BIOVOICES

CONNECTING BIO-BASED FORCES FOR A SUSTAINABLE WORLD

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CONNECTING BIO-BASED FORCES FOR A SUSTAINABLE WORLD

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DELIVERABLE 4.1

Stakeholders´ classification

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REVISION HISTORY

VERSION	DATE	REVIEWER	MODIFICATIONS
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1. EXECUTIVE SUMMARY

Over the next years, global population growth is expected to rise to a total of 9 billion people in 2050. Such an increase, along with the rapid depletion of many resources, external energy dependence compounded by price instability, increasing pressures on the environment, as well as climate change, are all factors that make it necessary for Europe to make radical changes in how it produces, consumes, processes, stores, recycles and uses biological resources.

The application of bioeconomy has become a key driver behind the development of new bio-based products, as it enables a smart use of microorganisms and enzymes for the sustainable processing and production of a wide variety of chemicals, compounds, materials and fuels, which are then applied across the manufacturing sector, including chemicals, pharmaceuticals, food and feed, paper and pulp, textiles, energy, materials and polymers. All mentioned before helps the actions of replacing petro-based products and processes but also leads to the development of new ones, while reducing the use of crucial inputs like energy, water or chemicals in production processes. Consequently, modern biotechnology applications reduce greenhouse gas emissions, waste generation and the use of non-renewable resources.

Thanks to a collaborative work between different actors involved in bioeconomy, BIOVOICES project will help to understand better the barriers and challenges that the bioeconomy is going through to get to the market and be competitive.

The aim of this deliverable is to create a stakeholders' classification in order to set up the best way to identify the thematic group to be involved in mobilization and mutual learning activities.

For carrying the objective out, we took into account different literature and opinions from different experts in this area. At the end, we created a table where we were able to divide different groups of stakeholders depending on thematic, localization and type of agent.

2. INTRODUCTION

Growing concerns about greenhouse gas emissions and their detrimental effect in terms of climate change lead us to the need to reduce dependence on fossil carbon, the need to use resources more efficiently with the objective to sustain a growing global population and the importance of promoting a transition towards a renewable bio-based economy has been increasingly recognized in recent years.

By making a better use of 2G biomass, by-products and wastes (e.g. forestry residues, food waste), the creation of less expensive products and or products with new functions, the bio-based economy will constitute an important part in the process for the further stimulation and growth of the society, with one goal in view: to respond to the societal challenges and needs. A bio-based economy would draw on locally produced 2G-biomass to produce a variety of outputs, including chemicals and 2G or higher fuels that are currently still largely produced from imported fossil resources, thereby creating local jobs and growth while reducing the environmental impact of these industries and their value chain elsewhere.

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Hence, there is a need to understand and therefore to isolate information on the bioeconomy activities from those of other non-biobased activities, in order to understand its potential and relevance within industry and as a main economy engine. A study commissioned by the Bio-based Industries Consortium (BIC), indicated that the bioeconomy employed as much as 18,3 million employees in 2013, and realized about €2,1 trillion turnover [1]. This includes employment that is generated in a broad range of industries, including agriculture, forestry, paper production, food and beverages, textiles, etc. but also covers the parts of the production of chemicals and pharmaceuticals that are bio-based.

Despite being able to tackle some of today's global societal challenges including climate change, dwindling fossil fuel resources and the need for the development of a more sustainable and resource-efficient industry, several hurdles (legislation, sustainability, etc.) continue to hamper the full exploitation of Bioeconomy potential today.

BIOVOICES project wants to contribute to overcome some of these several hurdles with the objective of engaging all relevant stakeholders groups (policy makers, researchers, business community, civil society and media) to address societal, environmental and economic challenges related to biobased products and applications.

3. OBJECTIVES

The objective of this deliverable is to create a classification of stakeholders' groups in order to identify, through a categorization by theme and stakeholder type, the thematic group relevant for mobilization and mutual learning. This classification is the basis for targeted community building, ensuring that all the necessary competences, interests, knowledge, experience and variety of perspectives in relation to each of the mutual learning contents will be maximally mobilised and nurtured (following the 3D BIOVoices Model).

To achieve this principal objective, two specific objectives were established:

1) Draw information from existing studies and literature (other projects related to BIOVOICES described in the description of work, annual reports, bioeconomy strategies, ect.);
2) Consult academic, technological and experts of bioeconomy inside and outside project framework.

4. METHODOLOGY

We traced the following strategy to create the classification of stakeholders' groups based on the categorization by theme and stakeholder type through:

1) Review of bibliography/literature within European projects, bioeconomy strategies and other reports which could be interesting for the classification.

[1] Piotrowski, S., Carus, M., Carrez, D. (2016). *The European Bioeconomy in Figures.*

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2) Consultation of members and other players/actors involved in the bioeconomy.

3) Feedback elicitation from consortium's members to find the best classification basing on project proposes.

