STAR-ProBio

Sustainability Transition Assessment and Research of Bio-based Products

Grant Agreement Number 727740

Deliverable D10.5
Third year report on communication, dissemination and publication activities

Version 1.0, 30 April 2020

This project is funded by the *European Union's Horizon 2020 Research and innovation action* under grant agreement No 727740 with the Research Executive Agency (REA) - European Commission. Duration: 36 months (May 2017 – April 2020).
Work Programme BB-01-2016: Sustainability schemes for the bio-based economy.

www.star-probio.eu

REPORT

Deliverable identifier	D10.5
Document status	First draft
Authors (Organisation)	Sergio Ugarte, Sjors van Iersel (SQ Consult) Janice Lofthouse, Katy Brooke (University of York) *With contributions by* Piergiuseppe Morone, Francesca Govoni (Unitelma Sapienza)
Lead Beneficiary	SQ Consult B.V.
Deliverable Type	Websites, patents filling, etc.
Dissemination Level	Public
Month due (calendar month)	Month 36 (April 2020)

DOCUMENT HISTORY

Version	Description
0.1	First draft for WP10 team revision
0.7	Complete draft
0.8	April 2020 update latest numbers of publications etc.
0.9	Final draft
1.0	Final version

Disclaimer

Table of Contents

Preface

Communication, dissemination and publication activities are key elements within STAR-ProBio. A special effort has been made during the third year of the project to ensure these activities are properly developed, implemented and managed. These activities follow the guidelines established in the Communication and Dissemination Strategy developed in the starting phase of the project within Work Package 10 (WP10) "Knowledge transfer, training and dissemination".

Progress towards objectives

Communication, dissemination and publication activities developed and completed during the third year of STAR-ProBio fulfilled the objectives established by the Communication and Dissemination Strategy, reaching out to a large range of stakeholders and contributing to the further exploitation of the project results within key stakeholders and relevant communities.

Achievements and current status

Deliverable achieved on time. The majority of communication, dissemination and publication activities planned for the third year of STAR-ProBio were successfully achieved. The grant agreement also included dissemination and communication targets for scientific publications (6 events, 8 articles in high impact journals, 20 open access publications (about 10 gold, 10 green) which can all be considered reached and some even well overshot, with more publications planned for the short term.

Summary

Communication, dissemination and publication activities play a vital role within STAR-ProBio. The third year report on these activities lists activities carried out in all Work Packages during the period April 2019 - April 2020. These activities include framework activities for the whole project such as:

- Coordination of Communication, Dissemination, Networking and Outreach
- Website
- Social media
- Update and revision of the Data Management Plan
- Newsletters

and specific communication and dissemination activities:

- 20 scientific publications: 16 journal articles, one journal special issue, two book chapters and one book
- One non-scientific publication
- Three workshops and experts focus groups organised by partners
- 40 speaking engagements
- 14 poster presentations
- Two outreach events for the general public
- One training session

Various such activities and publications are also planned after the project end, as listed in chapter 12.

The report describes for all these activities the target groups reached and messages delivered.

The specific communication and dissemination activities by STAR-ProBio, as known at the time of writing, can be summarised as follows:

	Completed			
	Year 1	**Year 2**	**Year 3**	**Total**
Scientific publications	3	14	20	37
non-scientific publications	7	5	1	13
Speaking and posters	14	41	54	109
Outreach and trainings	3	8	3	14

The communication, dissemination and publication targets of the STAR-ProBio Project were as follows:

- Minimum of 8 articles in journals with high impact factor
- At least 6 international conferences and trade fairs with presentations, posters or stands
- In the range of 10 gold open access publications
- In the range of 10 green open access publications

As can be observed in the table below, all of these targets have been met over the duration of the project. High impact journals have been defined as those classified as first quartile (Q1) in the Scientific Journal Rankings (SJR).

	Targets achieved			
	Year 1	**Year 2**	**Year 3**	**Total**
Articles in high impact factor journals	1	5	11	17
Gold open access publications	2	1	6	9
Green open access publications	1	5	8	14
International conferences/trade fairs	4	16	28	48

1 Objective

STAR-ProBio has concluded its third year of activities developing sustainability assessment tools for bio-based products. The main goal of communication, dissemination and publication activities is to reach out to the widest possible range of stakeholders to promote further exploitation of the project results within key stakeholders and relevant communities. Communication, dissemination and publication activities aim at ensuring that the results gained during the course of the STAR-ProBio project exert their full impact in a coordinated and resource efficient way, and in synergy with the activities of the different Work Packages. The various stakeholder groups that STAR-ProBio engages with are shown in Figure 1.

The specific objectives of communication, dissemination and publication activities are:

- Create a brand identity and dedicated dissemination channels for the project;
- Build and maintain professional and collaborative relationship with stakeholders;
- Transfer effectively knowledge developed by STAR-ProBio through the organisation of workshops and events;
- Publish results of STAR-ProBio in open access publications and dedicated blogs;
- Share regularly information through a dedicated website and social media;
- Make available sustainability assessment tools, examples and case studies developed by STAR-ProBio

The third and final year report on communication, dissemination and publication activities lists and describes the concrete activities carried out during the period May 2019 – April 2020.

Figure 1: The different stakeholder groups targeted by STAR-ProBio

2 Responsibilities within the project

2.1 CoDNOC

The grant agreement foresees the leader of WP10 to appoint a team member as the Communication, Dissemination, Networking and Outreach Coordinator (CoDNOC) for STAR-ProBio.

Responsibilities of the CoDNOC include the supervision of the formulation of the Communication and Dissemination Strategy, as well as the creation of a brand identity including the STAR-ProBio logo and templates for website, dissemination and training documents and presentations and to ensure that all resources, including the website, flyers, posters, presentation slides and promotional banners have a professional and uniform look. The activities as CoDNOC have been supported by the team of SQ Consult and have covered the following:

- Coordination, organisation and monitoring of all dissemination activities;
- Encouraging partners to initiate and to participate;
- Ensuring regular quality content for the various dissemination channels and activities.
- Authorship and coordination of the Bi-annual STAR-ProBio newsletter

The CoDNOC has performed a final quality check on materials produced for major activities before their external distribution took place.

On June 20th 2017, Louise Summerton (University of York) was appointed CoDNOC. She left this position when she left the University of York on 31 March 2019. On 1 April 2019 Janice Lofthouse (University of York) was appointed the new CoDNOC, and is supported in her activities by her colleagues Katy Brooke and Hannah Briers.

2.2 Coordinator, Executive Board and Work Package leaders

During the third year of the project, the STAR-ProBio Coordinator and the Executive Board[1] have been responsible for the formulation of all key messages of the project, always in coordination with the CoDNOC. The Coordinator and the Executive Board have complied with their responsibility for the approval of those major communication and dissemination activities that involve results of more than one work package. Major activities that involve results of only one work package were approved by the respective work package leader.

Work Package leaders took on their responsibility for the correct implementation of all communication and dissemination activities planned and implemented within their work package. These activities were timely informed to the CoDNOC.

SQ Consult as the leader of WP10 performed the following responsibilities during the third year of activities:

- Monitoring all communication and dissemination activities within STAR-ProBio;
- Preparations for the final annual conference of STAR-ProBio in April 2020;
- Reaching out and establishing working contacts with relevant stakeholders.

[1] The Executive Board is integrated by all work Package leaders

3 Dissemination channels

3.1 Website

The STAR-ProBio website http://www.star-probio.eu is the main channel for dissemination of project information. The STAR-ProBio domain was registered on 21 April 2017 and since then content has been uploaded; maintenance will be continuous until the end of project and will subsequently remain active for up to five years after the end of the project. The website is designed in such a way that it meets the communication and dissemination needs of wide range of users. The website was built with the following characteristics:

- Attractive to the different target groups;
- User-friendly;
- Multi-lingual;
- Interactive.

A screenshot of the STAR-ProBio website homepage is included below in Figure 2.

Figure 2: *STAR-ProBio website homepage*

3.1.1 Website sections

The website serves as a knowledge platform for the target audiences and as a place to provide access to reports and freely available publications, case studies, STAR-ProBio news and networks. The STAR-ProBio website has two distinct areas (public and private) each aimed at a different audience:

- **Public area –** Keeps the interested parties accessing the website informed on the project and its development. Its aim is not only to inform but rather to encourage engagement of people by allowing easy access to extensive information about STAR-ProBio and its activities including background

information, news and events announcements, articles alerts, contact details, etc. It makes the public project deliverables available as well as the published materials the project has created. Throughout the project, the public area of the website maintained the following subsections: "home page", "objectives", "WPs", "deliverables", "partners", "news" and "contact us". In order to attract attention to the final project outputs; mainly the Smart Tools, posters, recorded final presentations etc, an additional section was added to the website: "Results", and the fact that it is a new section was highlighted with this icon:

- **Private area -** Designed as a single working platform for partners, External Advisory Board members and key stakeholders. Moreover, the private area is used to share confidential documents. Access to private area requires a login procedure. All partners have been assigned with credentials (user id and password). The private area of the website is intended to support the general workflow by allowing smooth communication between project partners and serves the needs of the internal communication by distributing different sorts of documents and sets of documents. Examples of the documents accessible here are all completed project deliverables (public and otherwise) and their appendices, minutes and presentations of project meetings, published newsletters etc.
  The private area hosts the STAR-ProBio Online library. The STAR-ProBio Online Library hosts (scientific) publications and other information (deliverables) on all project activities that are open for access/download by the external users of the website. All consortium members are able to upload files in the Online library.

3.1.2 Website languages

The main sections of the websites are available in:

- English
- German
- French
- Italian
- Polish

3.1.3 Website content

The website includes general information about the project, consortium and guidance on how to use project outcomes. Specific functions of the website which pertain to dissemination include:

Core sections:

- Online STAR-ProBio newsletters (full text archive) (including current and back-issues) with online subscription;
- Cross-links to other key related projects, e.g. BioCannDo, BioLinX Project, BIOPEN, BioWays, CommBeBiz, InnProBIO, Pilots4U, ProBIO, RoadToBio, STAR4BBI;
- Information on STAR-ProBio (hosting or participation in) workshops and conferences;

- Downloadable copies of all STAR-ProBio public deliverables along with concise and engaging summaries to provide detail of what the deliverable entails in an easy to understand way and to encourage website visitors to read them in detail;
- Details of and links to all STAR-ProBio journal publications and their associated abstracts.
- News items about the project:

News item	Date posted	Further Detail
#BLOG_A new bioeconomy strategy for a sustainable Italy	15/05/2019	The updated version of the Italian bioeconomy strategy was published. The document highlighted the importance of promoting the use of sustainability standards, certification schemes and labels to support the bio-based market and the creation of a 'level playing field' between bio-based products and conventional products.
STAR-ProBio/LIFECAB joint workshop at EURAS Conference 2019	31/05/2019	STAR-ProBio organised (jointly with the LIFECAB project) its 2nd international workshop, which took take place within the 24th edition of the EURAS Conference in Rome on 14 June.
Newsletter Issue 4	03/07/2019	The STAR-ProBio 4th newsletter has been published.
STAR-ProBio Summer School	06/09/2019	On 5 September, the STAR-ProBio Summer School "Sustainability certification and market uptake of bio-based products. Focus on the construction sector" took place in Göteborg as part of the EIT Climate-KIC Summer School on wood construction in climate change mitigation.
Sustainable Metrics Symposium at the Green Chemistry Centre of Excellence	09/10/2019	On 11 September 2019, the Green Chemistry Centre of Excellence (GCCE) at the University of York held a one-day symposium entitled "Sustainability Metrics: Tracking, Measuring and Reporting Responsible Innovation". This was the second "Sustainability Metrics" symposium held at the GCCE as part of the EU's Horizon 2020-funded STAR-ProBio research project.
Newsletter Issue 5	19/12/2019	The fifth issue of the STAR-ProBio newsletter is now available.
New Gold Open Access STAR-ProBio Publication	09/01/2020	"Hybridised sustainability metrics for use in life cycle assessment of bio-based products: resource efficiency and circularity" published in *Green Chemistry* journal.
New Gold Open Access Paper by UWM –	13/02/2020	"Environmental external cost of poplar wood chips sustainable production" by

