

The S2Biom project - overview

Workshop „Biomass for growth“
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Main objective: Delivery of sustainable supply of non-food biomass to support a resource-efficient Bioeconomy in Europe

- **Funding programme: 7th Framework Programme (FP7)**
- **Funding volume: 4 Mio € (EC co-funding)**
- **Duration: 36+3 Month (09/2013 – 11/2016)**
- **Participation: 31 Partners from 16 countries (EU28, Western Balkans, Moldova, Ukraine, Turkey)**
- **Project website: www.s2biom.eu**

Project partners



No.	Institution/Organisation (original language)	Acronym	Country code
1	Agency for Renewable Resources	FNR	DE
2	Imperial College	Imperial	UK
3	Stichting Dienst Landbouwkundig Onderzoek	DLO	NL
4	University of Freiburg	ALU-FR	DE
5	Joanneum Research	JR	AT
6	International Institute for Applied Systems Analysis	IIASA	AT
7	European Forest Institute	EFI	FI
8	Natural Resources Institute Finland	LUKE	FI
9	VTT Technical Research Centre of Finland	VTT	FI
10	University of Bologna	UniBO	IT
11	Energy research Centre of the Netherlands	ECN	NL
12	Flemish Institute for Technological Research	VITO	BR
13	IINAS - International Institute for Sustainability Analysis and -Strategy	IINAS	DE
14	Clever Consult	CC	BE
15	SYNCOM Research and Development Consulting GmbH	SYNCOM	DE
16	WIP Renewable Energies	WIP	DE
17	Biomass technology group BV	BTG	NL
18	Central European Initiative	CEI	IT
19	Institute of Soil Science and Plant Cultivation, State Research Institute	IUNG	PL
20	International Centre for Sustainable Development of Energy, Water and Environment Systems	SDEWES	HR
21	Ege University Solar Energy Institute	EU-SEI	TR
22	National Institute for Agricultural Research	INRA	FR
23	Joint Research Centre	JRC	IT
24	CENER-CIEMAT Foundation	CENER	ES
25	Research Centre for Energy Resources and Consumption	CIRCE	ES
26	Slovenian Forestry Institute	SFI	SI
27	Centre for Research & Technology Hellas	CERTH	EL
28	Renewable Energy Agency	REA	UA
29	University of Belgrade - Faculty of Mechanical Engineering	UBFME	RS
30	Census-Bio	Census-Bio	UK
31	Biomass Research	Biomass Research	NL



- *In support of the **sustainable delivery of non-food lignocellulosic biomass at local, regional and pan-European level** through developing **Strategies, and Roadmaps** that are informed by a “computerized and easy to use” **planning toolset (and **respective databases**)** with up to date harmonized data for EU28, western Balkans, Turkey, Moldova and Ukraine.*
- *Results cover the **whole biomass delivery chain** from primary biomass to end-use of non-food products and from logistics, pre-treatment to conversion technologies.*
- *Spatial level is NUTS1 to NUTS3 for the tool sets and the database*

Large datasets in databases

- Sustainable cost supply of solid lignocellulosic biomass (forestry, biomass crops, agricultural residues, and secondary residues from wood and food industry, wastes) at NUTS3 level
- Characteristics of biomass for thermochemical and biochemical conversion pathways
- Pre-treatment technologies and logistics components
- Market techno-economic data for biobased product to market combinations
- Policies and support mechanisms for energy, agriculture, waste, environment, etc.

Harmonised methodologies to assess biobased economy

- Biomass cost supply assessment: building on BEE, EUWood, Biomass Futures, Biomass Policies, ...
- Standardised biomass characterisation and quality requirement for each biomass conversion technology
- Characterisation of main logistical components, i.e. storage, pre-treatment and transportation technologies.
- Life-cycle based environmental sustainability assessment with sustainability criteria and indicators.
- Policy analysis
- Case studies to validate the Strategies, Roadmaps and the Tool sets from the users' point of view in several regions of Europe

Key S2Biom outputs - viewing tool: supply



2012 - Production from forests - Stemwood from final fellings & thinnings - Final fellings from nonconifer trees - base potential - energy value - area weighted