The general procedure to collect relevant information through is shown in the scheme below:

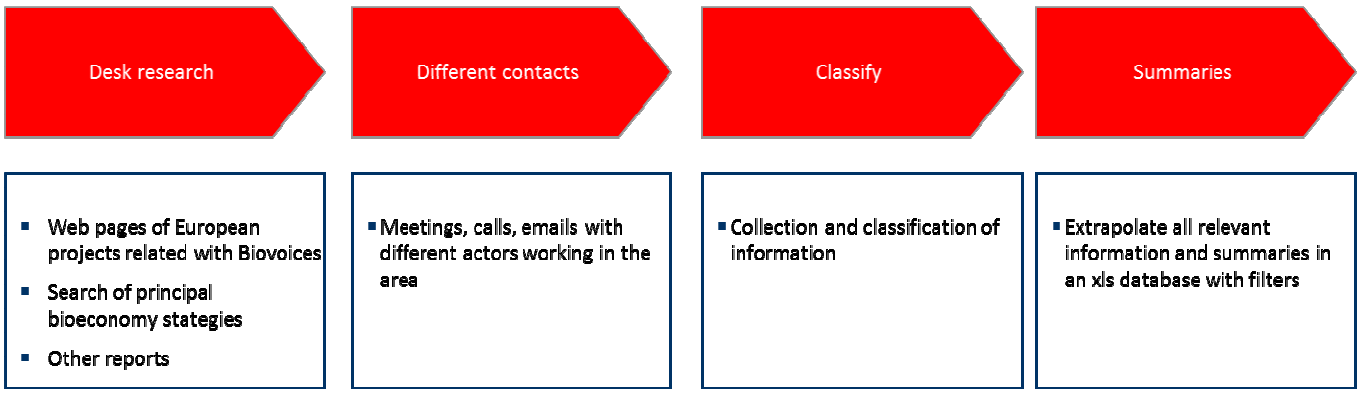

Figure 1: Methodology

4.1 DESK RESEARCH

We searched for the principal European projects related with BIOVOICES (Biocanndo, Bioways, Bioprom, Biostep, Biosurf, Greengain, Innoprobio, Isabel, Open Bio, Re-save, Veram, S2Biom, etc) and downloadeddocuments and reports related to the bioeconomy sector:

TITLE	LINKS
COM (2010) 2020 Europe 2020: the European Union strategy for growth and employment	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:em0028
COM (2012) 60 Innovating for Sustainable Growth: A Bioeconomy for Europe	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0060:FIN:EN:PDF
Bioeconomy Policy Synopsis and Analysis of Strategies in the G7	http://biooekonomierat.de/fileadmin/Publikationen/berichte/BOER_Laenderstudie_1_.pdf
The role of industry in a transition towards the Bioeconomy in relation to biorefinery	www.iea-bioenergy.task42-biorefineries.com/web/file?uuid=c60944… · Archivo PDF
The transition to a bio-economy: national perspectives	http://owwz.de/fileadmin/Biotechnologie/Presse/BBB1341_final.pdf
Biorefineries Roadmap – Abstract	http://www.iea-bioenergy.task42-biorefineries.com/upload_mm/6/2/7/5c9a365b-f38f-489e-b6c4-549a8436af6e_Borefinery%20Roadmap%20Germany%20May%202012_01.pdf
National Policy Strategy on Bioeconomy	http://buel.bmel.de/index.php/buel/article/view/40/Sonderheft-220-EN.html

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National Research Strategy Bioeconomy 2030	https://www.bmbf.de/pub/Natinal_Research_Strategy_BioEconomy_2030.pdf
Strategic Innovation and Research Agenda (SIRA) Bio-based and Renewable Industries for Development and Growth in Europe	http://ec.europa.eu/research/participants/data/ref/h2020/other/legal/jtis/bbi-sira_en.pdf
Bioeconomy strategy revision	https://ec.europa.eu/research/bioeconomy/pdf/review_of_2012_eu_bes.pdf#view=fit&pagemode=none

Table 1: Reports and Information downloaded about bioeconomy sector

4.2 CONSULTATION OF MEMBERS AND OTHER ACTORS INVOLVED IN BIOECONOMY

The following actors and bioeconomy related platforms were consulted:

- Industrial group of ASEBIO. With the objective to check the draft of classification:

PROFILE	NUMBER
Big companies	6
SMEs	31
Research centres	6
Hospital	1
Other	2

Table 2: Profiles of Industrial ASEBIO group

- Other related Platforms: European Biotechnology Association (EuropaBio), Spanish Biomass Platform (Bioplat) and Spanish Technology Platform for Sustainable Chemistry (Suschem) with two objectives: first, to explain and disseminate the project, and second, to check the classification that we had created.

- Other actors: We contacted the principal responsible of CLAMBER project, as the aim of this project is the implementation of a comprehensive plan for the development of the bioeconomy in Castile-La Mancha by public procurement strategy, including development of scientific projects in various areas of knowledge. We asked him for information about the different classification that they had implemented in Castile La Mancha.

4.3 DISCUSSION WITH MEMBERS OF THE CONSORTIUM

We established an intensive collaborations flow with members of the consortium in order to create the stakeholders classification:

- Meeting with CIVITTA and APRE (12/01/2018) in order to discuss ASEBIO's idea of separating and classifying stakeholders'groups basing on different themes.

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- After the Skype meeting, ASEBIO prepared a preliminary classificationshared in the KO meeting (30th-31st January 2018).
- Different mails and calls were done to follow up the progress and elaborate the final version.

