S2Biom Workshop

The S2Biom project - Introduction

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Road map

- **Overview of the project**
- **Objectives**
- **Project structure**
  - Work package description
- **Results and examples of the outcome**
  - Data quality
  - Atlas examples
  - Tool set examples

S2Biom at a glance

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 Universtity 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

Our objectives

- ***In support of the sustainable delivery of non-food lignocellulosic biomass at local, regional and pan-European level through developing Strategies, and Roadmaps that will be 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.***

- **Research *covers 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 toolset and the database***

We collaborate with:

- **EU projects: BEE, CEUBIOM, Biomass Futures, Biomass Policies, Biomass Trade Centres, CAPRI, Sector, Bioboost, Logistec, INFRES and EuroPruning;**

- **Biobased industries: close collaboration with key stakeholders from industry and market sectors.**

- **Energy Community: collaboration with Secretariat and Contracting Parties (e.g. Serbia, Macedonia, Moldova, Ukraine).**

Project Structure

Coordination & Management

Theme 1: Data & Tools (WPs 1-4)

- Current and future sustainable lignocellulosic biomass costs and supply (domestic and from imports) in EU28; Western Balkans, Moldova, Ukraine and Turkey.
- Common operating data, models, and tools representing the entire biomass supply chain
- Incorporation of models and tools for technical, environmental, economic and social impact analysis

Theme 2: Strategies & Roadmaps (WPs 5-8)

- Policy and regulations for supplying the future bioeconomy
- Support for future industrial investments
- Clarity on cross sector sustainability
- Strategies & Roadmap
- Ex ante impact assessment

Theme 3: Validation & project outreach (WPs 9-10)

- Support for policymaking at local, national, regional and EU28 levels by visualizing the outcomes of proposed policies
- Case Studies
- Stakeholder engagement
- Information Campaign
- Improvement of public awareness, education, and outreach

Thematic structure (1): Data, databases, methods & tools

Theme 1 (WP1 – WP4)

- **WP1: Sustainable biomass cost-supply**
- **WP2: Biomass conversion technologies for energy and bio-based products**
- **WP3: Optimal logistics for sustainable non-food biomass feedstock delivery chains**

- WP4: Toolset for interactive biomass supply – demand matching in sustainable biomass value chains

Thematic structure (2): Data, databases, methods, markets and policy

Theme 2 (WP5 – WP8)

- **WP5: Value chain sustainability across the bio-based sectors**
- **WP6: Regulatory & financial framework to mobilise non-food biomass to bio-based products & bioenergy market**
- **WP7: Integrated Assessment-Optimisation of biomass supply chains to satisfy the demand**

- WP8: Development of a vision, strategies, implementation plans and a R&D roadmap

Thematic structure (3): Case studies, workshops

Theme 3 (WP9 – WP10)
+ Project management (WP11)

- **Theme 1: Results**
- **Theme 2: Results**

- WP9: Regional adaptation & application, user integration, testing, validation and implementation planning
- WP10: Stakeholder engagement, cooperation with initiatives, dissemination and exploitation of results
- WP11: Project management

What we have accomplished so far (I)

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.

What we have accomplished so far (II)

Harmonised methodologies to assess biobased economy

- Biomass cost supply assessment: building on BEE, EUWood, Biomass Futures, Biomass Policies - in collaboration with JRC, BISO and in discussion with BeO
- Standardized biomass characterisation and quality requirement for each biomass conversion technology
- Characterization 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