Journal of Cleaner Production		Ewelina Olba-Zięty, Mariusz J. Stolarski, Michał Krzyżaniak and Janusz Gołaszewski
STAR-ProBio final event in Brussels "Assessing sustainability of bio-based products: Where do we stand?"	17/02/2020	The STAR-ProBio final international workshop will take place on 28th April in Brussels. Project's findings and recommendations will be presented.
New STAR-ProBio publication "Life cycle assessment of autochthonous varieties of wheat and artisanal bread production in Galicia, Spain"	10/03/2020	Published in *Science of The Total Environment*.
New STAR-ProBio Open Access publication "Effect of Bio-Based Products on Waste Management"	11/03/2020	Irena Wojnowska-Baryła, Dorota Kulikowska, Katarzyna Bernat Published in *Sustainability*
New STAR-ProBio Open Access publication from TUB in "Sustainability" (Special Issue "Sustainability and Standardization")	12/03/2020	Bio-Based Products in the Automotive Industry: The Need for Ecolabels, Standards, and Regulations Simone Wurster, Luana Ladu
ICT-BIOCHAIN & STAR-ProBio webinar – April 2nd (at 11:00 CET)	24/03/2020	STAR-ProBio is co-organizing a joint webinar with the BBI JU project ICT-BIOCHAIN, a CSA aiming at promoting ICT, IoT and Industry 4.0 tools to enhance the efficiency of the biomass supply chain.
The STAR-ProBio Final Workshop turns virtual	30/03/2020	The STAR-ProBio project invites to its Final (virtual) Workshop "Assessing Sustainability of Bio-based Products: Where do we stand?".
New STAR-ProBio book "Transition Towards a Sustainable Biobased Economy" (RSC Publishing) James Clark and Piergiuseppe Morone	30/03/2020	About this book Globally we are being confronted by the depletion of many natural resources as a result of unsustainable use and increasing global population. Although the debate on the bioeconomy has gained momentum in recent decades, the interest in certifications and standards for biobased products is still weak. This book aims to fill this gap by promoting a holistic approach, which covers environmental, social and economic sustainability aspects and pushes forward the development of a circular, biobased economy.

New STAR-ProBio publication "Metrics for quantifying the circularity of bioplastics: The case of bio-based and biodegradable mulch films"	22/04/2020	Francesco Razza, Cristiana Briani, Tony Breton, Diego Marazza Published in *Resources, Conservation and Recycling*

Towards the end of the project a new section 'Results' was added, providing an overview and links to all main outcomes and final deliverables, including the following:

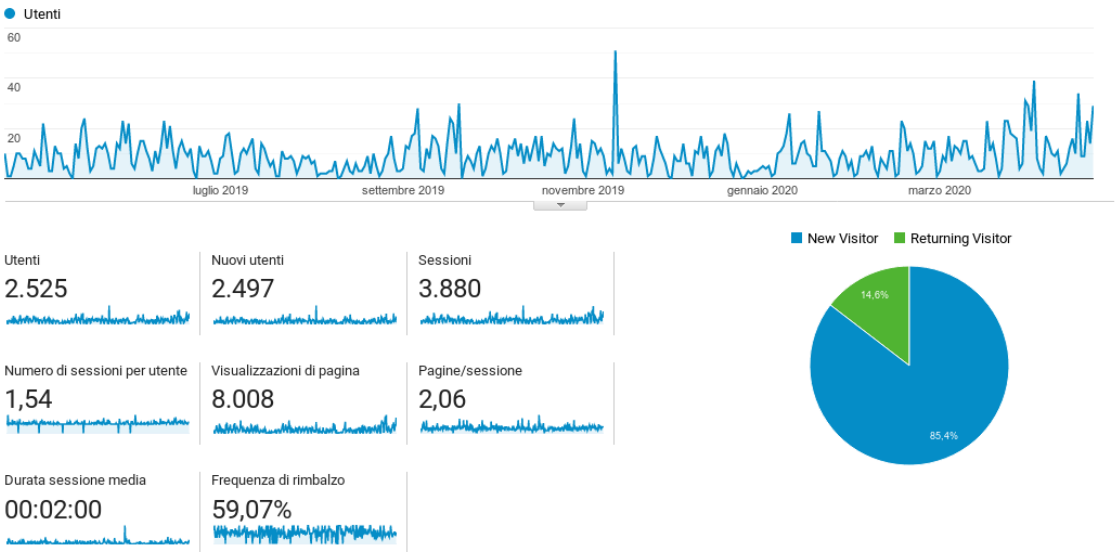
- STAR-ProBio Final Virtual Event
  - Includes the agenda and narrated copies of the presentations.
  - An FAQ document responding to the questions posed by the audience of the final workshop
- Posters of key project results from the Work Packages
- An animated video to describe the SAT-ProBio Framework
- Documents explaining the 3 STAR-ProBio smart tools:
  - Integrated Assessment Tool (IAT)
  - Sustainability Certification Tools
  - SyD-ProBio

3.1.4 Website statistics

The STAR-ProBio website recorded 11,484 sessions since its beginning (time-frame: 1 May 2017 - 22 April 2020):

- 3,078 sessions in the first year (1 May 2017 - 23 April 2018);
- 4,526 sessions in the second year (24 April 2018 - 18 April 2019);
- 3,880 sessions in the third year (19 April 2019 - 22 April 2020)

Total number of users in the time-frame 19 April 2019 - 22 April 2020: 2,525 (of which 2,497 are new users).



Geographic origin of users:

- Italy: 494 (19.4%)
- United States: 382 (14.5%)
- Germany: 239 (9.4%)
- Spain: 158 (6.2%)
- Netherlands: 125 (4.9%)
- United Kingdom: 111 (4.4%)
- Belgium: 101 (4%)
- Poland: 94 (3.7%)
- France: 89 (3.5%)
- Finland: 64 (2.5%)
- Others: 668 (26.5%)

	Paese	Utenti	% Utenti
1.	Italy	494	19,36%
2.	United States	382	14,97%
3.	Germany	239	9,37%
4.	Spain	158	6,19%
5.	Netherlands	125	4,90%
6.	United Kingdom	111	4,35%
7.	Belgium	101	3,96%
8.	Poland	94	3,68%
9.	France	89	3,49%
10.	Finland	64	2,51%

A recent sample of the traffic statistics of the STAR-ProBio website for the time-frame 01/11/2019 – 18/04/2020 recorded 1,809 sessions. The origin, website sub-sections and the path users took between sections are shown in Figure 3. After the Homepage, the "research" and the "members" sections are the most popular.

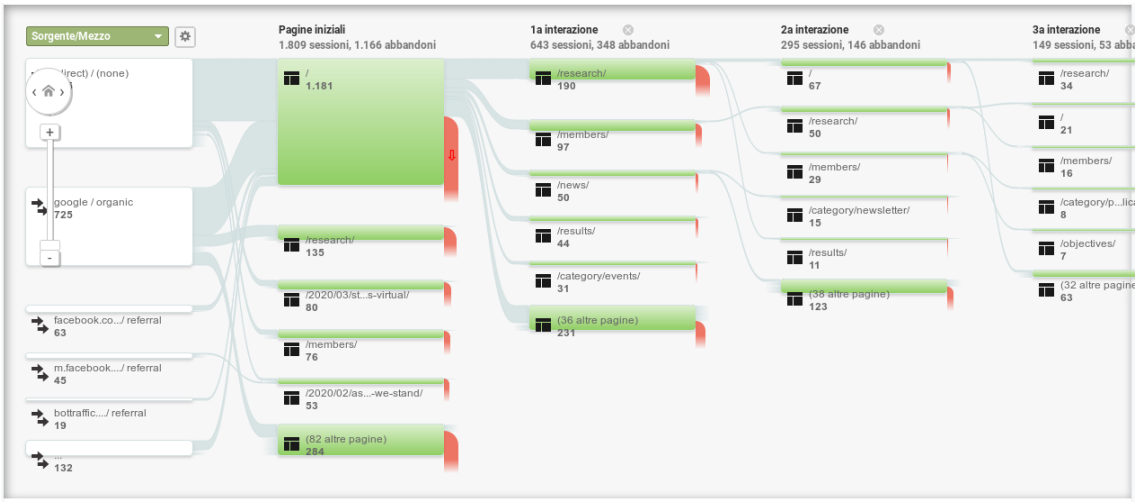


Figure 3: ***STAR-ProBio web traffic analysis 01/11/2019 to 18/04/2020***

3.1.5 Website Responsibility

Unitelma Sapienza administers the website and takes care of its technical set up and maintenance, analysing periodically the website traffic through Google Analytics in order to measure how users interact with the website content.

A dedicated staff member updates the website regularly, sharing news, information on events, presentations and relevant studies. Content management is the responsibility of the Project Coordinator [UNITELMA], the CoDNOC and WP leaders.

The CoDNOC makes sure that all information and knowledge generated in the project are widely circulated among the participants. In the internal area of the website, the posting of documents encourages knowledge exchange.

The website is regularly updated by placing interesting items on the home page not only to keep the audience informed but also to raise continued interest of already attracted visitors.

3.2 Social media channels

Social media platforms provide an important opportunity to engage with stakeholders and the general public. As a fundamental part of its communication strategy, the STAR-ProBio project actively maintains profiles on social media. STAR-ProBio profiles were created on several main social media platforms once the project had started and have been maintained ever since.

The primary project social media channels are:

- LinkedIn: https://www.linkedin.com/in/star-probio-655816145
- Facebook: https://www.facebook.com/STAR-ProBio-343691609383137/
- Twitter: https://twitter.com/STAR_ProBio

The current status of these accounts is represented in Table 1 (figures provided as of 23/04/2020):

Table 1: ***Current (23/04/2020) status of STAR-ProBio social media networks***

	Network	Content
LinkedIn	448 Members; 466 Followers	71 Posts
Twitter	403 Followers; 339 Following	180 Tweets published; 218 Likes received
Facebook	147 Followers; 137 Likes	141 Posts

4 Data Management Plan (DMP)

A Data Management Plan (DMP) for data generated and/or collected during the project was completed in month 06 (October 2017). It provided guidance to the consortium on identifying and disseminating data and knowledge gathered in the project, not restricted to the formal project deliverables.

Key examples are databases and inventories of collected information underlying the project deliverables and the supporting data for scientific manuscripts. In Month 18 (October 2018) an update to the DMP was published and a final version has been prepared for publication in Month 36 (April 2020).

The initial version of the STAR-ProBio Data Management Plan (DMP) provided the members of the consortium with a unified approach to data collection, curation and publication, focusing on the supporting data generated while implementing the various STAR-ProBio Work Packages and task.