5. RESULTS

The initial point to the classification was the 3D BIOVOICES Model based on the three principal aspects:

- Type of social agent (Quadruple helix model)
- Localization (Local, National or European)
- Bioeconomy areas (bio-based products, bio-based market and bioeconomy)

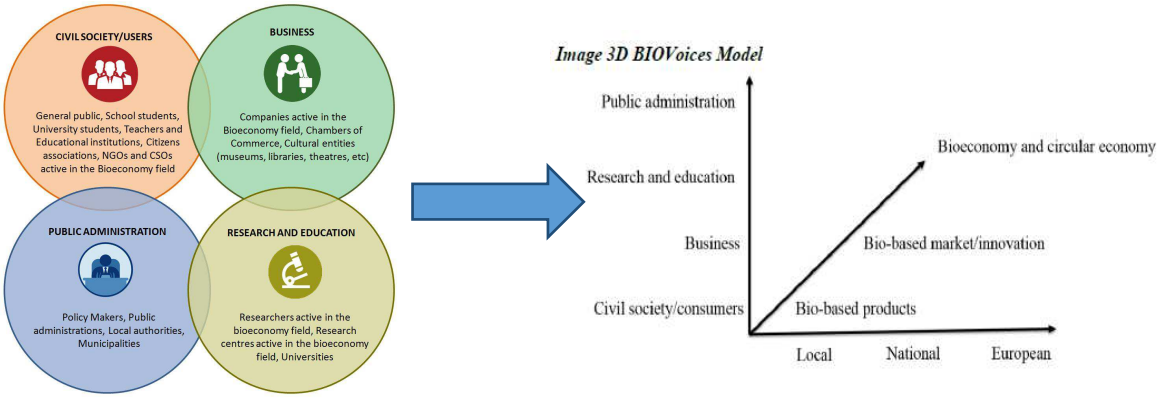

Figure 2: Quadruple helix model and 3D BIOVOICES Model

Focused on finding the best way to elaborate the classification and after meetings with the coordinators and considering literature (included in table 1) and the opinion of experts, we presented two types of classification at the KO meeting:

1) Classify the actors depending on the value chain
2) Classify the actors depending on the opportunities and barriers that the bioeconomy could offer

Also the quadruple helix was studied in more detail and for each division more fields were included, as we can see in the chart below:

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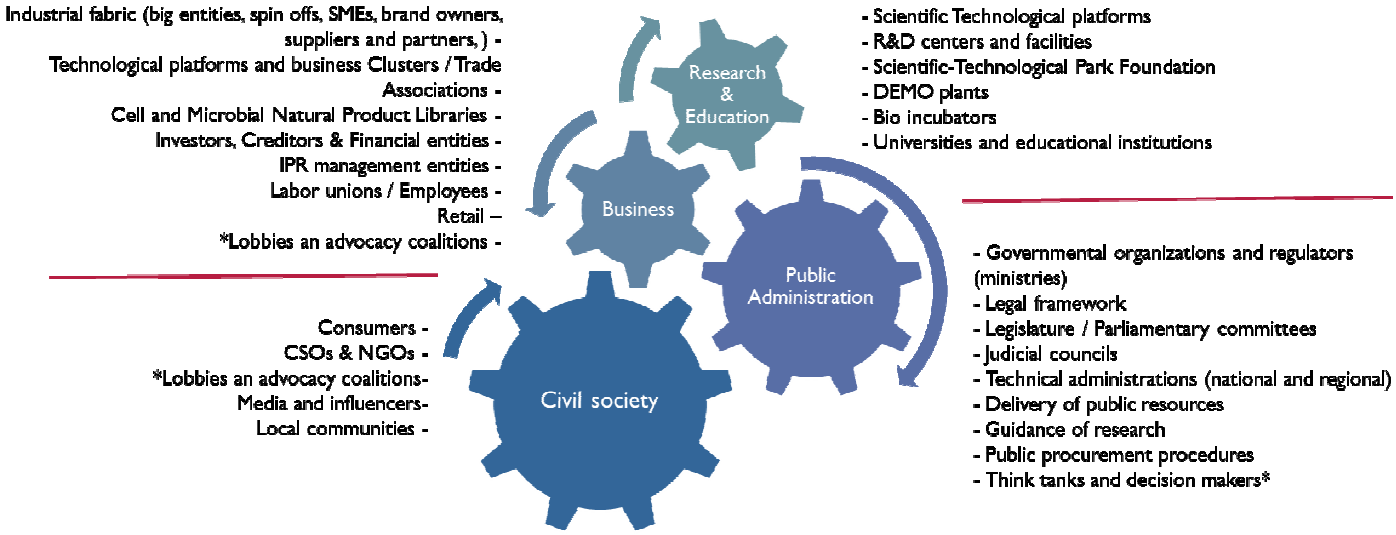

Figure 3: Classification Type of agent

5.1 CLASSIFY THE ACTORS DEPENDING ON THE VALUE CHAIN

In the preliminary classification of value chains, we divided the different actors taking into account the whole value chain, starting with raw materials, describing the intermediate processes and ending with final products.

RAW MATERIALS	PRODUCTS
Agri based	Intermediary products
Forestry based	End product
Marine based	
Waste (urban and domestic)	

MAIN ACTORS
Agricultural inputs and supplies
Biomass production
Biomass mobilization
Biorefining chemicals
Downstream chemistry
End products
End users

Table 3: Preliminary classification of stakeholders depending on value chain

Likewise, we elaborated one example where we explained in more detail all the process and the actor who was involved in each part of the process:

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	BIOMASS PRODUCTION	BIOMASS MOBILIZATION	BIOMASS PRETREATMENT	BIOREFINING	DOWNSTREAM PROCESSING	ASSEMBLY / END USE
ACTORS	- FARMERS - FORESTERS - LOCAL COOPERATIVES - LARGE PRODUCERS - WASTE MANAGERS - PULP MILLS - COMPANIES OF THE AGROINDUSTRY SECTOR	- LOGISTICS COMPANIES - WASTE MANAGERS	- PROCESS DESIGNERS - CATALYSTS AND ENZYMES PRODUCERS - BIOREFINING COMPANIES	- PROCESS DESIGNERS - CATALYSTS AND ENZYMES PRODUCERS - BIOREFINING COMPANIES	- PROCESS DESIGNERS - CATALYSTS AND ENZYMES PRODUCERS - CHEMICAL COMPANIES	- AUTOMOTIVE COMPANIES - CONSTRUCTION COMPANIES - CHEMICAL COMPANIES - ENERGY COMPANIES - PACKAGING COMPANIES
ACTIONS / PROCESSES	- SOWING, GROWING AND COLLECTION - WASTE GENERATION AND COLLECTION	- CROPS OR WASTE TRANSPORT	- ENZYMATIC FRACTIONATING - HOT WATER OR ACID CHEMICAL HYDROLYSIS - STEAM OR AMMONIA FIBER EXPLOSION - ALKALINE TREATMENT - ORGANOSOLV PROCESS	- ENZYMATIC HYDROLYSIS - FERMENTATION - CHEMICAL PULPING - THERMOCHEMICAL PROCESSES (COMBUSTION, GASIFICATION, PYROLYSIS) - ANAEROBIC DIGESTION	- SEPARATION PROCESSES (FILTRATION, CENTRIFUGATION…) - FISCHER-TROSCH SYNTHESIS - CHEMICAL UPGRADING - PRODUCTION OF FIBRE PRODUCTS - POLYMERIZATION - PELLETING - PRODUCTION OF BINDERS AND ADHESIVES - BLEACHING	- ASSEMBLY - MIXING - PLASTIC TRANSFORMATION
INPUTS	- WATER - LIGHT - CO_2 - NUTRIENTS	- OUTPUT OF THE PREVIOUS LINK OF THE CHAIN	- OUTPUT OF THE PREVIOUS LINK OF THE CHAIN	- OUTPUT OF THE PREVIOUS LINK OF THE CHAIN	- OUTPUT OF THE PREVIOUS LINK OF THE CHAIN	- OUTPUT OF THE PREVIOUS LINK OF THE CHAIN
OUTPUTS	- LIGNOCELLULOSIC CROPS: WOOD, MISCANTHUS, SHORT ROTATION POPLAR AND WILLOW… - LIGNOCELLULOSIC RESIDUES: AGRICULTURAL RESIDUES (E.G. STRAW, BAGASSE, CORNCOBS), SAW MILL RESIDUES, MUNICIPAL WASTES…	- LIGNOCELLULOSIC CROPS AND RESIDUES (NO TRANSFORMATIONS)	- CELLULOSE - HEMICELLULOSE - LIGNIN	- ETHANOL AND OTHER ALCOHOLS - ORGANIC ACIDS (LACTIC ACID, SUCCINIC ACID…) - SYNGAS - BIOMETHANE - OTHER BIOBASED CHEMICAL BUILDING BLOCKS (FURFURAL, ACETIC ACID…) - FIBRES - AMINO ACIDS	- BIOFUELS - BIOPOLYMERS - BIOLUBRICANTS - BIOSOLVENTS - THICKENERS, ADHESIVES, EMULSIFIERS, STABILIZERS… - PAPER - PELLETS - NANOCELLULOSE AND OTHER CELLULOSE SPECIALTIES - ANIMAL FEED - NUTRACEUTICALS - FRAGANCES AND FLAVOURS	- FINAL PRODUCTS - ENERGY

Table 4: Classification of stakeholders depending on value chain

At the KO meeting, all the partners decided that this table was very convoluted. The partners thought the ideal option for the stakeholders' classification would be to focus on raw materials and end products, leaving out the intermediate processes.

5.2 CLASSIFY THE ACTORS DEPENDING ON BARRIERS AND OPPORTUNITIES

Another kind of classification was also proposed based on highlighting the barriers and opportunities the bioeconomy could offer. This classification brings us the opportunity to link the work package, choose possible themes for MML events and the actors who are most appropriate to invite.

General barriers that we have found in the literature [2] were:

- Feedstock related barriers
- Investment barriers and financial hurdles
- Lack of public perception and awareness
- Lack of demand side policy
- Policy incoherence, lack of legislation, standardization and public procurement schemes
- Lack of sufficient bio-based product lebelling

[2] BIOTIC Team (2015). *A roadmap to a thriving industrial biotechnology sector in Europe.*
Harvey et al., 2011 (DOI: 10.1016/j.foodpol.2010.11.009); Hertel et al., 2013 (DOI: 10.1111/agec.12057)

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- Concerns around raw materials production – monoculture, land-use competition and change, soil degradation and emissions from intensified agriculture

In order to know in which detail the consortium would want to have the classification we presented at the KO meeting the principal barriers regarding feedstock, industry and market, as listed below:

Feedstock- related barriers

- High costs of biomass feedstock produced in EU.
- Inadequate availability of biomass feedstock at the required quality, quantity and price throughout the year
- Seasonality in biomass feedstock production
- Inefficient transport and distribution systems of several biomass feedstock types
- Inefficient recovery systems for (bio)waste that could possibly be used as feedstock for bio-based products

Industry- related barriers

- Low technology readiness level and commercialization status for many bio-based products
- Lack of cooperation between the stakeholders in the relevant value chains
- Hurdles in establishing partnerships between academia and industry
- Limited financial support for new production facilities
- Lack of a trained workforce

Market- related barriers

- Low price of crude oil and natural gas that make the use of biomass feedstock and bio-based production processes economically unattractive
- High cost of bio-based products compared to their fossil-fuel derived equivalents
- Lower performance of many bio-based products compared to their fossil-fuel derived equivalents
- No dedicated and detailed EU legislation framework, conflicts between sustainability goals and market needs, lack of uniform standardization and certified labelling for bio-based products
- Intellectual property related barriers
- Low public awareness of the benefits of using bio-based products
- Lack of reliable and sufficient information about bio-based products

Despite thinking that it would be very useful to have the principal barriers for the classification of stakeholders, it was decided to include only the principal ones so as to create a simpler table. We also took into account the principal barriers that our partners of work package 3 are preparing.