Validity & accuracy of data/ (I) Supply

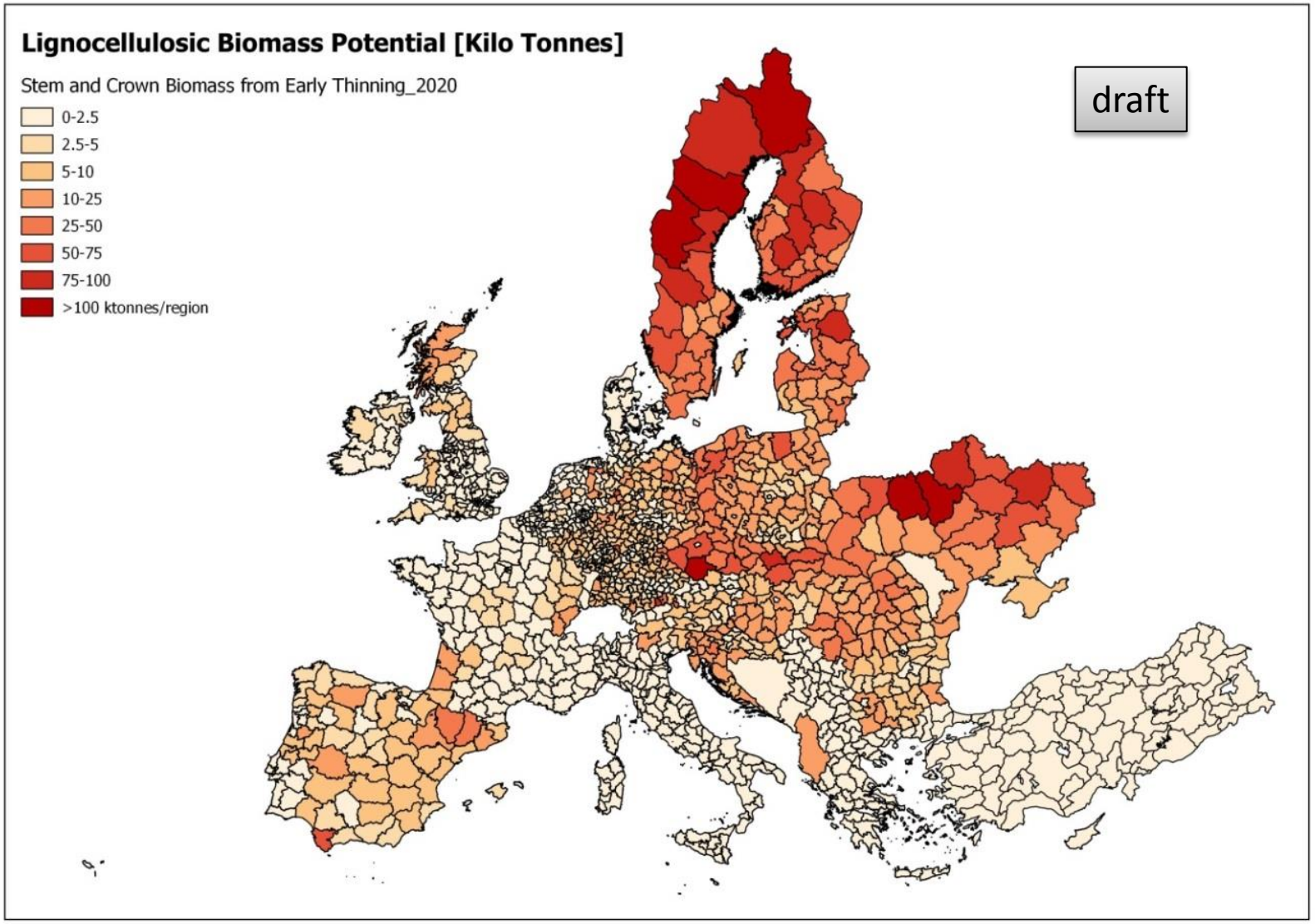
Types of potentials

- **Technical potential**
  - Technical constraints &
  - Current uses for food, feed, biobased products, energy & fuels
- **Base potential**
  - Sustainable potential – RED criteria
  - Considering agreed and established sustainability standards at EU & intl level
- **User-defined potentials**
  - Vary in terms of type and number of considerations per biomass type
  - Options to choose & combine