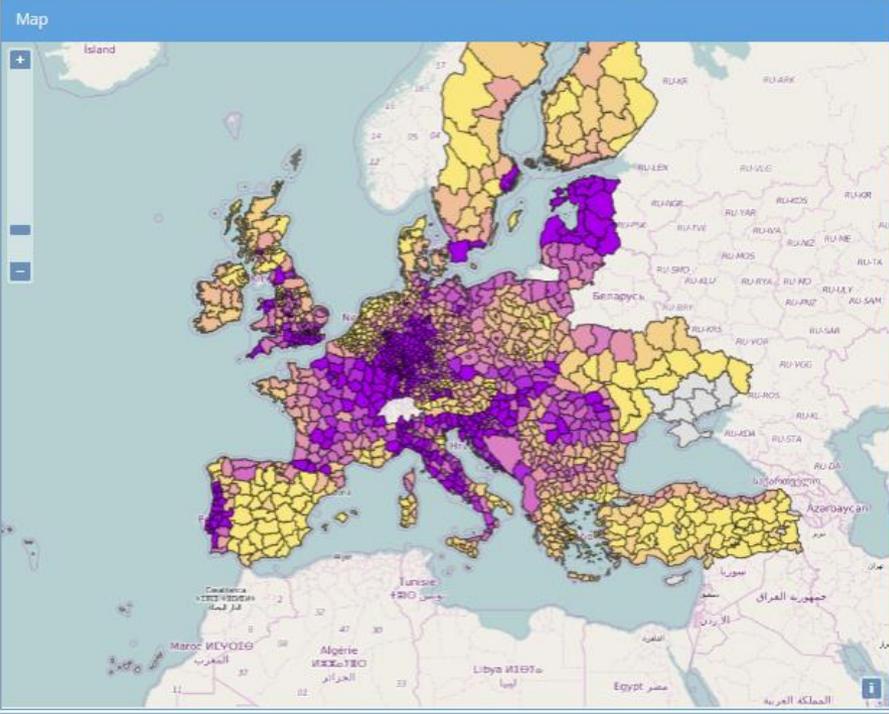
Administrative level	Scenario
nuts1	2012
nuts2	2020
nuts3	2030

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
Thinnings from nonconifer trees

Potential
base potential
technical potential
user defined 1



energy value	weight	volume	costs
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			

Current selection	Identify result	Selected reg
NUTS level	nuts3	
Scenario	2012	
Category	Production from forests	
Subcategory	Stemwood from final fellings & thinnings	
Type	Final fellings from nonconifer trees	
Potential	base potential	