Finally, a comparative study have been done with fourteen projects. The main point was to compare their classification with ours in order to find similar areas of bioeconomy, find the ones that were different and select the ones that needed to be included in our project to have a classification as complete as possible.

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We could compare with our classification regarding to raw materials, bioproducts and applications.

Regarding to raw materials we found information in BERST and Biosurf projects. As we can see in the table below our project is very complete, including the most important raw materials:

RAW MATERIAL					
Food-industry based	Agri based	Forestry based	Marine based	Waste (industry, urban and domestic)	Other
BERST & BioSurf	BERST & BioSurf	BERST	BERST	BERST & BioSurf	BERST & BioSurf

Table 5: Comparison raw materials

Regarding bio-products we found information in eight projects, and we included the most important, as we can see in the table below:

BIOPRODUCT								
Bio-based chemicals and building blocks	Biomaterials	Bioplastics	Bioenergy and biofuels	Biosurfactants	Biolubricants	Bio-based food and feed ingredients	Bioremediation inputs	Bioinputs for agriculture
BioCannDo, BioSTEP InnProBio, RESAVE, S2Biom & BERST	BioCannDo, BioSTEP InnProBio, & BERST	BioCannDo, BioSTEP InnProBio, RESAVE, & BERST	BioSTEP InnProBio, RESAVE, S2Biom & BERST	BioCannDo	BioCannDo, BioSTEP & InnProBio	BioSTEP InnProBio, & BERST	BioWays, BioStep, RESAVE, S2Biom & BioHorizon	BioCannDo, RESAVE & BERST

Table 6: Comparison bioproducts

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Regarding to applications we found information in the fourteen projects. We included the applications which appear in the projects and also one application more: Animal care. This area was included after speaking with the experts (4.2 and 4.3):

Application													
Cleaning and household products	Films & packaging	Food services & catering	Ground maintenance & Agriculture	Paint & Coating	Chemicals	Textile processing	Fibres and fabrics	Construction	Plastic products	Paper products	Transport and equipment maintenance	Personal care products and cosmetic	Animal care	Other (define)
BioCannDo & InnProBio	InnProBio & BioHorizon	BioCannDO, BioWays, BIOSTEP, InnProBio, CommBeBiz, Platform & BERST	BioCannDO, BioProm, InnProBio, CommBeBiz, Platform & BERST	BioCannDo	BioWays, BioStep, BioBaseEurope, S2Biom, RESAVE, BioHorizon, PlatForm & BERST	BioCannDo, BioProm & InnProBio	BioWays, BioStep, RESAVE, S2Biom & BioHorizon	BioCannDo, BioProm, ImmProBio & BERST	BioWays, BioHorizon, Platform & BERST	PlatForm & BERST	BioCannDo, InnProBio & BERST	InnProBio & BERST		

Table 7: Comparison applications

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6. CONCLUSIONS

To conlcude, we created a clear table, using filters in order to separate the diffferent actors that we want to be involved in each event. Also the table will be used to send thematic information or call for contribution to specific contents they are related to.

In the table the following areas has been included:

- Contact details (organization, name, email, telephone, website, role and description of the actvity).
- Type of actor depending on the Quadruple helix model and using the classification described in Figure 3.
- Localization (local, national, european) includding the region, country of the company and the targeted region like the region which it operates (local, national, european or international).
- Thematics regarding to raw materials, bioproducts and applications and also depending on the area of knowledge, detailing the subthemes regarding barriers the actors could be facing (according to the information given by work package 3):

1. feedstock related barriers: the logistics of securing large quantities of biomass feedstock all year round, and the availability of feedstock at affordable prices;
2. investment barriers and financial hurdles: the availability of project capital and the perception of high investment risk;
3. poor public perception and awareness of industrial biotechnology and bio-based products;
4. demand side policy barriers: an absence of incentives or efficient policies (framework, ecolabels and standards for sustainable and bio-based products).

- Partipation within BIOVOICES project (Multistakeholders Community, Labs, Social Platform, MML, Advisory Board, Focus Group, etc).

This table enables to record and see the progress of the activities involving the stakeholders. It dynamic part, because it could change depending on the processes and adaptation to the necessities of the project.

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7. ANNEX

GLOSSARY

Advisory bodies: It refers to the institutions, bringing authority, experience and knowledge in any question submitted for its consideration; especially in legal issues, standard-setting processes and liability of public administrations.

Lobbying and Advocacy coalitions: Groups of people who can influence public opinion and/or policy.