The Month 18 update to DMP built on the experiences thus far to refine and improve the guidance and approach for the datasets. It also identified 26 datasets that were foreseen to be generated by the project, including a few that had meanwhile been finalised. In DMP Annex I a description of each of the 26 datasets is was added. The default approach is to make fully finalized datasets publicly available, unless there is a clear reason not to. STAR-ProBio has created a community on Zenodo (https://zenodo.org/communities/star-probio/) which is used as the main repository for making datasets publicly available.

The final update in Month 36 provides a full list of all generated datasets, 30 in total, of which only 8 couldn't be published as open access. In 22 cases the datasets were made public by publication on Zenodo, for the remainder, DMP Annex I contains a description of the dataset, the reason why it could not be made public, and the key contact person for queries.

Partners are encouraged to add the datasets that they (co)-author to their institutional repositories, and of course the STAR-ProBio website can host the public deliverables and related datasets as well.

Besides datasets, the STAR-ProBio Zenodo community also hosts project deliverables, journal articles etc.

5 Publications

The scientific community is one of the main target groups of STAR-ProBio. According to STAR-ProBio's Communication and Dissemination Strategy, the research teams will aim to publish a minimum of 8 scientific papers in journals during the project lifetime. These publications should aim at a high impact factor.

In the first two years of the project, 17 scientific publications were published. During the third year, a further 20 have been produced: 16 journal papers, one journal special issue, two book chapters and one book. These scientific publications have focused on analysis and findings from WPs 2 through 9. These scientific publications are targeted not only to specialists in bioeconomy and bioproducts, but also to scientists in any other discipline that could in one way or another benefit from STAR-ProBio outcomes. The respective dissemination forms with all detailed information of these publications are presented in Annex 1.

Journal papers

Further to the 11 papers listed in the Year 1 and 2 reports, the following 16 papers were published during Year 3:

1. A. Cortés, G. Feijoo, A. Chica, J. F. Da Costa-Serra & M. T. Moreira, **Environmental implications of biohydrogen based energy production from steam reforming of alcoholic waste**, *Industrial Crops and Products*, 2019, 138, 111465; https://doi.org/10.1016/j.indcrop.2019.111465; written by Universidade de Santiago de Compostela relevant to the work of WP2.
2. A. Cortés, M. T. Moreira & G. Feijoo, **Integrated evaluation of wine lees valorization to produce value-added products**, *Waste Management*, 2019, 95, 70-77; https://doi.org/10.1016/j.wasman.2019.05.056; written by Universidade de Santiago de Compostela relevant to the work of WP2 and WP3.
3. P. M. Falcone, S. González García, E. Imbert, L. Lijó, M. T. Moreira, A. Tani, V. E. Tartiu & P. Morone, **Transitioning towards the bio-economy: Assessing the social dimension through a stakeholder lens**, *Corp Soc Resp Env Ma.*, 2019, 26, 1135–1153; https://doi.org/10.1002/csr.1791; Open Access; written by Unitelma Sapienza and USC relevant to the work of WP6.
4. I. Salim, S. González-García, G. Feijoo & M. T. Moreira, **Assessing the environmental sustainability of glucose from wheat as a fermentation feedstock**, *J Environ Manage.*, 2019, 247, 323-332; https://doi.org/10.1016/j.jenvman.2019.06.016; written by Universidade de Santiago de Compostela relevant to the work of WP2.
5. B. Santiago, A. Arias Calvo, B. Gullón, G. Feijoo, M.T. Moreira & S. González-García, **Production of flavonol quercetin and fructooligosaccharides from onion (*Allium cepa* L.) waste: An environmental life cycle approach**, *Chemical Engineering Journal*, 2019, 123772, https://doi.org/10.1016/j.cej.2019.123772; written by Universidade de Santiago de Compostela relevant to the work of WP2 and WP3.
6. K. Lokesh, A. S. Matharu, I. K. Kookos, D. Ladakis, A. Koutinas, P. Morone & J. H. Clark, **Hybridised sustainability metrics for use in life cycle assessment of bio-based products: resource efficiency and circularity**, *Green Chem.*, 2020, 22, 803-813;

https://doi.org/10.1039/C9GC02992C; Open Access; written by University of York, AUA and Unitelma Sapienza relevant to the work of WP3.

7. E. Olba-Zięty, M.J. Stolarski, M. Krzyżaniak & J. Gołaszewski, **Environmental external cost of poplar wood chips sustainable production**, *J. Clean. Prod*., 2020, 119854; https://doi.org/10.1016/j.jclepro.2019.119854; Open Access; written by UWM relevant to the work of WP4 and WP8.
8. I. Câmara Salim, F. Almeida-García, S. González-García, A. Romero-Rodríguez, B. Ruíz-Nogueiras, S. Pereira-Lorenzo, G. Feijoo & M.T. Moreira, **Life cycle assessment of autochthonous varieties of wheat and artisanal bread production in Galicia, Spain**, *Sci. Total Environ*., 2020, 713, 136720; https://doi.org/10.1016/j.scitotenv.2020.136720; written by Universidade de Santiago de Compostela relevant to the work of WP2.
9. S. Wurster & L. Ladu, **Bio-based products in the automotive industry: the need for ecolabels, standards, and regulations,** *Sustainability*, 2020, 12(4), 1623; DOI: https://doi.org/10.3390/su12041623; Open Access; written by TU Berlin relevant to the work of WP9.
10. I. Wojnowska-Baryła, D. Kulikowska & K. Bernat, **Effect of bio-based products on waste management production**, *Sustainability*, 2020, 12, 2088; https://doi.org/10.3390/su12052088; Open Access; written by UWM relevant to the work of WP3.
11. D. Moosmann, S. Majer, S. Ugarte, L. Ladu, S. Wurster & D. Thrän, **Strengths and gaps of the EU frameworks for the sustainability assessment of bio-based products and bioenergy**, *Energy, Sustainability and Society*, 2020, In Press; Open Access; Written by DBFZ, SQ Consult & TUB relevant to the work of WP9.
12. F. Razza, C. Briani, T. Breton & D. Marazza, **Metrics for quantifying the circularity of bioplastics: The case of bio-based and biodegradable mulch films**, *Resources, Conservation and Recycling*, 2020, 159, 104753; https://doi.org/10.1016/j.resconrec.2020.104753; written by Novamont & UNIBO relevant to the work of WP8.
13. S.M. Ioannidou, C. Pateraki, D. Ladakis, H. Papapostolou, M. Tsakona, A. Vlysidis, I.K. Kookos & A. Koutinas, **Sustainable production of bio-based chemicals and polymers via integrated biomass refining and bioprocessing in a circular bioeconomy context**, *Bioresource Technology*, 2020, 307, 123093; https://doi.org/10.1016/j.biortech.2020.123093; written by AUA relevant to the work of WP4.
14. M. Witkowska-Dąbrowska, A. Napiórkowska-Baryła & N. Świdyńska, N. **Harmonization of criteria and operationalization of sustainable development indicators in the assessment of bioproducts**, *Economics and Environment*, 2020, 1(72), 58-73; https://doi.org/10.34659/2019/1/4; Open Access; written by UWM relevant to the work of WP8.
15. M. Witkowska-Dąbrowska, N. Świdyńska & A. Napiórkowska-Baryła, **Meeting the Europe 2020 Strategy sustainable development guidelines by Poland**, *Research Papers of Wrocław University of Economics*, 2019, 63(9), 103-116; https://doi.org/10.15611/pn.2019.9.09; Open Access; written by UWM relevant to the work of WP8.
16. D. Briassoulis, A. Pikasi & M. Hiskakis, **Recirculation potential of post-consumer/industrial bio-based plastics through mechanical recycling - Techno-economic sustainability criteria and indicators**, *Polymer Degradation and Stability*, 2020, In Press; Written by AUA relevant to the work of WP4.

Journal Special Issues

1. P. Morone, **Special Issue on: Standards for a Bio-Based Economy**, *International Journal of Standardization Research (IJSR)*, 2019, 17(1), 1-84; https://www.igi-global.com/journal/international-journal-standardization-research-ijsr/145878; written by Unitelma and TUB relevant to the work of WP5 and WP6.

Book chapters

Further to the six book chapters listed in the Year 1 and 2 reports, the following two book chapters were published during Year 3:

1. C. Pateraki, A. Papadaki, A. Koutinas & V. Kachrimanidou (2019), **2.59 - Biorefinery Engineering** In M. Moo-Young (Ed.), *Comprehensive Biotechnology*, 3rd Edition. Amsterdam: Elsevier, Volume 2, pp. 879-892, https://doi.org/10.1016/B978-0-444-64046-8.00107-5 written by Agricultural University of Athens relevant to the work of WP4.
2. D. Ladakis, H. Papapostolou, A. Vlysidis & A. Koutina (2020), **Inventory of food processing side streams in EU and prospects for biorefinery development** In M. Kosseva & C. Webb (Eds.), *Food Industry Wastes*, 2nd Edition. Amsterdam: Elsevier, https://www.elsevier.com/books/food-industry-wastes/kosseva/978-0-12-817121-9 written by Agricultural University of Athens relevant to the work of WP4.

Books

1. P. Morone & J.H. Clark (2020), **Transition Towards a Sustainable Biobased Economy**. *RSC Green Chemistry Series*, https://doi.org/10.1039/9781839160271

Non-scientific publications

STAR-ProBio partners have also published one non-scientific publication, using magazines and web platforms. These non-scientific publications aim at disseminating project information and news to policy makers, business stakeholders, public procurers, certification bodies, researchers, students, political stakeholders and general public.

Further to the 12 publications listed in the Year 1 and 2 reports, the following Non-scientific publication was published during Year 3:

1. L. Ladu, S. Wurster & S. van Iersel, **Marktakzeptanz von Zertifizierungskriterien für biobasierte Produkte und Implikationen für die Standardisierung** article on T5.1 written by TUB and Unitelma Sapienza for the July 2019 issue German magazine DIN Mitteilungen.

6 Conferences, workshops and other oral communication

Partners of STAR-ProBio have organised three events (workshops, stakeholder events etc.) and communicated in 54 more (40 oral presentations, panel discussions etc. and 14 posters) during the third year of STAR-ProBio. According to STAR-ProBio's Communication and Dissemination Strategy, the research teams will aim to participate and present in at least 6 international conferences and trade fairs. All these activities are summarised in Tables 2, 3, 4 and 5. The respective dissemination forms with all detailed information of these activities are presented in Annex 2.

All the events organised by STAR-ProBio have adopted a cooperative approach, promoting active exchange with experts invited. Presentations, posters and panel debates in which STAR-ProBio members have participated were carefully prepared to address a varied audience including industry representatives, legislators and policy makers, standardisation and certification professionals, environmental NGOs and the scientific community in general.