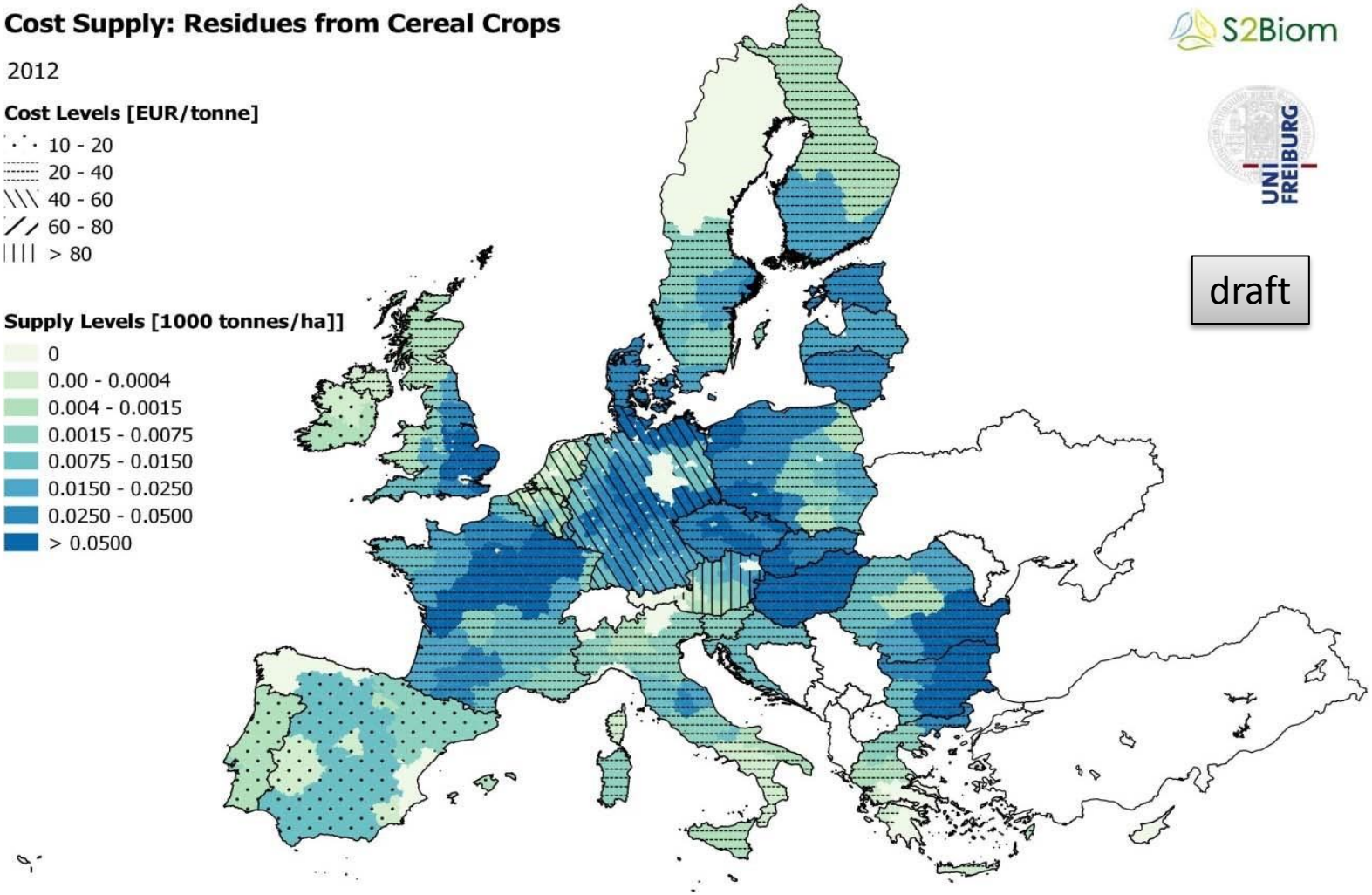
Types of feedstocks

- **Primary production of biomass crops (lignocellulosic and woody crops)**
  - Miscanthus, giant reed, cardoon, sorghum, etc.
- **Agricultural residues**
  - From arable crops cereals, rape, sunflower, grain maize and sugarbeet (leaves).
  - Secondary from agro indusrties
- **Grassland**
- **Forestry**
  - Stemwood, thinnings, etc
  - Secondary- wood processing industries
- **Road verge grass**
- **Landscape care management biomass**
- **Waste/ tertiary residues**

Display of results in the toolset/ atlas: Stem and Crown Biomass from Early Thinnings 2020



Display of results in the toolset/ atlas: Cost-supply potential for residues from cereal crops



Validity & accuracy of data (II)
Demand, Market projections

S2Biom

- **Key question S2Biom modelling focuses: To what extent the additional biomass demand for chemicals and materials could be sufficiently significant to:**
  - influence lignocellulosic biomass prices and
  - induce scarcity and competition issues with
  - energy applications?

- **Focus of specific product to market combinations (PMCs- see next slide): Uncertainties are substantial with respect to:**
  - technologies that are to be further developed
  - supporting policies required
  - the future of (petro)chemical industry in EU
  - the oil price, being a strong factor affecting the
  - prospects for biobased chemicals and
  - Materials

Results so far

Current state of biomass use for bioenergy, biofuels and bio-based materials & scenarios for modelling future demand in Europe

Tool demo for testing; two webinars so far - new update within June - initial tailoring to case studies; BeWhere tool, LocaGIStics tool, Bio2Match matching tool, benchmarking tool for resource efficient use of biomass (policy guidelines)

Strategic and advanced case study work ongoing

Vision of 1 Billion tonnes lignocellulosic biomass in Europe by 2030- open consultation & ongoing validation

Key S2Biom outputs

Database, method and atlas of sustainable non-food lignocellulosic biomass feedstocks at NUTS3 level for EU28, western Balkans, Turkey, Moldova and Ukraine.