Think tanks: organizations performing research and advocacy concerning topics such as social policy, political strategy, economics, military, technology, and culture. Most of them are non-profit organizations, governments, advocacy groups, or corporations. Some Spanish examples of think tanks are: Cotec (http://cotec.es/), Civismo (https://www.civismo.org/es/el-think-tank), Agri-food cooperatives (http://www.agro-alimentarias.coop/inicio)

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STAKEHOLDERS CLASSIFICATION´S TABLE

At the start of the table, we included contact details and information about the activity of their organization:

Actor	Contact details					Activity
Organisation	Name	Email	Telephone	Organisation website	Role in the organisation	Description of activity

Table 8: Classification of stakeholders. Contact details

The second part consisted of a description of the type of agent (using filters where you can specify with more detail within the quadruple helix)

Social agent	Type of actor	Additional information regarding type of actor	
Quadruple helix stakeholders (Select form the list)	Actor within value chain	Business community Subclassification (Actor within Value chain)	Public administration Subclassification (Areas)

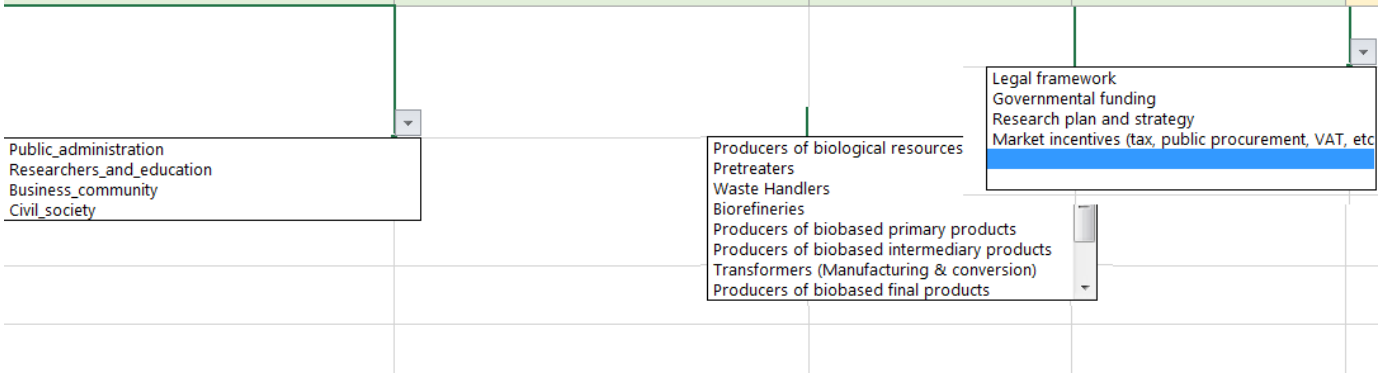

Table 9: Classification of stakeholders. Type of actor

The third part was focused in the localization and the targeted region like the region which it operates:

Country	Region	Targeted region
Specify country	Specify region	Select between Regional, National, European or International

Table 10: Classification of stakeholders. Localization

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The fouth part contained the classification depending on raw material, the principal material organization business is focused on (1st option) and the use of other kind of raw material (2nd option):

1st option: Raw material		2nd option: Raw material					
Select from the list	Other (define)	Food-industry based	Agri based	Forestry based	Marine based	Waste (industry, urban and domestic)	Other

Food-industry based
Agri based
Forestry based
Marine based
Waste (industry, urban and domestic)
Other

Table 11: Classification of stakeholders. Raw material

Te fifth part holded the classification depending on the final product, based on the principal bioproduct they obtain (1st option) and a second option embracing the production of a different bioproduct(2nd option):

1st option: Bioproduct		2nd option: Bioproduct								
Select from the list	Other (define)	Bio-based chemicals and building blocks	Biomaterials	Bioplastics	Bioenergy and biofuels	Biosurfactants	Biolubricants	Bio-based food and feed ingredients	Bioremediation inputs	Bioinputs for agriculture

Bio-based chemicals and buildi
Bio-derived novel materials / Bi
Bioplastics
Bioenergy and biofuels
Biosurfactants
Biolubricants
Bio-based food and feed ingred
Bioremediation inputs

Table 12: Classification of stakeholders. End products

The sixth part included the classification depending on the principal application of the (1st option) and a second option in case they have other purpouses (2nd option):

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1st option: Application		2nd option: Application														
Select form the list	Other (define)	Cleaning and household products	Films & packaging	Food services & catering	Ground maintenance & Agriculture	Paint & Coating	Chemicals	Textile processing	Fibres and fabrics	Construction	Plastic products	Paper products	Transport and equipment maintenance	Personal care products and cosmetic	Animal care	Other (define)

Cleaning and household produc
Films & packaging
Food services & catering
Ground maintenance & Agricult
Paint & Coating
Chemicals
Textile processing
Fibres and fabrics

Table 13: Classification of stakeholders. Applications

The seventh part included the classification depending on the area of knowledge, detailing the subthemes regarding barriers the actors could be facing (feedstock, investment barriers and financial hurdles, public perception and policy barriers):

Area of knowledge			Subthemes	Subthemes
BIOECONOMY AND CIRCULAR ECONOMY (STRATEGY AND REGULATION)	BIOBASED MARKET INNOVATION	BIOBASED PRODUCTS	Related to barriers (list)	Related to opportunities

Table 14: Classification of stakeholders. Themes

The last part regarded to partipation within BIOVOICES project:

Participation in:									
Multi-stakeholders community	Labs	BIOVoices multi-stakeholder on line social platform	Workshops	Mobilization and mutual learning events			Questionnaire	BIOVoices Adivisory Board	BIOVoices Focus Group	Signed consent
				European	National	Regional				

Table 15: Classification of stakeholders. Participation in BIOVOICES

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COMPARISON BIOVOICES WITH OTHER EUROPEAN PROJECTS

BioCannDo
Bioeconomy Awareness and Discourse Project

The BioCannDo aim is to help bridge awareness gaps, and inform about the potential and long-term benefits of a vibrant bioeconomy sector to the wider public. BioCannDo also offer a platform for feedback, interactionn and engagement in the wider discussion on the value of a bio-based economy. (BioCannDo, s.f.)

In BioCannDo they include a table corresponding to the resources from which they obtain the information and a glossary.

Comparison into the applications sector: In the BIOVOICES project have much more applications fields than BIOCannDo project.