Key S2Biom outputs - cost/supply

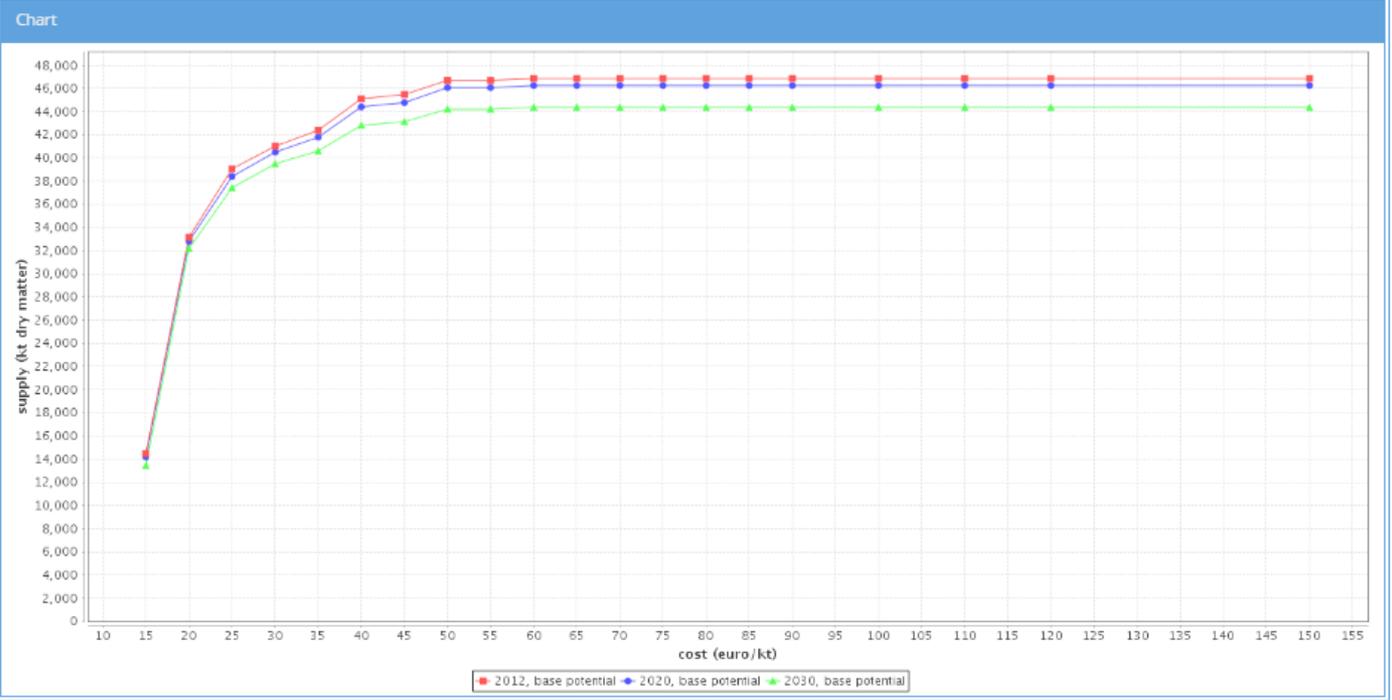


ALBANIA, AUSTRIA, BELGIUM, BOSNIA AND HERZEGOVINA, etc. - 2012, 2020, 2030 - base potential - Stemwood from thinnings originating from nonconifer trees

Country	Scenario
ALBANIA	2012
AUSTRIA	2020
BELGIUM	2030
BOSNIA AND HERZEGOVINA	
BULGARIA	
CROATIA	
CYPRUS	

Type
Stemwood from final fellings originating from nonconifer trees
Stemwood from final fellings originating from conifer trees
Stemwood from thinnings originating from nonconifer trees
Stemwood from thinnings originating from conifer trees
Stemwood from final fellings and thinnings broadleaf & coniferous tr...
Stem and crown biomass from early thinnings originating from broad...
Stem and crown biomass from early thinnings originating from conife...

Potential	Unit
base potential	Euro/kt dry matter
technical potential	Euro/Gj
user defined 1	



Key S2Biom outputs - Bio2Match



Select rows and columns

⇄ Switch rows and columns

Columns - Conversion tec. ?

- Syngas platform
- Gasification technologi...
- Direct combustion of s...
- Anaerobic digestion
- Biochemical treatment
- Torrefaction
- Treatment in subcritica...
- Fast pyrolysis

Rows - Biomass types ?

- Production from forests
- Primary residues from ...
- Primary production of ...
- Agricultural residues
- Grassland
- Other land use
- Secondary residues fro...
- Secondary residues of ...
- Municipal waste
- Waste from wood

Match

Name	Syngas to methanol (41)	Producer gas to biomethane (44)	Syngas to FT-diesel (52)
Final fellings from nonconifer trees	✓	✓	✓
Final fellings from conifer trees	✓	✓	✓
Thinnings from nonconifer trees	✓	✓	✓
Thinnings from conifer trees	✓	✓	✓
Early thinnings from nonconifer trees	✗	✗	✗
Early thinnings from conifer trees	✓	✓	✓

Matching overview for biomass type "Stem and crown biomass from early thinnings originating from broadleaf trees" and conversion "S... ?

Name	Group	Match Status
Ash content	Thermal conversion	✗
Ash melting behavior (DT)	Thermal conversion	✓
Bulk density, BD	Physical treatment	✓
Chlorine content	Thermal conversion	✓
Moisture content	Physical treatment	✓
Nitrogen content	Thermal conversion	✓

Matching characteristics ?