Database, method and tool with indicators to assist decision makers in matching biomass types with the optimal conversion technologies.

Database, method and tool to evaluate promising logistics supply chains at local, regional level with sustainability and demand criteria

A computerised toolset integrating data and methodologies from biomass cost supply, conversion and logistics which will "facilitate the integrated design and evaluation of optimal biomass delivery chains at European, national, regional and local scale.

Key S2Biom outputs

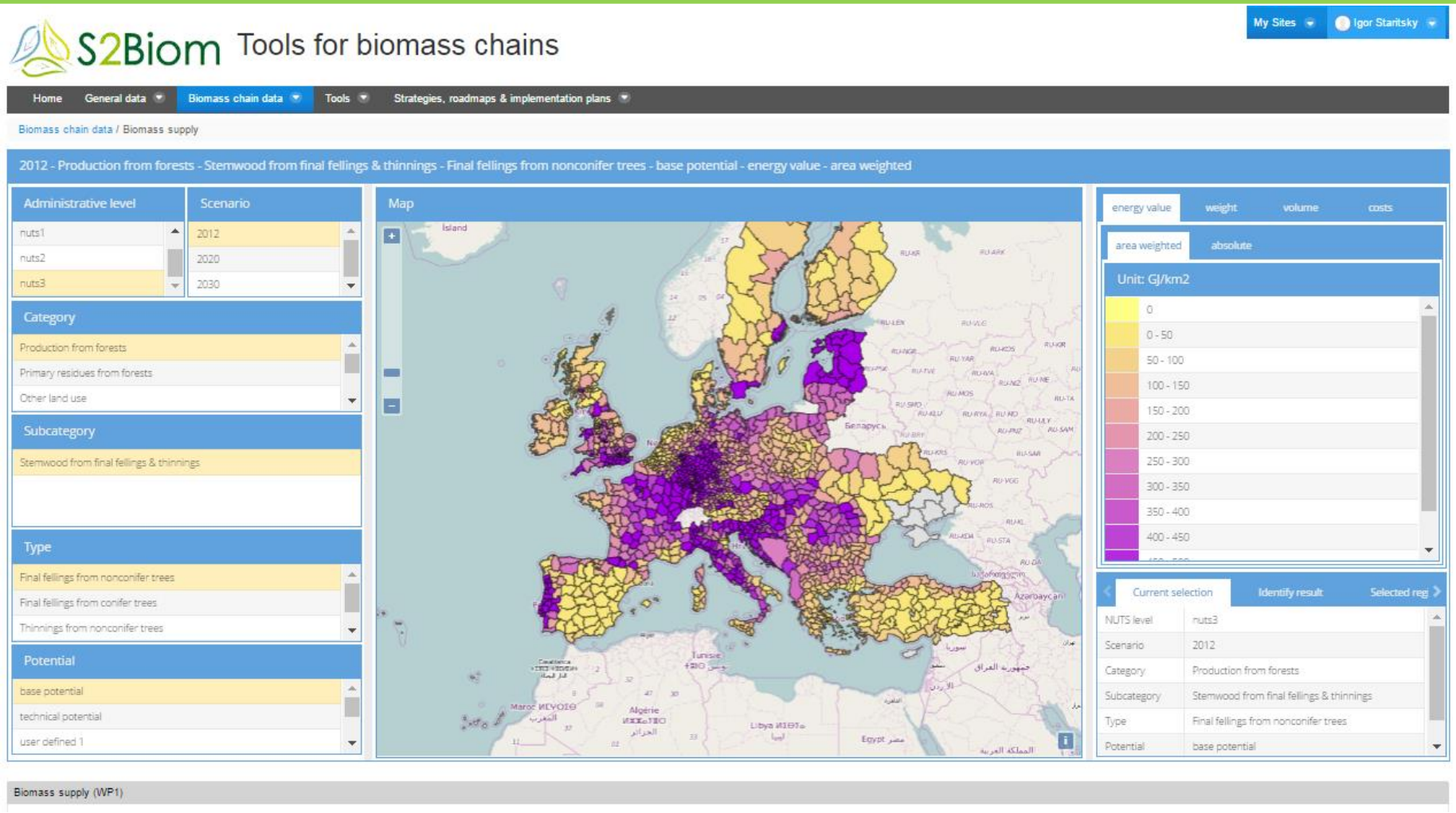
Harmonized sustainability requirements for bioeconomy value chains, including guidelines for methodologies to determine sustainability performance.