Comparison into Bioproducts materials: They include in the selections the paints, coating and dyes, rubber and solvents, but not include the food, bioenergy, etc.

bio energy PROM

The main objectives of the BIOPROM project were to increase the efficiency of national and European initiatives in communicating science and research, especially in the field of bioeconomy, by identifying and promoting the success factors of several science centers and museums in Europe. Common workshops have been organized with experts from science communication and exhibition building in order to set up a concept for the BIOPROM exhibition. The consortium also organized a public debate on the BIOPROM project and the topic of bioeconomy during the EU Danish presidency “bioeconomy in action” conference 2012 in Copenhagen. A survey done by the BIOPROM partners has shown that there is a high need of explaining bioeconomy to the public and to keep it simple from a scientific point of view. The central goal of BIOPROM has been to develop and produce a bioeconomy related interactive travelling exhibition which has been hosted at the partnering science centers in Wels, Austria, Rome, Italy, Aberdeen, UK, and Tallinn, Estonia, with about 200.000 visitors. (Moser, 2018)

They spoke of a differentiation in the participation of different events in a way that can share and promote the bioeconomy.

Comparison into the applications sector. In the BIOVOICES´s project have a lot of applications field than de BIOPROM project that only have three. They include a very basic classification on the applications covered by the bioeconomy: Agriculture and fisheries, food and well being and biotech&life science.

Comparison in the participation of events. The classification of the BIOVOICES project is more complete and adapts to the philosophy of the project.

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The project mission is to promote the huge potential of bio-based research results and products to the public at large, through communication campaigns, public engagement activities, and educational tools and materials. (BioWays, s.f.)

Comparison into the applications sector. BIOVOICES´s is more complete. Bioways included the following areas which also are included in BIOVOICES: Biomaterials, Bio-based food and feed ingredients, Biolubricants, Biosurfactants, Bio-based chemicals and building blocks, Bioenergy and Biofuels, Bioplastics

BioSTEP applies a three-tier approach which aims at reaching all relevant actors in the bioeconomy domain, particularly policy-makers, various stakeholder groups (scientists, business, non-governmental organisations), and citizens. Tailored communication tools, including workshops, conferences and exhibitions, will be developed for each target group in order to maximize outreach and to facilitate active engagement in public debates on the bioeconomy. At regional level, a so-called 'living lab' approach will be applied and tested, which facilitates the involvement of public-private networks of stakeholders in bioeconomy-based innovation and business model development processes. (BioSTEP, s.f.)

They have a database with information about existing products and bioeconomy processes.

A table is included in the database that summarizes the processes suffered by the bioproduct and the generated impact.

They spoke of a differentiation in the participation of different events and the publication of different deliverables and articles in a way that can share and promote the bioeconomy.

Comparison into the applications sector. BioSTEP include in their classification the BioRefinery, Biomass, and Biotech fields, but its classification ends up being scarce.

Comparison into the Bioproducts sector. The structure is similar.

Open innovation and education center for the biobased economy. This joint initiative of the Flanders region and The Netherlands consists of a flexible and multipurpose pilot plant for biobased products and processes and a Training Center, network and exhibition center promoting a sustainable biobased economy.

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They have a network of stakeholders that are key in the world of the bioeconomy and could participate in the MML proposed by the BIOVOICES project.

Comparison into the applications sector. It is observed that BIO Based Europe is more focused on industrial processes related to Biomass.

The objective of BIOSURF (BIOmethane as SUstainable and Renewable Fuel) is to increase the production and use of biomethane (from animal waste, other waste materials and sustainable biomass), for grid injection and as transport fuel, by removing non-technical barriers and by paving the way towards a European biomethane market. (BIOSurf, s.f.)

They have a large number of stakeholders and a network of contacts organized in the 7 countries that have their 11 partners.

They spoke of a differentiation in the participation of different events in a way that can share and promote the use of biomethane, with different days and events.

Three main biomass categories were of particular interest in the development of this report: animal waste (slurry and manure), other waste materials (municipal bio-waste and food/ feed residues) and biomass residues like agricultural crop residues.

Share of 8 crop residues produced in EU: wheat, rye, barley, oats, maize, rice, rapessed and sunflower.

They included different stakeholders that make up the project: Scientific Community (Higher Education, Research), Industry, Civil Society, General Public, Policy Makers, Media, Investors, Customers and Other. BIOVOICES´s classification is more complete and simpler by including the drop-down sections.

BIOSURF makes a differentiation of raw materials focusing on its application to Bioenergy. The BIOVOICE´s project proposal covers more areas of the bioeconomy and its commitment to raw materials is wider.

InnProBio, the Forum for Bio-Based Innovation in Public Procurement, aims to build a community of public procurement practitioners interested in Public Procurement of Innovation (PPI) of Bio-Based Products and Services (BBPS).

Public procurement plays a vital role in Europe’s economic performance. EU public spending on purchasing supplies, works and services amounts to nearly 19% of the EU’s gross domestic product (GDP). This tremendous power from the European public sector can be used as a market pull mechanism to help boost the market of bio-based products and their associated services.

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In this database you find a range of bio-based products that are already on the market and the application. The project has a very complete classifications and similar to BIOVOICES regarding bioproducts.

The RESAVE project has focused its priorities on the connections between education/training and work, with a combined use of training methodologies but also based on internet technologies aiming at tackling the digital divide in rural areas . It also focused on the "green economy" as a great business opportunity for farms can be used as a driver for competitive and sustainable development in the rural areas. The training design process focuses on the feasibility of those objectives and implementation of innovative and user friendly training tools on management of biomass and other kind of renewable energy sources. (FNR- International, s.f.)