- Anaerobic digestion
- Biochemical treatment
- Physical treatment
- Thermal conversion

Product groups ?

- electricity
- biofuels and biobased products
- heat

Regions ?

Legend

- ✓ Physical match
- ⚠ Fundamental match, no physical...
- ✗ No match
- Not taken into consideration
- 🔍 Missing data



Key S2Biom outputs - LocaGIStics



My Sites Igor Staritsky

S2Biom Tools for biomass chains

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

Tools / LocaGIStics

[User documentation](#)

Countries	Areas of interest
France	Burgundy
Spain	

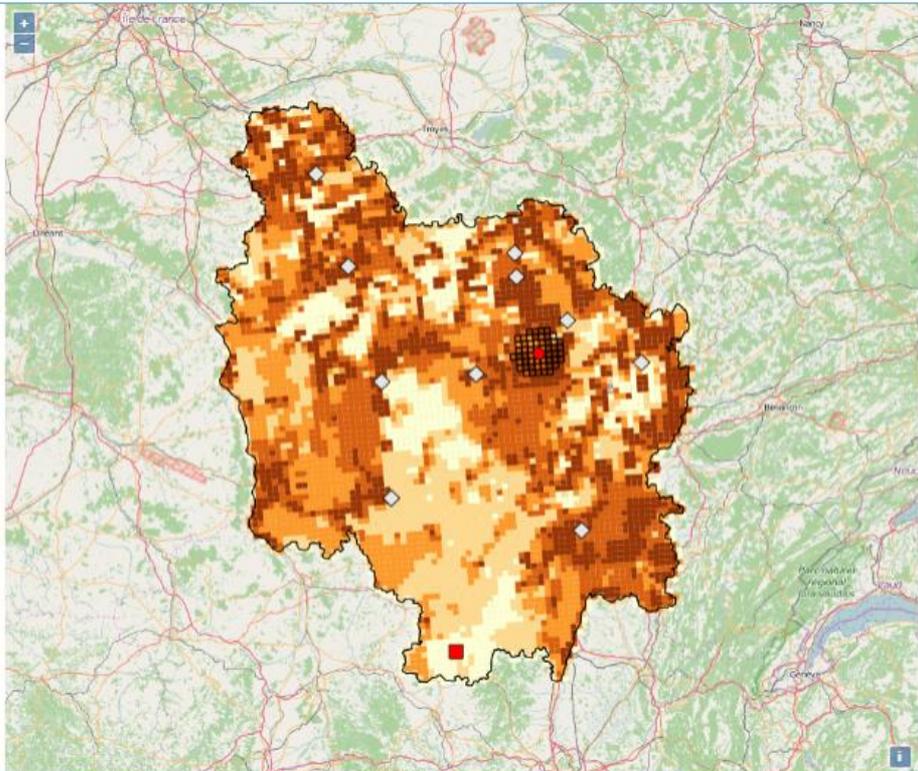
Cases
Burgundy straw and miscanthus

Variants				
Name	Financi...	Energy p...	Net GHG...	
[default ...]	3,378,185	441,132	42,241	
test	3,678,266	436,085	41,771	

Create Summarize

Biomass types			
Name	Availab..	Field - L..	ICP - PP..
Straw	33	14	9
Miscanthus	100	15	10

Hide



Biomass conversion plants						
Name	Siz...	Am..	Fin...	En...	Net GH...	
[default n...]	30...	30...	3.3...	44...	42,241	