A database on EU and national level, for all 37 countries analysed in this call, and policy guidelines in relation to the mobilization of sustainable non-food biomass for the biobased economy.

Strategies & implementation plans for lignocellulosic biomass supply tailored to a) different levels of governance (i.e. regional and specific local ones linked to case studies) and ii) industrial sectors

Case studies to validate the Strategies, Roadmaps and the Tool from the users' point of view (i.e. Member States, Associates and neighbouring countries, regional authorities, industries)

Key S2Biom outputs - viewing tool: supply



http://s2biom.alterra.wur.nl

Account: demo
Password: helsinki

Key S2Biom outputs - cost/supply

S2Biom Tools for biomass chains

My Sites | Igor Staritsky

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

Biomass chain data / Biomass cost/supply

User documentation

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

Country: ALBANIA, AUSTRIA, BELGIUM, BOSNIA AND HERZEGOVINA, BULGARIA, CROATIA, CYPRUS

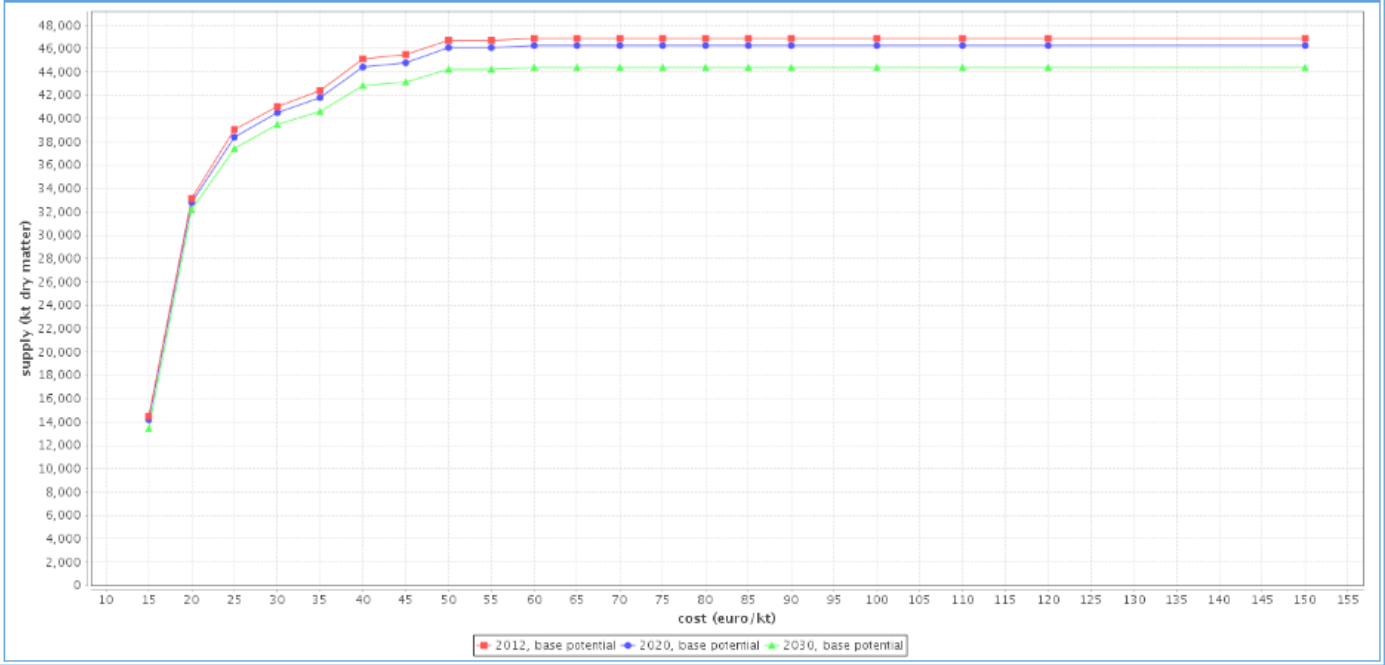
Scenario: 2012, 2020, 2030

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...