The following STAR-ProBio communication and dissemination actions are included in this chapter:

- Table 2: Three workshops and experts focus groups organised by partners
- Table 3: 40 oral presentations, panel discussions and session chairs
- Table 4: 14 poster presentations
- Table 5: Four attendances by STAR-ProBio team members to specialised seminars

Further to the 10 events listed in the Year 1 and 2 reports, the following three events were organised during Year 3:

Table 2: Workshops and experts focus groups organised by partners during the third year of STAR-ProBio

Nº	Title	Date/place	Audience	Partners involved	Further details
1	STAR-ProBio Second Annual Workshop (as part of 24th EURAS Annual Standardisation Conference)	14/06/2019 Rome, Italy	82 people from eighteen countries registered to attend the workshop. Final numbers of attendance was 65 scientists, policy makers, industry representatives, consumers, organisations and students from across Europe.	SQ Consult, University of York, UNITELMA, USC, ECOS, TUB and AUA	The second annual STAR-ProBio workshop was co-organised with the 24th EURAS (European Academy for Standardisation) conference, themed 'Standards for a Bio-Based Economy', which took place on 13-15 June 2019. The STAR-ProBio workshop, hosted together with the LIFECAB project, was a plenary session covering the afternoon of the main conference day. The 3.75 hour workshop combined presentations on the STAR-ProBio project from Sofia Maina (AUA) and Maite Moreira (USC) and the LIFECAB project from Michalis Koutinas (CUT) and Elio Padoan (University of Turin – DISAFA) with a Roundtable Discussion to explore 'Standards as policy tools'. Panel members consisted of a complementary blend of industry (including SME), academia, policy makers and NGOs: Knut Blind, TU Berlin & FhG FOKUS; Mauro Cordella, JRC; Mathilde Crepy, ECOS – European Environmental Citizens' Organisation for Standardisation; Monica Delsignore, Università degli Studi di Milano – Bicocca; Uwe Fritsche, Director of IINAS; Liliana Gamba, WWF; Davide

					Mainero, Acea Pinerolese; and Elena Mocchio, UNI - Ente Italiano di Normazione. The workshop was well received by an engaged audience, and led to increased stakeholder interest in the project's final deliverables, as well as additional insights of market needs and desires for bio-based product sustainability assessment.
2	Sustainability Metrics: Tracking, Measuring and Reporting Responsible Innovation II	11/09/2019 York, UK	25 scientists, researchers and industry representatives from across Europe	University of York	This was the second "Sustainability Metrics" symposium held at the GCCE, University of York as part of the STAR-ProBio project. The aim of the symposium was to give researchers the opportunity to discuss their use of green chemistry metrics and other toolkits, to assess the sustainability of their research, and to encourage discussions and future collaborations between academic and industrial researchers. There were speakers from the University of Sheffield, University of York, Drax, Croda, CO2Chem, OWS Limited, Pré Sustainability and Novamont in attendance.
3	STAR-ProBio Final (virtual) Workshop "Assessing Sustainability of Bio-based Products:	28/04/2020 Online	140 stakeholders including policy makers, industry representatives and researchers, including from Austria, Belgium, Cyprus,	All partners: SQ Consult (lead), U. of York, UNITELMA, ECOS, TUB, NOVAMONT,	Session 1 (live): Identifying the way forward • Mainstreaming sustainability assessments - The STAR-ProBio

	Where do we stand?"		Finland, France, Germany, Greece, India, Italy, Ireland, Luxembourg, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom	UNIBO, agroVet, SEPA, DBFZ, AUA, UWM, USC, Quantis, Chemprof	approach (Piergiuseppe Morone – UNITELMA). • Acceptance factors for consumers and for businesses (Luana Ladu – TUB). • The Bioeconomy Strategy and the role for schemes and labels (Mathilde Crepy – ECOS). Session 2 (live): Blueprint for a sustainability scheme and assessment tool • Integrated assessment tool (Francesco Razza – Novamont). • Operationalising criteria and indicators and setting up a benchmark platform (Eva Merloni – UNIBO/Matthias Grill - agroVet). Session 3 (live): Policy challenges in the European Green Deal era • Policy scenarios for a level playing field (Hordur Haraldsson/Deniz Koca – SEPA). • Co-regulation for the integration of sustainability assessment (Sergio Ugarte – SQ Consult). • Effective monitoring of sustainability impacts (Stefan Majer – DBFZ). Technical session 1 (on website): Gap analysis and novel approaches for sustainability assessment in bio-materials production

					• Current standards: Gaps and recommendations (Janusz Golaszewski – UWM) • Upstream environmental assessment (Iana Camara Salim – USC) • Assessing the increase of land use (Diego Marazza – UNIBO) Technical session 2 (on website): Assessing sustainability in a circular economy • Downstream process impact assessment (Kadambari Lokesh – UoY & Vincent Rossi - Qantis) • Proposed techno-economic sustainability criteria for alternative end of life options and recirculation of post-consumer bio-based products (Demetres Briassoulis – AUA) • Life Cycle Costing indicators (Apostolis Koutinas – AUA) • End-of life social and socioeconomic assessment (Enrica Imbert – UNITELMA) Posters • WP1: Gaps in Existing EU Sustainability Certification and Standardisation (Stefan Majer, David Moosmann – DBFZ; Luana Ladu, Simone Wurster - TUB) • WP2: Upstream Environmental Impact Assessment (Iana Câmara Salim, Maria Teresa Moreira - USC; Vincent Rossi - Qantis; Kadambari

					Lokesh - UoY; Apostolis Koutinas, Dimitris Ladakis, Sofia Maria Ioann - AUA; Diego Marazza - UNIBO; Irena Wojnowska - UWM; Francesco Razza - Novamont; Mathilde Crepy – ECOS; Michal Luczynski – Chemprof) • WP3: Downstream Environmental Impact Assessment (Kadambari Lokesh -UoY; Vincent Rossi - Qantis; Apostolis Koutinas, Dimitris Ladakis, Demetres Briassoulis – AUA; Iana Camara Salim - USC; Irena Wojnowska – UWM) • WP4. Techno economic assessment - Alternative EoL options (D. Briassoulis, A. Pikasi, M. Hiskakis – AUA) • WP4. Techno economic assessment - natural resource use (Janusz Gołaszewski – UWM) • WP4. Techno economic Sustainability Assessment - conversion routes of renewable feedstock resources to bio-based products (Dimitrios Ladakis, Sofia Maria Ioannidou, Apostolis Koutinas – AUA) • WP5: Market Sustainability Preferences (Luana Ladu, Simone Wurster - TUB; Enrica Imbert, Piergiuseppe Morone – UNITELMA; Sjors van Iersel – SQ Consult; Mathilde Crêpy – ECOS)

					• WP6 Social Assessment (Idiano D'Adamo, Pasquale Marcello Falcone - UNITELMA; Camara Salim Iana, Sara González García - USC; Luana Ladu; Simone Wurster - TUB; Deniz Koca – SEPA) • WP7: ILUC risk assessment for bio-based products (Enrico Balugani, Eva Merloni, Diego Marazza - UNIBO; Stefan Majer, Beike Sumfleth - DBFZ; Mathilde Crepy - ECOS; Luana Ladu – TUB) • WP8: Sustainability scheme blueprint for bio-based products (Janusz Gołaszewski – UWM; Francesco Razza – Novamont; Sergio Ugarte – SQ Consult; Luana Ladu – TUB; Mathilde Crepy – ECOS) • WP8: Integrated Assessment Tool (Francesco Razza - Novamont; Luana Ladu – TUB) • WP9: Analysis of framework conditions and labelling for the sustainability of bio-based products (David Moosmann, Stefan Majer - DBFZ; Luana Ladu, Simone Wurster – TUB) • WP10: Knowledge transfer, training and dissemination (Sergio Ugarte, Sjors van lersel, Monique Voogt – SQ Consult; Janice Lofthouse, Katy Brooke – UoY)

Further to the 37 oral communications listed in the Year 1 and 2 reports, the following 40 oral communications were delivered during year 3:

Table 3: Participation with oral presentations, panel discussions and session chairs in specialised events during the third year of STAR-ProBio

Nº	Title	Date/place	Audience	Partner(s) involved	Further details
1	Oral Presentation 'Biorefinery development using industrial side streams and organic fractions of municipal solid wastes in a bio-economy context' at the 8th International Forum on Industrial Biotechnology (IBA-IFIBiop 2019)	01/05/2019-05/05/2019 Miri, Sarawak, Malaysia	scientists, researchers, directors, editors, students; over 200 attendees from around the world	AUA	Apostolis Koutinas, AUA (presenter)
2	Oral presentation 'Analysis of spent sulphite liquor as raw material for the production of fermentative succinic acid' at the 8th International Forum on Industrial Biotechnology (IBA-IFIBiop 2019)	01/05/2019-05/05/2019 Miri, Sarawak, Malaysia	scientists, researchers, directors, editors, students; over 200 attendees from around the world	AUA	Dimitrios Ladakis, AUA (presenter)
3	Panel debate 'Sustainability governance approaches (certification, landscape, jurisdictional/territorial etc.): Experiences and perspectives' at IEA Bioenergy Workshop "Governing sustainability in biomass supply chains for the bioeconomy"	23/05/2019	scientists, researchers, directors, editors, policy makers and students; ca. 100 attendees from around the world	SQ Consult	Sergio Ugarte, SQ Consult
4	Oral presentation 'Sustainability assessment and research of bio-based products' at the WRUN and Climate Change Network Meeting: Exploring the environmental impacts of supply chains	23/05/2019 York, UK	30 scientists, researchers, policy makers, students, conservationists and ecologists from around the UK	University of York	Kadambari Lokesh, UoY (presenter)

5	Oral presentation 'Incorporation of hybridised impact assessment methods into LCA for the environmental evaluation of bio-based products' at the Society of Environmental Toxicology and Chemistry (SETAC) Europe 29th Annual Meeting	26/05/2019-30/05/2019 Helsinki, Finland	Scientists, researchers, policy makers, students, conservationists and ecologists; 2,161 delegates from 64 countries.	University of York and Quantis	Kadambari Lokesh, UoY (presenter) and Vincent Rossi, Quantis
6	Oral presentation 'Life Cycle Assessment of winery by-products valorisation for alcohol and calcium tartrate production: a case study of a real biorefinery in Italy' at the Society of Environmental Toxicology and Chemistry (SETAC) Europe 29th Annual Meeting	26/05/2019 - 30/05/2019 Helsinki, Finland	Scientists, researchers, policy makers, students, conservationists and ecologists; 2,161 delegates from 64 countries.	UNIBO	UNIBO: Diego Marazza (presenter) and Luciano Vogli
7	Session chair of session 'Bio-based industries: sustainability benefits of technological innovation and closed loop approaches across supply chains' at the Society of Environmental Toxicology and Chemistry (SETAC) Europe 29th Annual Meeting	26/05/2019 - 30/05/2019 Helsinki, Finland	Scientists, researchers, policy makers, students, conservationists and ecologists; 2,161 delegates from 64 countries.	UNIBO	Diego Marazza, UNIBO; Co-chairs: Neus Escobar (Germany), Daniel Garrain (Spain), Tarmo Räty (Finland).
8	Oral presentation 'Strengths and gaps of the current EU bioeconomy framework for the sustainability assessment of bio-based products' at the 27th European Biomass Conference and Exhibition	27/05/2019 - 30/05/2019 Lisbon, Portugal	Scientists, researchers, directors, editors, policy makers, students; ca. 100 attendees from across Europe	SQ Consult, DBFZ and TUB	Sergio Ugarte (speaker, SQ Consult), David Moosmann, Stefan Majer, Luana Ladu, Simone Wurster
9	Oral presentation 'Identification and certification of low indirect land use impact biomass for the EU bioeconomy' at the 27th European Biomass Conference and Exhibition	27/05/2019 - 30/05/2019 Lisbon, Portugal	Scientists, researchers, directors, editors, policy makers, students; ca. 100 attendees from across Europe	DBFZ and UNIBO	Stefan Majer (speaker, DBFZ), Enrico Balugani, Beike Sumfleth, Diego Marazza, Eva Merloni, Daniela Thrän