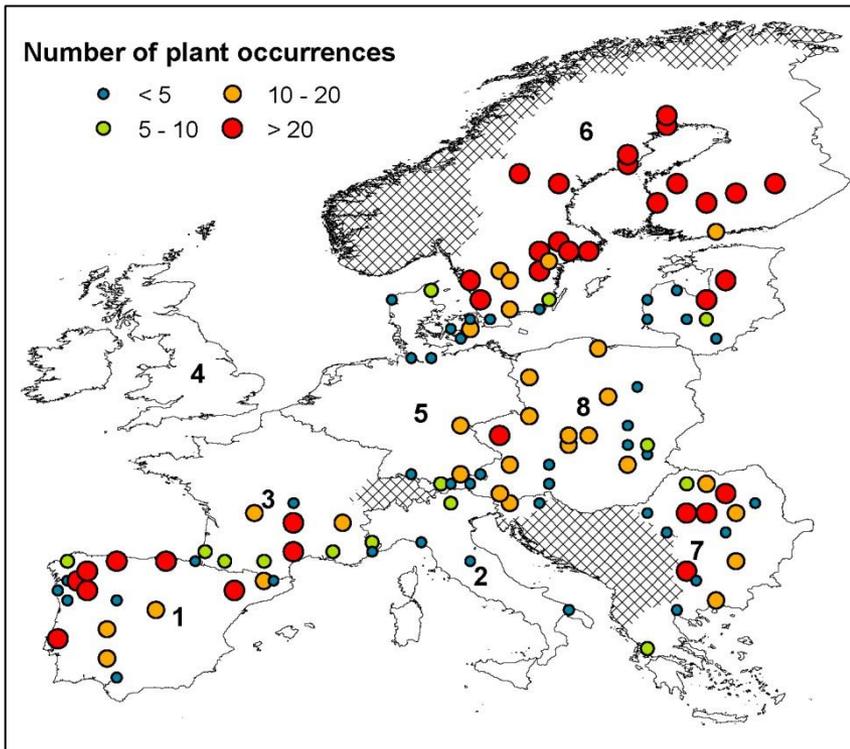
Create

Intermediate collection points			
Name	Amoun...	Distanc...	
[default name]	30,595	301,245	

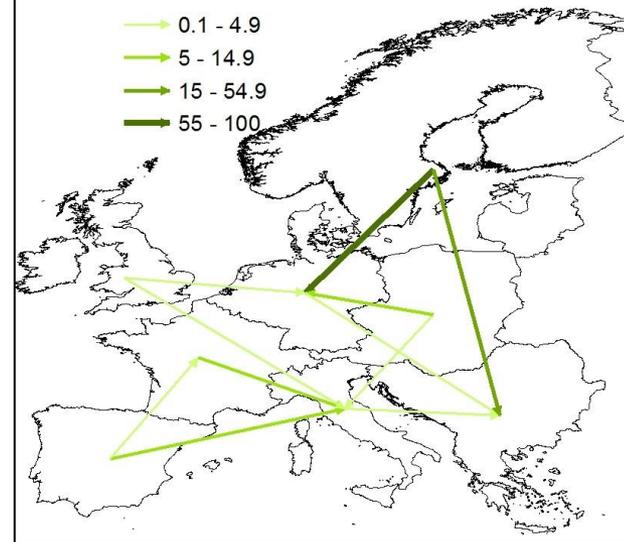
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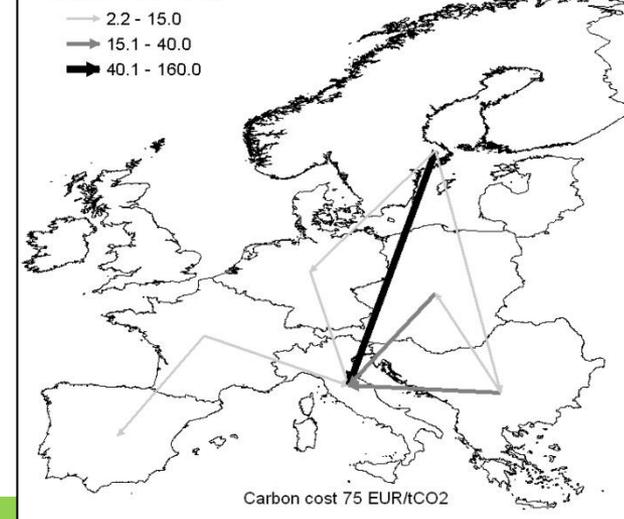
Key S2Biom outputs - European Model - BeWhere



Biomass trade in Europe (PJ)
Carbon cost 150 EUR/tCO₂



Biofuel trade (PJ)



Collaborative effort of all partners



Thanks for your attention!



S2Biom

www.s2biom.eu

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With support from



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