Since the project is focused on renewable energies, its fields of application are limited: Bioenergy and biomaterials

The BBP of RESAVE project are more focused on the use of renewable energies.

The research work in the S2Biom project covered the whole biomass delivery chain - from primary biomass to end-use of non-food products, and from logistics and pre-treatment to conversion technologies. These aspects have been elaborated to facilitate integrated design and evaluation of optimal biomass delivery chains and networks at European, national, regional and local scale. S2Biom work supported the development of strategies to realize the bio-based economy in Europe.

For this review, the focus is directed towards sectors that can create significant biomass demand, i.e. relatively bulky chemicals markets. Specialties and fine chemicals can have high added value and can therefore be most relevant for a biorefinery business case, but their production will by definition not induce bulky amounts of biomass demand.

The only application found in this project is the use of biomass. In addition, the products that could be obtained with the use of biomass are detailed.

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CommBeBiz worked with one clear aim - to enable EU funded research projects and researchers working in the bioeconomy to fulfil their innovation potential. (CommBeBiz, s.f.)

Key messages are offered in this document for the following stakeholders of the Ecosystem surrounding the research community: Researchers, EU & EC, the shapers and providers of core funding, Funders (National, Regional and Especialist), Academia & Reseacrh Institutes, Industry & Its Associations, Communicators, inclunding CSA projects such as CommBeBiz and Innovation Intermediaries & Enterpreneurs

CommBeBiz only speaks in its project of five BBP applications: Forestry, Agriculture, Marine, Food and Biotech

BioHorizon is a network of specialised NCPs (National Contact Points) for Horizon 2020, the EU Framework Programme for Research and Innovation, within the scope of the Societal Challenge 2 (SC2) “Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy” and the Key Enabling Technology (KET) “Biotechnology” (KET-B). The network consists of officially appointed Food Security National Contact Points (NCPs) and Contact Points in International Cooperation Partner Countries (ICPC CPs), coordinated by the Instytut Podstawowych Problemów Techniki Polskiej Akademii Nauk (IPPT PAN) in Poland.

The aim in supporting biotechnology research is to improve the understanding of terrestrial and aquatic biological systems and, more importantly, to exploit this knowledge to boost technological innovation. Thus, biotechnology can significantly contribute to the development of more sustainable production processes products based on renewable raw materials.

The activities will focus on mission-oriented research towards life sciences, biotechnology and biochemistry for sustainable non-food products and processes. It has been divided into six interlinked areas. Our classification is more complete.

PLATFORM brings together European Research Area Networks (ERA-NETs) and other relevant public-to-public (P2P) partnerships in the area of the bioeconomy: food, agriculture, aquaculture, fisheries, forestry, climate, biodiversity and biotechnologies.

PLATFORM is the forum for funders and programme managers and plays a central role in facilitating and improving the coherence between the P2P partnerships active in the bioeconomy. The current network under H2020 continues and expands the work of FP7 PLATFORM (2012-2014) with the following objectives: to further increase collaboration among

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actors, to foster inclusiveness, to increase capacities for efficient and effective ERA-NETs, and to inform research policy making. (era-platform.eu, s.f.)

The project have general applications of the bioeconomy. The classification of BIOVOICE's is more specific.

BERST
Building Regional BioEconomies

This Catalogue of Instruments & Measures is an integral part of the European project BERST 'Bioeconomy regional strategy toolkit'. The project aims to support regions in Europe to develop smart bioeconomy strategies.

The Catalogue provides detailed information on Instruments and Measures facilitating bioeconomy development in regions throughout Europe. The Catalogue can be useful for a wide variety of stakeholders from regional policy makers over local entrepreneurs to profit and non-profit organisations. (BERST, s.f.)

Both tables on raw materials and applications are very complete and similar.

They include a classification about their position in the value chain.

BioLinX

BioLinX supports participants in FP7 and H2020 projects to commercialize their innovative ideas, and to connect them to knowledge, regional networks, new partners and funding opportunities.

They consider existing European projects as their starting point to identify potential innovation opportunities. They scout, screen and select the opportunities and jointly define the best possible support mechanism. They apply a narrow focus on feedstock, process and product (based on agro & forestry residues) because it is their strong belief that this will enhance the possibility to find relevant (new) partners, to add relevant intelligence and point towards relevant markets. Parts of the support programme are also open to entrepreneurs working on biobased innovations. (Biolinx, s.f.)

In BIOLINX the search permits you to customize your search by using various filters. This table is similar to the one we propose in our project, only in BIOVOICES we have it segmented. Both tables are very similar.

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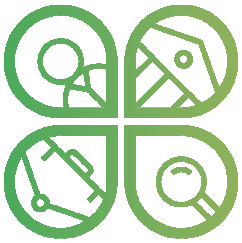

BIOVOICES

CONNECTING BIO-BASED FORCES
FOR A SUSTAINABLE WORLD

APRE, Agency for the Promotion of European Research
www.apre.it
Italy

FVA New Media Research
hwww.fvaweb.eu
Italy

PEDAL Consulting, s.r.o.
www.pedal-consulting.eu
Slovakia

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www.cnr.it
Italy

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Portugal

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www.civitta.com
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Greece

Frontier Management Consulting
www.frontierconsulting.ro
Romania

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The Netherlands

Minerva Communications UK Ltd
www.minervacomms.net
United Kingdom

ASEBIO, Asociación Española de Bioempresas
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Spain

ICLEI Europe
www.iclei-europe.org
Germany

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