10	Oral presentation 'Bio-based products in the automotive industry: The need for eco-labelling, standards and regulatory support' at the 24th EURAS Annual Standardisation Conference	13/06/2019 - 15/06/2019 Rome, Italy	ca. 100 scientists, researchers, directors, editors and policy makers from across Europe in attendance	TUB, ECOS, AUA	Luana Ladu, TUB (speaker); this was an activity part of task 9.2
11	Oral presentation 'Tackling uncertainty in the bio-based economy' at the 24th EURAS Annual Standardisation Conference	13/06/2019 - 15/06/2019 Rome, Italy	ca. 100 scientists, researchers, directors, editors, policy makers from across Europe in attendance	Unitelma	Pasquale Marcello Falcone (speaker), Enrica Imbert, Piergiuseppe Morone
12	Oral presentation 'Integration of social impact assessment into standardisation schemes for bio-based products' at the 24th EURAS Annual Standardisation Conference	13/06/2019 - 15/06/2019 Rome, Italy	ca. 100 scientists, researchers, directors, editors, policy makers from across Europe in attendance	Unitelma and USC	Lucía Lijó, Sara González-García, Enrica Imbert (speaker), Pasquale Marcello Falcone, María Teresa Moreira
13	Oral presentation 'Techno-Economic sustainability criteria for post-consumer bio-based plastics' material recovery' at BIOPOL2019, 7th International Conference on Biobased and Biodegradable Polymers	17/06/2019 - 19/06/2019 Stockholm, Sweden	Scientists, researchers, policy makers, students, conservationists, ecologists, general public; ca. 100 attendees from around the world	AUA	Demetres Briassoulis (speaker), Anastasia Pikasi, Miltiadis Hiskakis
14	Oral presentation 'Environmental consequences of quercetin extraction from onion waste' at 1st Mediterranean Symposium on Life Cycle Assessment (MeSyLCA 2019)	19/06/2019 Santander, Spain	30 scientists, researchers and students from across Europe in attendance	USC	Beatriz Santiago (speaker), Beatriz Gullón, Gumersindo Feijoo, María Teresa Moreira and Sara González-García
15	Oral presentation 'Environmental consequences of quercetin extraction from onion waste' at 3rd International Congress of Chemical Engineering (ICCE3)	19/06/2019 - 21/06/2019 Santander, Spain	Scientists, researchers and students (mostly from Spain); number of attendees unknown	USC	Beatriz Santiago (speaker), Beatriz Gullón, Gumersindo Feijoo, María Teresa Moreira and Sara González-García.

16	Oral presentation 'Environmental implications of honey production in the natural parks of northwestern Spain' at 2nd International Conference "ADAPTtoCLIMATE"	24/06/2019 - 25/06/2019 Crete, Greece	Scientists, researchers and students from across Europe; number of attendees unknown	USC	Maria Teresa Moreira
17	Oral presentation 'Identifying potential feedstocks in a cradle-to-farm gate approach for sugar production' at 2nd International Conference "ADAPTtoCLIMATE"	24/06/2019 - 25/06/2019 Crete, Greece	Scientists, researchers and students from across Europe; number of attendees unknown	USC	I. Salim (speaker), S. Bello, G. Feijoo, M.T. Moreira
18	Oral presentation 'Tackling uncertainty in the bio-based economy through science - The case of the H2020 project STAR-ProBio' at HERAKLION 2019 – 7th International Conference on Sustainable Solid Waste Management	26/06/2019 - 29/06/2019 Heraklion, Crete, Greece	Scientists, researchers, policy makers, students, conservationists, ecologists, general public; ca. 450 attendees from around the world	Unitelma	Piergiuseppe Morone
19	Oral presentation 'Techno-economic sustainability criteria and indicators for End-of-Life options of bio-based plastics' at HERAKLION 2019 – 7th International Conference on Sustainable Solid Waste Management	26/06/2019 - 29/06/2019 Heraklion, Crete, Greece	Scientists, researchers, policy makers, students, conservationists, ecologists, general public; ca. 450 attendees from around the world	AUA	Demetres Briassoulis
20	Oral presentation 'An approach to bio-based product-related land use change analysis' at GEET19 – International Conference Green Energy and Environmental Technology	24/07/2019 - 26/07/2019 Paris, France	Around 100 scientists in attendance from around the world.	UWM and UNIBO	Janusz Gołaszewski (speaker), Barbara Kalisz, Diego Marazza, Krystyna Żuk-Gołaszewska, Wioleta Radawiec
21	Oral presentation 'Life Cycle Management and non-financial reporting as effective	11/09/2019	25 scientists, researchers, directors	Novamont	Francesco Razza

	tools to accelerate transition to sustainable production and consumption patterns: the experience of Novamont' at Sustainability Metrics: Tracking, Measuring and Reporting Responsible Innovation II	York, UK	and students from across Europe		
22	Oral presentation 'Novel hybridised sustainability metrics for use in LCA: Resource efficiency and circularity' at Sustainability Metrics: Tracking, Measuring and Reporting Responsible Innovation II	11/09/2019 York, UK	25 scientists, researchers, directors and students from across Europe	UoY and Quantis	Kadambari Lokesh (speaker), Vincent Rossi
23	Invited talk 'Accelerating the transition to a bio-based economy: the role of standards and regulation' at workshop 'The Normative Dimension of Transformations towards a Sustainable Bioeconomy – Expanding the Economic Perspective'	Stuttgart-Hohenheim, Germany 13/09/2019 - 14/09/2019	An audience of 45 scientists and researchers from across Europe	Unitelma	Piergiuseppe Morone
24	Oral presentation 'Professionals procurers Sustainability Preferences' at 6th International Environmental Best Practices Conference (EBP6)	Olsztyn, Poland 22/09/2019 - 26/09/2019	An audience of 40 scientists, researchers and students from around the world	Unitelma	Enrica Imbert gave presentation in the session 'Socio- economic dimensions of regulations on circular bioeconomy'
25	Oral presentation 'A simple tool to estimate ILUC risk for feedstocks used to produce bioplastics, in the framework of the Star-ProBio project' at 6th International Environmental Best Practices Conference (EBP6)	Olsztyn, Poland 22/09/2019 - 26/09/2019	An audience of 50 scientists, researchers and students from around the world	UNIBO and DBFZ	Enrico Balugani (speaker), Diego Marazza, Eva Merloni, Stefan Majer, Beike Sumfleth
26	Oral presentation 'Mapping existing policies related to direct and indirect land use change for the bio-based economy in Europe' at 6th International	Olsztyn, Poland	An audience of 40 scientists, researchers and students from around the world	ECOS	Mathilde Crepy gave a presentation on task 7.3's preliminary findings

	Environmental Best Practices Conference (EBP6)	22/09/2019 - 26/09/2019			
27	Chair of session "Socio- economic dimensions of regulations on circular bioeconomy" at 6th International Environmental Best Practices Conference (EBP6)	Olsztyn, Poland 22/09/2019 - 26/09/2019	An audience of 60 scientists, researchers and students from around the world	Unitelma	Chair of the session: Piergiuseppe Morone
28	Oral presentation 'The gap in techno-economic sustainability assessment of bio-products: from open loops to close loops' at ISWA World Congress 2019	07/10/2019 - 09/10/2019 Bilbao, Spain	Scientists, researchers, directors, policy makers, students, waste management experts and consultants; ca. 150 attendees from around the world	AUA	Maria Tsakona (speaker), Apostolis Koutinas, Dimitris Ladakis
29	Oral presentation 'Process design, techno-economic assessment and environmental impacts of succinic acid production via continuous fermentation mode using spent sulfite liquor' at the International Graduate Symposium on Industrial Biotechnology	13/10/2019 - 16/10/2019 Wuxi, China	Scientists, researchers, directors, policy makers, students, waste management experts and consultants; ca. 100 attendees from around the world	AUA	D. Ladakis (speaker), S. Ioannidou, A. Koutinas, I. Kookos
30	Oral presentation 'The ecosystem-related efficiency of resource use in assessment of the sustainability of bio-based products' at 4th Congress of Engineering, Science and Environmental Management and 5th International Conference of Greening of the Industry Network	28/10/2019 - 30/10/2019 Mexico City, Mexico	Scientists, researchers, directors and students; ca. 300 from around world	UWM	Janusz Gołaszewski (speaker), Ewelina Olba-Zięty, Anna Karwowska
31	Oral presentation 'External costs associated with production of raw material feedstock for bio-based products - a review' at 4th Congress of Engineering,	28/10/2019 - 30/10/2019	Scientists, researchers, directors and students; ca. 300 from around world	UWM	Ewelina Olba-Ziety (speaker), Janusz Gołaszewski, Anna Karwowska, Mariusz J. Stolarski, Michał Krzyżaniak

	Science and Environmental Management and 5th International Conference of Greening of the Industry Network	Mexico City, Mexico			
32	Oral presentation 'Understanding the transition from a linear mass consumption economy to circular post-consumerism: the case of food system' at the European Workshop on Bioeconomy 2019	29/10/2019 - 30/10/2019 Paris, France	Industry representatives, scientists, researchers and policy makers; ca. 100 attendees from across Europe	Unitelma	Presentation given by Piergiuseppe Morone and STAR-ProBio also promoted through distribution of flyers
33	Oral presentation 'Techno-Economic Sustainability Analysis Methodology For Alternative End-Of-Life Options For Post-Consumer Bio-Based Plastics Used In The Agrifood Sector' at 11th Panhellenic Conference on Agricultural Engineering	08/11/2019 Volos, Greece	Scientists, researchers, students and stakeholders; ca. 150 attendees from across Europe	AUA	D. Briassoulis (speaker), A. Pikasi, M. Hiskakis
34	Oral presentation 'Process design, techno-economic assessment and environmental impacts of succinic acid production from the organic fraction of municipal solid waste' at the 2019 AIChE Annual Meeting	10/11/2019 - 15/11/2019 Orlando, USA	Scientists, researchers, directors, policy makers, students, waste management experts and consultants; ca. 100 attendees from around the world	AUA	D. Ladakis, E. Stylianou, S. M. Ioannidou, C. Pateraki (speaker), C. S. K. Lin, A. Koutinas, I. Kookos
35	Invited talk 'Biorefinery development using industrial side streams and organic fractions derived from municipal solid waste for the production of bio-based products' at	18/11/2019 Manizales, Colombia	The audience consisted of ca. 70 scientists, researchers, directors and students from around Colombia	AUA	Apostolis Koutinas was invited speaker in seminar
36	Oral presentation 'Bioprocess design and techno-economic evaluation of butanediol production from crude glycerol and sugar-based feedstocks' at New Horizons in Biotechnology (NHBT-2019) and BIOSPECTRUM2019: International	20/11/2019-26/11/2019 Trivandum & Tiruvalla, India	Scientists, researchers, directors, policy makers, students, waste management experts and consultants; ca.	AUA	D. Ladakis (speaker), A. Koutinas, S. Maina, E. Stylianou, O. Psaki, A. M. Castro, E. Dheskali and I. Kookos

	Conference on Advances in Food and Industrial Biotechnology		150 attendees from around the world		
37	Invited talk in a panel within the session "Standardisation, LCA, labelling and regulatory hurdles" at the BBI JU Stakeholder Forum 2019	03/12/2019-04/12/2019 Brussels, Belgium	Scientists, researchers, policy makers; ca. 300 attendees from across Europe	Unitelma	Piergiuseppe Morone gave invited lecture. The STAR-ProBio brochure was also distributed among all participants.
38	Invited talk at workshop 'Bioeconomia in Friuli Venezia Giulia - Focus Sulla Formazione e l'Orientamento a Supporto di uno Sviluppo Sostenibile e Circolare'	24/01/2020 Udine, Italy	Industry representatives, scientists, researchers and policy makers; ca. 150 attendees from around Italy	Unitelma	Piergiuseppe Morone gave invited lecture.
39	Oral presentation 'Natural resource use efficiency in techno-economic sustainability analysis of bio-based products' at the 8th International Conference on Sustainability, Technology and Education 2020 (STE 2020)	05/02/2020-07/02/2020 Sao Paulo, Brazil	An audience of 70 scientists, researchers and students from around the world	UWM	Janusz Gołaszewski (presenter), Izabela Samson-Bręk, Barbara Kalisz, Krystyna Żuk-Gołaszewska, Wioleta Radawiec
40	Presenting STAR-ProBio project at the Social Lab on Responsible Research and Innovation	04/03/2020-05/03/2020 Tromsø, Norway	People with particular expertise and experience with different aspects of R&I systems, FET topics, FOOD topics and/or national interests (Europe)	Unitelma	Piergiuseppe Morone and Francesca Govoni gave presentation and distributed brochures at workshop organised as part of the New Horrizon project.

