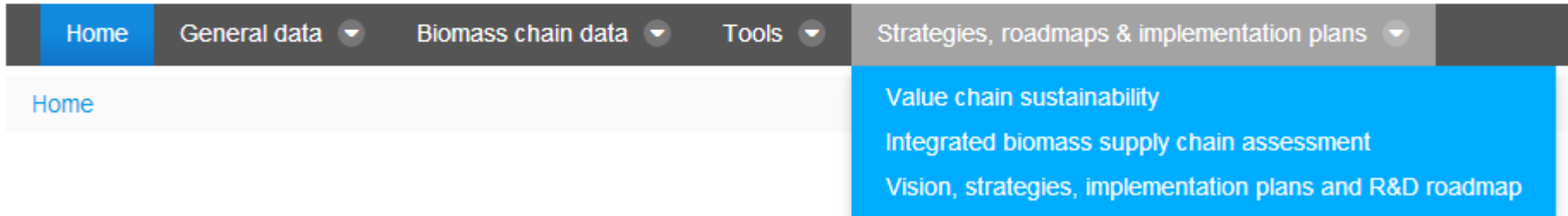
- Bio2Match: Biomass & conversion pathways matching (WP2 &3)  
Full chain assessments ( WP4.3&4.4)
- EU wide-national and regional assessment tool (**BeWhere**)
- Local assessment tool (**LocaGIStics**)

# 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](https://s2biom.alterra.wur.nl)

Test login provided:

demo

helsinki

THANKS FOR YOUR ATTENTION  
[BERIEN.ELBERSEN@WUR.NL](mailto:BERIEN.ELBERSEN@WUR.NL)

QUESTIONS?