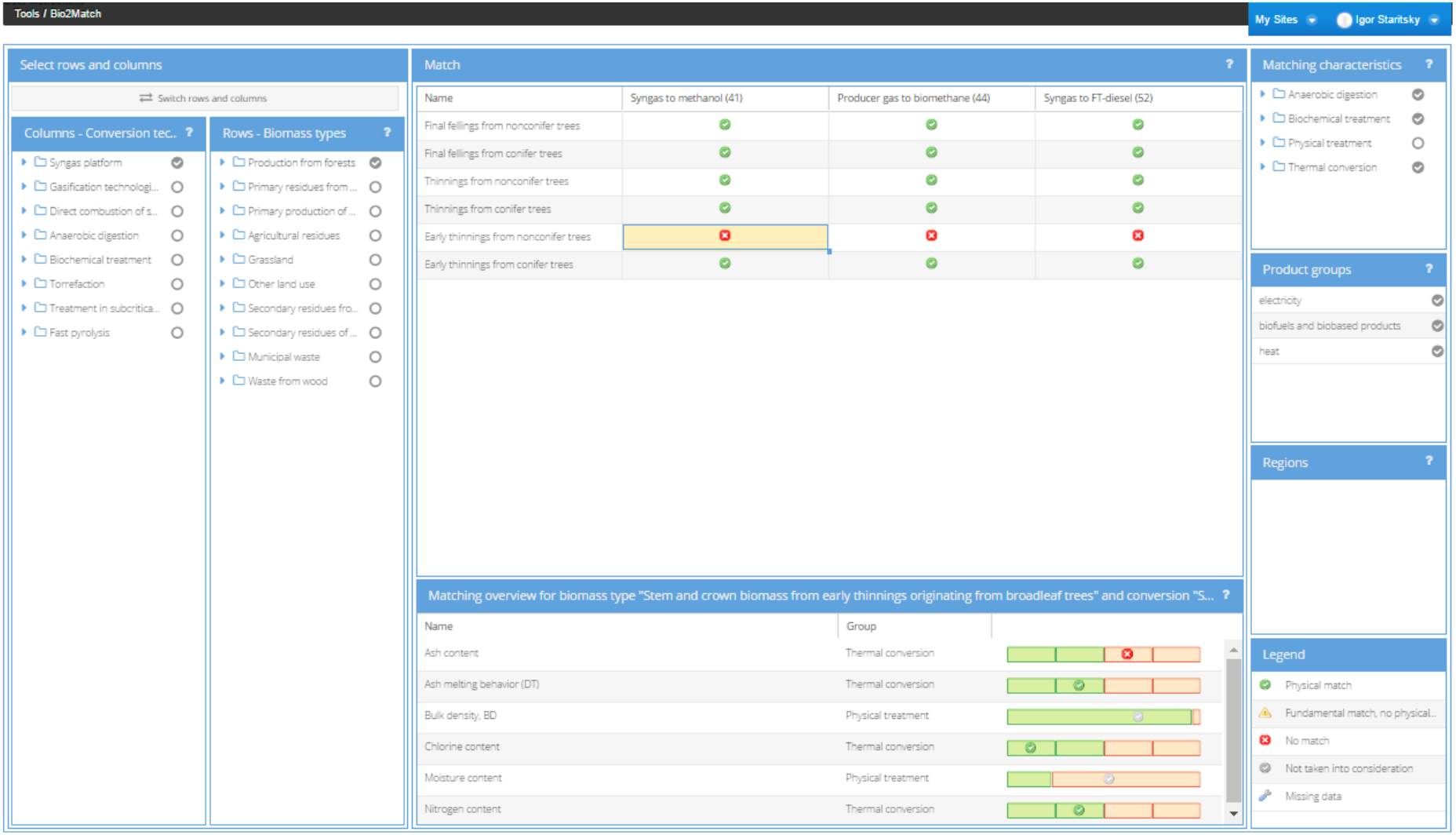
Potential: base potential; technical potential; user defined 1