The following 14 posters were presented at conferences during Year 3:

Table 4: Participation with poster presentations in specialised events during the third year of STAR-ProBio

Nº	Title	Date/place	Audience	Partners involved	Further details
1	Poster presentation 'Progressing the bio-based products' global value chains by social innovation' at Eu-SPRI 2019: Science Technology and Innovation Policies for Sustainable Development Goals. Actors, Instruments and Evaluation	05/05/2019-07/05/2019 Rome, Italy	Scientists, researchers, directors, policy makers, conservationists, ecologists and students; ca. 30 from around the world	UWM and TUB	Luana Ladu, Cristina Fróes de Boria Reis, Janusz Gołaszewsk (presenter), Janire Clavel Diaz
2	Poster presentation 'Sustainability aspects of renewable resource use in techno-economic assessment of bio-based products' at 12th International Conference on Bio-based Materials	15/05/2019-16/05/2019 Cologne, Germany	Directors, scientists, researchers; 280 attendees from around the world	UWM	Janusz Gołaszewski
3	Poster presentation 'Changes of landuse structure in relation to soil units' at 30. Congress of the Soil Science Society of Poland	02/09/2019-07/09/2019 Lublin, Poland	Scientists, researchers, students, conservationists, ecologists, directors, editors and policy makers; ca. 300 attendees from around the world	UWM	Barbara Kalisz (presenter), Paweł Sowiński, Janusz Gołaszewski, Krystyna Żuk-Gołaszewska, Wioleta Radawiec, Przemysław Slesiński
4	Poster presentation 'Sustainability indicators of the effectiveness of using biomass resources in the production of bio-based products' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Izabela Samson-Bręk (presenter), Barbara Kalisz, Krystyna Żuk-Gołaszewska, Wioleta Radawiec
5	Poster presentation 'Application of Corine database in assessment of changes in land use structure' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Barbara Kalisz (presenter), Janusz Gołaszewski, Krystyna Żuk-Gołaszewska, Wioleta Radawiec, Przemysław Slesiński

6	Poster presentation 'Aerobic degradation of PLA in thermophilic conditions' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Dorota Kulikowska (presenter), Katarzyna Bernat, Irena Wojnowska-Baryła, Rafał Jabłoński
7	Poster presentation 'Economic indices in the production of two short rotation woody crops species' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Ewelina Olba-Zięty (presenter), Mariusz Jerzy Stolarski, Michał Krzyżaniak, Monika Makowska
8	Poster presentation 'Harmonisation under the criteria of sustainable development and their operationalization' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Poster presentation given by Mirosława Witkowska-Dąbrowska
9	Poster presentation 'Implementation of ecosystem-based DPSIR framework in the study on sustainability of bio-based products' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Janusz Gołaszewski (presenter), Anna Karwowska
10	Poster presentation 'Biogas production from polylactic acid (PLA) under anaerobic thermophilic condition' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Katarzyna Bernat (presenter), Dorota Kulikowska, Irena Wojnowska-Baryła, Rafał Jabłoński
11	Poster presentation 'Legislation and consensus for minimum criteria in all bio-based economy sectors' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	UWM	Michał Krzykowski (presenter), Ewelina Olba-Zięty, Janusz Gołaszewski, Jan Jakub Zięty
12	Poster presentation 'Elemental composition, antioxidant activity and bioactive compounds content of "Salivet"	22/09/2019-26/09/2019	Scientists, researchers, ecologists; ca. 130	UWM	Juszczuk Andrzej (presenter), Turemko Marcin, Waśkiewicz Krzysztof, Gomułka Agnieszka,

	as an example of bio-based complementary feed from willow bark (*Salix sp*.)' at the 6th International Environmental Best Practices Conference (EBP6)	Olsztyn, Poland	attendees from around the world)		Mateusz Kondzior, Michał Łuczyński
13	Poster presentation 'Upstream environmental assessment of first and second generation sugars' at the 6th International Environmental Best Practices Conference (EBP6)	22/09/2019-26/09/2019 Olsztyn, Poland	Scientists, researchers, ecologists; ca. 130 attendees from around the world)	USC	Iana Câmara Salim (presenter), Gumersindo Feijoo and Maria Teresa Moreira
14	Poster presentation 'Biodegradability and compostability of biobased products' at the 17th International Waste Management and Landfill Symposium	30/09/2019-04/10/2019 Cagliari, Italy	Researchers, technicians, administrators and operators; 675 attendees from around the world	UWM	Irena Wojnowska-Baryła, Dorota Kulikowska (presenter), Katarzyna Bernat

Further to the four attendances listed in the Year 2 and 3 reports, the following attendance took place during Year 3:

Table 5: Attendance by STAR-ProBio team members to specialised seminars

Nº	Title	Date/place	Audience	Partners involved	Further details
1	STAR4BBI Stakeholder Workshop: Assessing Bio-based Product Value Chains - How Better Regulation and Standardisation can Promote a Level Playing Field	14/05/2019 Cologne, Germany	Scientists, researchers, directors, policy makers, conservationists, ecologists and standardisation bodies representatives; 30 participants from around the world	8	Interactive discussions on issues related to STAR-ProBio, i.e. compostability standard (EN 13432), proposal for a Renewable Material Directive, harmonisation of WFD and Circular Economy Package, Sustainability Certification for all products.

2	IFIB 2019 – International Forum on Industrial Biotechnology and Bioeconomy	03/10/2019-04/10/2019 Naples, Italy	Materials distributed to a broad variety of stakeholders including policy makers, civil society organizations; business; ca. 200 attendees from around the world.	6, 10	Distribution of leaflet 'Smart tools for Bio-based products: introducing SATProBio and SyD-ProBio'; also round table moderation.
3	14th European Bioplastic Conference	02/12/2019-03/12/2019 Berlin, Germany	Scientists, industry NGOs; ca. 500 attendees from around the world.	5	Material distributed and contact with experts for getting feedback on the IAT.
4	ICT-BIOCHAIN Train-The-Trainer Webinar and platform launch	02/04/2020 Online	Ca. 200 scientists, researchers, policy makers and students from around the world	TUB, Unitelma and Novamont	ICT-BIOCHAIN and STAR-ProBio presented the tools they developed to enhance efficiency in the biomass supply chain and sustainability in the bio-based industry respectively. Recording of the webinar at: https://www.youtube.com/watch?v=NkteNrsU0Ss

7 Outreach and communication materials

Outreach is among the most important aspects of STAR-ProBio's dissemination activities. Outreach and training materials (posters, brochures, leaflets, newsletters, fact sheets, etc.) are used as a means to give visibility to the project and provide relevant information to all publics. All STAR-ProBio outreach and training materials and presentations use the STAR Pro-Bio's logo and templates. The EC logo is shown in all of them and the grant agreement reference is prominently placed.

7.1 Flyers, fact sheets and posters

For each of the main project outputs, the Smart Tools, flyer was produced. These flyers are attached as annex to D11.3 and can be viewed online here:

- Integrated Assesment Tool (IAT)
- Sustainability Certification Tools
- SyD-ProBio

During the third year a leaflet was developed, printed and handed out, as presented as annex 9.

Furthermore, each WP developed a poster summarising the main WP outcomes:

- WP1 Poster
- WP2 Poster
- WP3 Poster
- WP4 Poster EoL
- WP4 Poster TESA
- WP4 TESA Routes
- WP5 Poster
- WP6 Poster
- WP7 Poster
- WP8 Poster IAT
- WP8 Blueprint
- WP9 Poster
- WP10 Poster

Also a set of fact sheets was developed. In order to present the various criteria and indicators discussed and prepared in the different WPs of STAR-ProBio in a coherent and harmonised structure, we developed a set of uniform factsheets. This factsheet (also referred to as the Building Blocks) module shall support and ease the transfer of STAR-ProBio results into the existing certification landscape.

The STAR-ProBio principles, criteria and indicators have been sourced from different methodological approaches and perspectives (e.g. LCA and non LCA based such as iLUC, social aspects and circularity). The Building Blocks module aims at organizing these principles, criteria and indicators according the general logic of a product certification approach and to prepare their coherent and uniform presentation.

The integration of STAR-ProBio criteria and indicators into a common structure for their use by certification schemes has been done in a two-step approach:

i) The development of an inventory that collects the results of STAR-ProBio Work Packages 2, 3, 4, 6 and 7 and organises them according to their relevance in the chain of custody as well as their sustainability dimension. This is a necessary intermediate step between the outcome of Work Packages and the proposed Building Blocks that can be used by product certification schemes.
ii) The development of factsheets, which present the STAR-ProBio criteria and indicators in a uniform structure

The factsheets present the STAR-ProBio results in a uniform approach with further information which should support the potential transfer of these results, such as the necessary pre-conditions for their implementation in product certification schemes or general limitations of the criteria and indicators as well as their respective methodologies. Consequently, the Building Blocks module can help to address gaps which have been identified by the Benchmarking Platform as result of the comparison of existing schemes with the STAR-ProBio principles, criteria and indicators. The fact sheets are available from the STAR-ProBio website, Results section.