Unit: Euro/kt dry matter; Euro/GJ

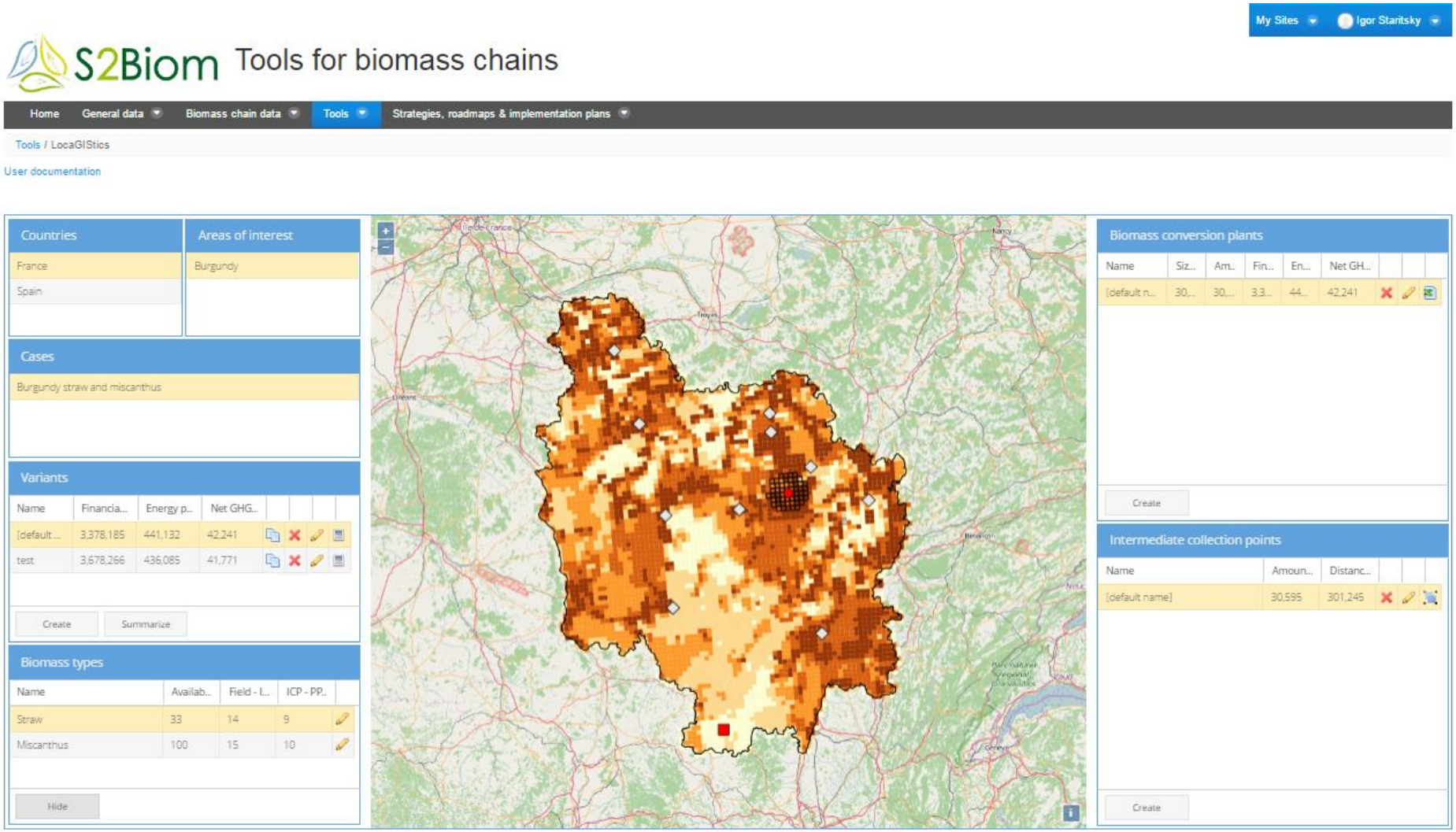
Chart



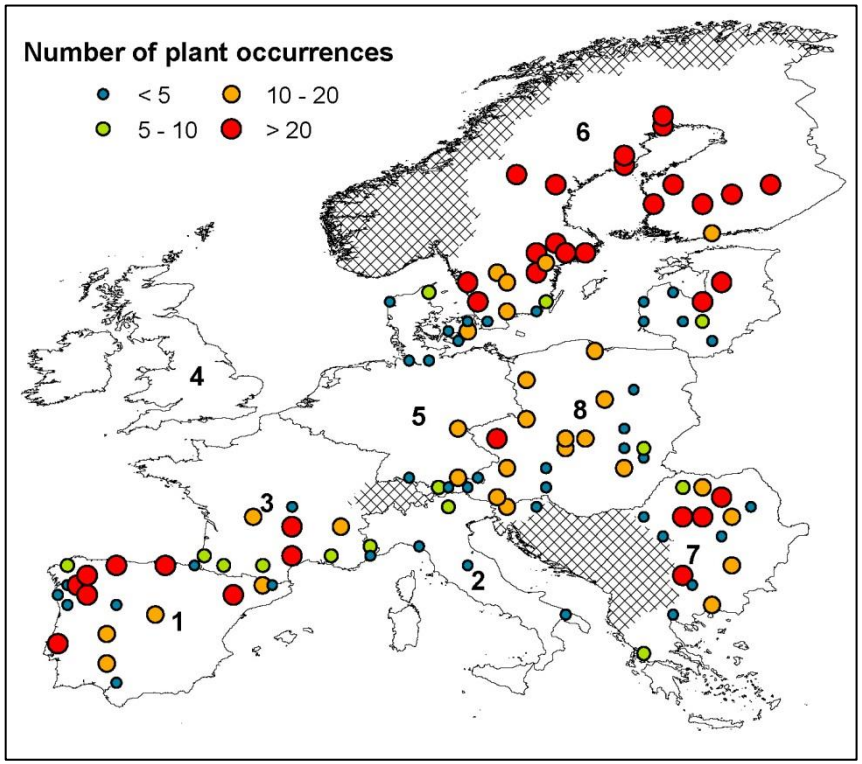
Key S2Biom outputs - Bio2Match

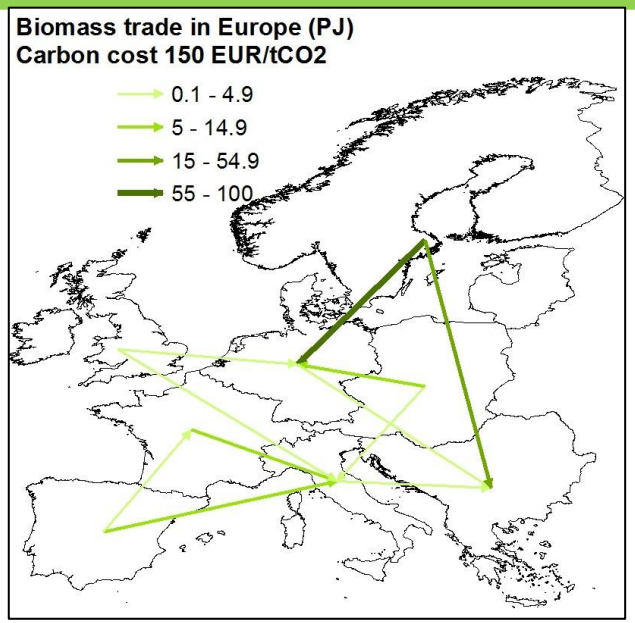


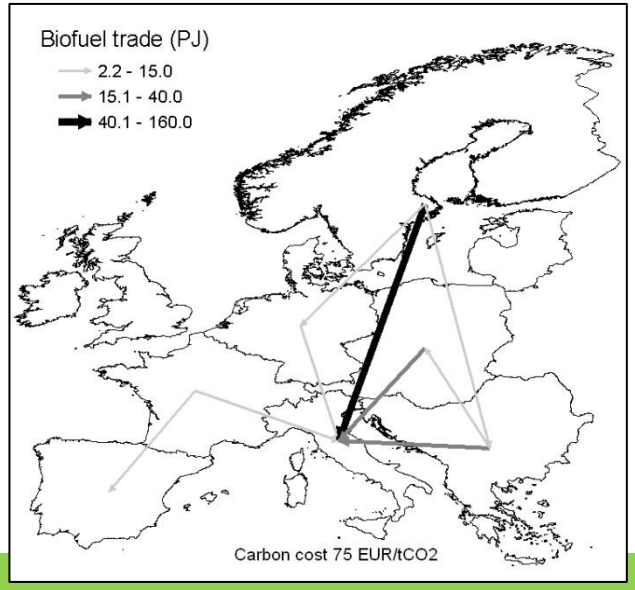
Key S2Biom outputs - LocaGIStics



Key S2Biom outputs - European Model - BeWhere







What will S2Biom deliver at the end of the project (November 2016)

- **Large datasets in databases:**
  - Facilitate the formation and comparability of comprehensive databases populated with consistent and accurate datasets on:
    - Lignocellulosic biomass cost supply, conversion technologies, logistic technologies, matching tool for biomass to conversion technologies, policies/ support mechanisms
- **Harmonised methodologies to asses biobased economy (cross sector)**
  - Transparency in data collection - harmonised protocols
  - Cross sector integrated frameworks addressing all bioeconomy sectors for: Life Cycle Analysis, Sustainability Criteria & Indicators Economic & energy modelling and Policy
- **S2Biom toolset- improve (feedstocks - geography) IT capacity for biomass cost supply & logistics for a wide range of feedstocks in a large geographic area with high resolution**
- **Bridging policy/regulatory framework with local capacity and investment opportunities to develop action and investment plans in selected cases (special focus in Southeast Europe)**
- **Developing a Vision, Strategies, regional implementation plans (EU28 & EnC) & an R&D roadmap**

Project Partners

Collaborative effort of all partners

Thanks for your attention!

S2Biom

www.s2biom.eu

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