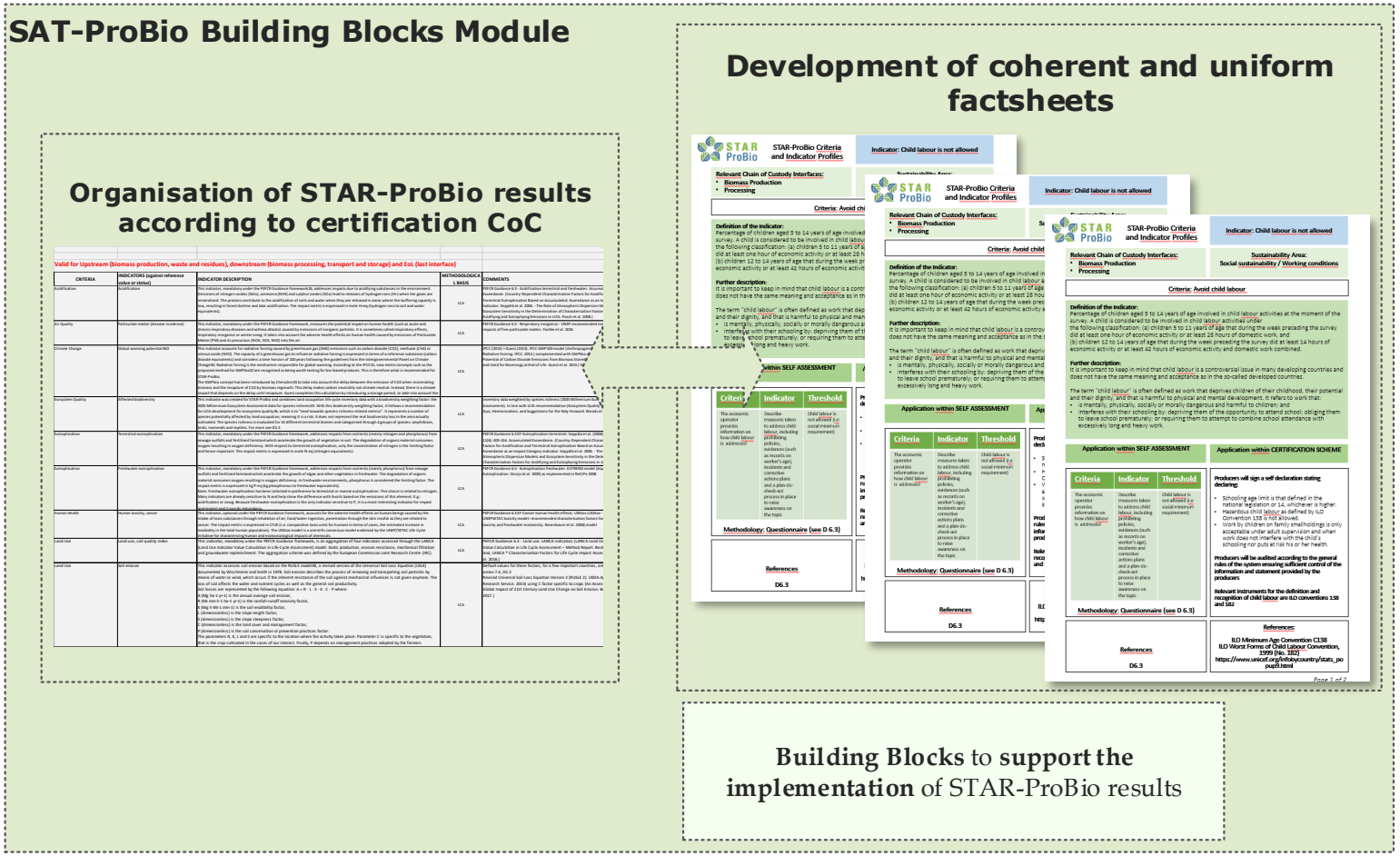


Figure 4: SAT-ProBio Building Blocks Module

7.2 Videos

In order to reach a wide public, two videos were produced, to increase the project's visibility.

One animated video presents the need for and the workings of the SAT-ProBio smart tools to a broad audience. The video can be viewed here: http://www.star-probio.eu/UWM-1-0.mp4. UWM led the development of this video.

Another video, narrated by project team members, is aimed are increasing social acceptance. The video can be viewed here: https://www.usc.gal/biogroup/media/videos. USC led the development of this video.

7.3 Outreach and training

During the third year of STAR-ProBio activities, three outreach and training events took place. Partners have produced one summer school and participated in two exhibitions. All these activities are summarised in Table 6. The respective dissemination forms with all detailed information of these activities are presented in Annex 3.

Furthermore, the UoY team prepared several bio-based experiments and a bio-based game for school children, which are included as Annex 10.

Further to the 9 outreach events listed in the Year 1 and 2 reports, the following three outreach and trainings were delivered during Year 3:

Table 6: Outreach and training events in Year 3

Nº	Title	Date/place	Audience	Partners involved	Further details
1	STAR-ProBio Summer School "Sustainability certification and market uptake of bio-based products. Focus on the construction sector"	05/09/2019 Göteborg, Sweden	29 scientists and researchers from European universities and Nigeria	SQ Consult B.V., DBFZ, agroVet, UNIBO, Ecos, SEPA (through Lund University)	STAR-ProBio partners successfully conducted in Göteborg the STAR-ProBio Summer School "Sustainability certification and market uptake of bio-based products. Focus on the construction sector". This summer school was part of the larger EIT Climate-KIC graduate course on wood construction in climate change mitigation, jointly organised with Aalto University in Espoo, Finland and Chalmers University of Technology in Gothenburg, Sweden.
2	Organisation of 'Bioeconomy Village' as part of European Researchers' Night 2019	27/09/2019-28/09/2019 Frascati, Italy	Ca. 1000 scientists, researchers, students and the general public from across Italy were in attendance	Unitelma Sapienza	The BIOECONOMY Village, promoted by the STAR-ProBio, BIOVOICES, Biobridges and LIFT projects, aims to raise awareness, improve knowledge on products of renewable origin and promote the applications and benefits of bioeconomy, the circular economy and the sustainability, fostering dialogue, confrontation and sharing between the general public, researchers and companies. Through the display of products, examples, thematic workshops and practical demonstrations, visitors are shown, in a clear and engaging way, how the bioeconomy is

					increasingly part of our daily lives and how conscious consumer choices can have a positive impact on the environment, society and the economy. European Researchers' Night is an open science event that makes science and the work of scientists familiar to audiences all over Europe. Unitelma organised participation including distribution of STAR-ProBio flyers and gadgets
3	Organisation of 'Bioeconomy Village' as part of Maker Faire Rome 2019	18/10/2019-20/10/2019 Rome, Italy	Ca. 10,000 scientists, researchers, students and the general public from across Italy were in attendance	Unitelma Sapienza	The Maker Faire is a showcase of invention, creativity, and resourcefulness 'the most important event in the world of innovation'. This was a three-day event (organised in collaboration with BIOVOICES, Biobridges and LIFT projects) with a half day exclusively dedicated to school children. STAR-ProBio flyers and gadgets were distributed.

8 Other general dissemination activities

8.1 Electronic newsletter

Two electronic newsletters are planned per year. They are distributed by email, published on the website and announced on social media. The fourth newsletter was published in June 2019 and is included in Annex 4, the fifth newsletter was published in December 2019 and is included in Annex 5. Figure 5 shows samples of the front pages of the Year 3 newsletters. Free subscription to the newsletter is possible online via the project website. At the time of writing (April 2020), the newsletter has 146 subscribers.

The target group is all stakeholder groups that may benefit from the outputs and tools produced by STAR-ProBio, the scientific community and interested members of the public at large.

The fourth and fifth newsletters showcase recently completed and upcoming project outputs, describe the contributions of the individual Work Packages, contain interviews with key researchers, and report on several STAR-ProBio communication and dissemination activities at events and contain an outlook on forthcoming events. The sixth and final newsletter is scheduled for April 2020.

Figure 5: Example newsletters of STAR-ProBio

SQ Consult has the overall responsibility for the newsletters, supported by CoDNOC. WP leaders are responsible for providing content material and for proposing articles related to the work and findings of their respective Work Packages. Partners can copy

the content of different news items and distribute them using their existing communication materials such as their own newsletters, email lists and their websites, as long as the STAR-ProBio Visual Identity is followed (logo and URL).

8.2 Social media (LinkedIn, Twitter, Facebook)

STAR-ProBio maintains an active presence in three major social media platforms (LinkedIn, Twitter, Facebook). The main objective is outreach to both stakeholders and the general public, to be findable, recognizable and memorable. Social media is a valuable tool to get STAR-ProBio's existence, key messages and outputs across to a wide audience and to generate interest in the project and the societal issues that the project aims to alleviate.

- LinkedIn: https://www.linkedin.com/in/star-probio-655816145
  LinkedIn is primarily aimed at a professional audience. Members interested in STAR-ProBio can easily follow the project. After the third year, 448 people have joined the project's network and 466 people follow the project through LinkedIn. The 71 entries posted on LinkedIn primarily showcase communication and dissemination events (many of which include photos) which STAR-ProBio is part of, share project news such as the publication of the newsletters and liking and sharing other related Horizon 2020 projects.

  In addition to the project profile on LinkedIn, many STAR-ProBio team members have listed the project on their personal LinkedIn profiles, and several consortium members have shared STAR-ProBio news on their company/institution profile on LinkedIn.

- Facebook: https://www.facebook.com/STAR-ProBio-343691609383137/
  Facebook is typically used for more informal purposes than LinkedIn, but it helps the user to discover news and information that their friends and liked profiles post. For STAR-ProBio it is therefore an important channel to communicate the project, its aim and outputs to the general public. Since the beginning of the project, the STAR-ProBio Facebook profile has gathered 147 followers and 137 likes. The profile contains videos and photos, almost exclusively from events in which the project was involved or participated. The 141 posts by the project on Facebook also concentrate on these events, on project outputs such as the newsletters and relevant related projects industry news. Other projects and people explicitly named STAR-ProBio several times in their posts. Further, many project partners have used their institutional Facebook account to promote STAR-ProBio.

  Among the various uses of the STAR-ProBio Facebook account, this platform was used to live stream the first annual STAR-ProBio Workshop at the Climate Show in Geneva (and was foreseen to live stream the final event, before it was converted into an online-only event following Covid-19 restrictions).

- Twitter: https://twitter.com/STAR_ProBio
  Twitter is known for its large stream of short messages, which can be spread quickly through the platform. This is particularly useful for news and announcements from the project; posts can reach a large number of people quickly, however older posts don't get much attention. The project's 180 tweets have generated 403 followers.

Several consortium partners also have used their company/institution Twitter account to share STAR-ProBio information.

9 Second annual workshop

On 14th June 2019 the STAR-ProBio project hosted its second international workshop at the 24th EURAS (European Academy for Standardisation) conference in Rome.

The STAR-ProBio project was one of the four organisers of this year's EURAS conference, which this year had the theme 'Standards for a Bio-Based Economy'. It was held at LUISS Guido Carli University of Rome, Italy from 13-15 June 2019. The STAR-ProBio workshop took place on 14th June from 14:00 to 17:45 with the support of the LIFECAB project. The workshop was a plenary session of the EURAS conference, but also accessible, free of charge, for participants only joining the workshop. About half of the participants were present for the workshop only. The programme consisted of a set of technical presentations followed by a roundtable discussion.

A great effort has been put by all fifteen consortium partners to attract the whole range of relevant stakeholders. Besides relying on EURAS's extensive network to attract participants, the workshop was also promoted through STAR-ProBio's ICT channels, mainly the project's social media (Twitter, LinkedIn and Facebook) and the STAR-ProBio website, as well as team members' personal profiles in LinkedIn. All STAR-ProBio partners announced the workshop within their respective networks. The newsletter of the project also promoted the workshop. The LIFECAB project supported communication about the event as well.

The workshop was well received by an engaged audience, and led to increased stakeholder interest in the project's final deliverables, as well as additional insights of market needs and desires for bio-based product sustainability assessment. The report summarising the event was submitted to EC as Milestone 9 within 2 weeks after the event, and can be found as annex 7 to this report.

The final programme for the STAR-ProBio 2nd annual workshop during EURAS 2019:

WORKSHOP AGENDA

- **STAR-ProBio/LIFECAB Technical Session (14:00 – 15:30)**
  Objectives, key findings and expected future outputs of the projects. Session chair: Valentina Elena Tartiu
    - Michalis Koutinas (Cyprus University of Technology)
    - Sofia Maina (Agricultural University of Athens)
    - Maria Teresa Moreira (University of Santiago de Compostela)
    - Elio Padoan (University of Turin – DISAFA)
- **Coffee break (15:30 – 15:45)**
- **Roundtable Discussion 'Standards as policy tools' (15:45 – 17:15)**
  Session chair: Piergiuseppe Morone, Unitelma Sapienza
    - Knut Blind (TU Berlin & FhG FOKUS)
    - Mauro Cordella (JRC)
    - Mathilde Crepy (ECOS – European Environmental Citizens' Organisation for Standardisation)

- Monica Delsignore (Università degli Studi di Milano – Bicocca)
- Uwe Fritsche (Director of IINAS)
- Liliana Gamba (WWF)
- Davide Mainero (Acea Pinerolese)
- Elena Mocchio (UNI)

- **Coffee break (17:15 – 17:45)**

- **Gala dinner (20:30)**

10 Summer school

STAR-ProBio successfully conducted its Summer School "Sustainability certification and market uptake of bio-based products. Focus on the construction sector" on September 5th, 2019 from 09:00 to 13:00 hours. The event took place at Chalmers University in the city of Göteborg, Sweden, and was part of the EIT Climate-KIC 2-weeks long Summer School on wood construction in climate change mitigation, jointly organised with Aalto University in Espoo, Finland and Chalmers University of Technology in Gothenburg, Sweden.

Participants

STAR-ProBio summer school trained 20 PhD students from Universities in Finland, Germany, Italy, Lithuania, Nigeria, Norway, Portugal, Serbia, Slovenia, Spain and Sweden. Their background spanned the following knowledge fields:

- Architecture
- Biotechnology
- Building Acoustics
- Environmental Management
- Forestry
- Geography
- Industrial Ecology
- Public Health
- Wood Industry Engineering

Lecturers

Five experienced STAR-ProBio lecturers were selected for this event:

- Beike Sumfleth (DBFZ)
- Deniz Koca (SEPA)
- Enrico Balugani (UNIBO)
- Mathilde Crepy (ECOS)
- Matthias Grill (agroVet)
- Sergio Ugarte (SQ Consult)

Contents and agenda

Participants of the summer school were trained on the importance and developments of standards and certification schemes for assessing the sustainability of bio-based products used in the construction industry. STAR-ProBio lecturers touched upon the list of sustainability issues affecting the construction sector, understanding how certification processes work in practice, indirect Land Use Change (iLUC) and the

effects of environmental protection policies, and finally the suitability of sustainability standards and certification schemes as policy instruments.

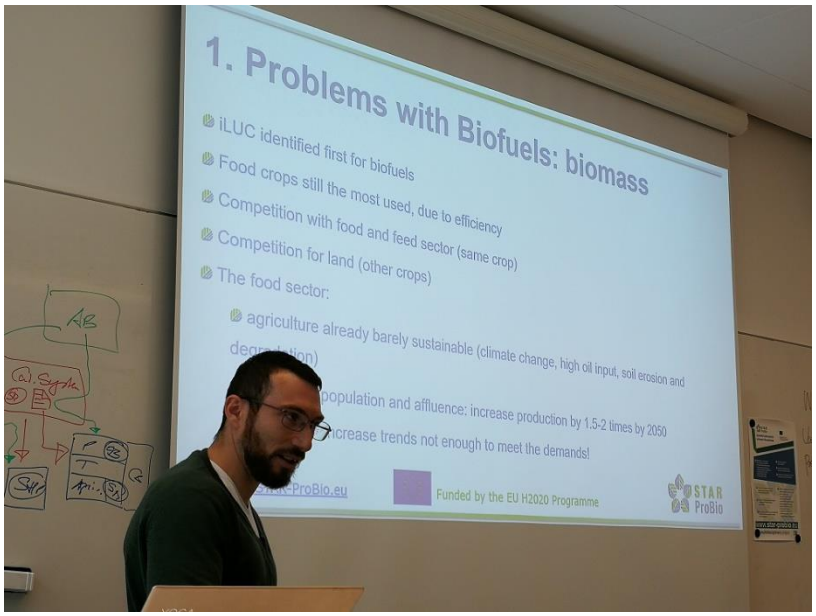
The agenda of the event consisted of an introduction, four in-depth lectures and one group exercise on the selection of suitable certification schemes for bio-based products used in the construction sector.

Summer school Agenda

Time	Description
09:00 - 09:10	Welcome words **- Deniz Koca**
09:10 - 09:15	Introduction: Sustainability certification and market uptake - **Sergio Ugarte** o Why sustainability also means business o o How credible certification can help market uptake
09:15 - 09:35	Standards and certification for bio-based products and their use in the construction sector - **Beike Sumfleth** List of sustainability issues in the construction sector o Differences between standards and certification schemes o Use of standards and certification schemes in the construction sector
09:35 – 10:05	Understanding certification processes. How does certification work in practice? - **Matthias Grill** Complexity of supply chains (Chain steps; FCP and CoC) o Operative of sustainability certification schemes. Who does what? o Companies preparation. Development of internal systems o Auditing and certification o Sanctions
10:05 – 10:30	**Coffee break**
10:30 – 10:50	Filling sustainability gaps of complex global markets. The case of indirect Land Use Change (iLUC) - **Enrico Balugani** Indirect effects of environmental protection policies. Focus on iLUC effects. o Managing complex systems, i.e. the global market o Fighting iLUC related to bio-based products. The case of policies for biofuels and how they can mirror in bio-products for the construction sector
10:50 – 11:10	Suitability of standards and certification schemes as policy instruments - **Mathilde Crepy** o Current experiences applied to the bioeconomy o Policy trends and challenges in the EU
11:10 – 12:00	Group exercise: Selection of suitable certification schemes
12:00 – 13:00	**Lunch**

Pictures of the event

Picture: Participating students



Picture: Enrico Balugani (UNIBO) discussing indirect land use change issues

Picture: Mathilde Crêpy (ECOS) discussing policy options for the use of certification schemes

11 Third annual workshop (virtual)

The third and final annual workshop "Assessing Sustainability of Bio-based Products: Where do we stand?" took place on 28th April 2020. Due to the Covid-19 pandemic occurring at the time of the final workshop, it was reorganised as a virtual event. The length of the event was limited to 2.5 hours and included overarching presentations regarding the key project results. All the presentations that were originally planned to be included in the workshop are still available from the website as narrated presentations. Registration was free but mandatory and subject to availability.

The agenda for the workshop was:

WORKSHOP AGENDA

- **Opening session: Identifying the way forward (10:00 – 10:30)**
  - *Mainstreaming sustainability assessments - The STAR-ProBio approach* (Piergiuseppe Morone – UNITELMA)
  - *Acceptance factors for consumers and for businesses* (Luana Ladu – TUB)
  - *The Bioeconomy Strategy and the role for schemes and labels* (Mathilde Crepy – ECOS)
- **Blueprint for a sustainability scheme and assessment tool (10:30 – 11:10)**
  - *Integrated assessment tool* (Francesco Razza – Novamont)
  - *Operationalising criteria and indicators and setting up a benchmark platform* (Eva Merloni – UNIBO/Matthias Grill - agroVet)
- **Policy challenges in the European Green Deal era (11:10 - 11:50)**
  - *Policy scenarios for a level playing field* (Hordur Haraldsson/Deniz Koca – SEPA)
  - *Co-regulation for the integration of sustainability assessment* (Sergio Ugarte – SQ Consult)
  - *Effective monitoring of sustainability impacts* (Stefan Majer – DBFZ)
- **Q&A Session (11:50 - 12:20)**
- **Closing Remarks (12:20 - 12:30)**
- **Stakeholders roundtable for discussion on project findings (by invitation only) (14:00 - 15:00)**
  - *SAT-ProBio sustainability assessment and certification tools*
  - *SyD-ProBio policy scenarios tool*

152 participants registered for the workshop, of which 140 attended. An advanced draft of the full report of the event, including the presentations are provided as Appendix 8. As the deadline for this report is 2 days after the event, the results of the satisfaction survey, which is still open at the time of writing, are preliminary. The final full report of the event will be submitted within 2 weeks from the event.

Posters for each work package were presented virtually and are available from the results section of the STAR-ProBio website (http://www.star-probio.eu/results/).

12 Expected activities after the end of the project

Project partners intend to continue to disseminate the outcomes of the project through a number of activities, including peer-reviewed publications. Table 7 presents the expected communication and dissemination items within one year after the completion of the project being completed, as far as known at the time of writing.

Table 7: Further expected (at the time of writing) communication and dissemination activities related to STAR-ProBio

Planned activity	Partners involved	Further Detail
Publication	USC	Authors: Iana Camara Salim, Pablo Conde, Gumersindo Feijoo and Maria Teresa Moreira. Title: "The use of maize stover and sugar beet pulp as feedstocks in industrial fermentation plants - an economic and environmental perspective" Journal: *Industrial Crops and Products* (under review – sent 20/04/2020)
Publication	USC	Authors: Beatriz Santiago, María Teresa Moreira, Gumersindo Feijoo, Sara González-García Title: Identification of environmental aspects of citrus waste valorization into D-limonene from a biorefinery approach Journal: *Separation & Purification Technology* (submitted April 2020) – under review
Publication	USC	Authors: Beatriz Santiago, María Teresa Moreira, Gumersindo Feijoo, Sara González-García Title: Environmental comparison of banana waste valorization strategies under a biorefinery approach Paper under preparation
Publication	USC	Authors: Antonio Cortés, Gumersindo Feijoo, Jorge Domínguez, Marta Lores and Maria Teresa Moreira Title: Unravelling the environmental impacts of bioactive compounds and organic amendment from grape marc Journal: *Journal of Environmental Management* (Under review-sent January 2020)
Publication	USC	Authors: Antonio Cortés, Valdecir Ferrari, Silvio R. Taffarel, Luis F. O. Silva, Gumersindo Feijoo and Maria Teresa Moreira. Title: Environmental assessment of viticulture waste valorisation via composting. Evaluation of potential mineral fertilisers substitution in cereal and fruit crops

		Journal: *Environmental Pollution* (Under review-sent April 2020)
Oral Presentation	USC	Conference: 8TH INTERNATIONAL CONFERENCE ON SUSTAINABLE SOLID WASTE MANAGEMENT Place: Thessaloniki, Greece Date: 2-5 September 2020 Authors: Antonio Cortés, Valdecir Ferrari, Silvio R. Taffarel, Luis F. O. Silva, Gumersindo Feijoo and Maria Teresa Moreira. Title: Life cycle assessment of wine waste composting. Analysis of the potential substitution of mineral fertilizers in maize, tomato and strawberry crops
Oral Presentation	USC	Conference: 8TH INTERNATIONAL CONFERENCE ON SUSTAINABLE SOLID WASTE MANAGEMENT Place: Thessaloniki, Greece Date: 2-5 September 2020 Authors: Iana Camara Salim, Pablo Conde, Gumersindo Feijoo and Maria Teresa Moreira. Title: Environmental and economic assessment of by-products from agricultural operations and industrial processing for the production of fermentable sugars.
Poster Presentation	USC	Conference: SETAC SciCon. SETACEurope 30th Annual Meeting. Open Science for Enhanced Global Environmental Protection Place: Dublin, Ireland - Final Online meeting Date: 3-7 May 2020 Title: Assessment carbon footprint of citrus waste valorization to D-limonene Authors: Beatriz Santiago, María Teresa Moreira, Gumersindo Feijoo, Sara González-García
Publication	AUA	Title: Aerobic composting of post-consumer /industrial bio-based plastics – Techno-economic sustainability criteria and indicators Authors: Demetres Briassoulis, Anastasia Pikasi, Miltiadis Hiskakis Description: This publication will present the techno-economic sustainability analysis (TESA) criteria and indicators that are proposed to assure the feasibility and viability of organic recycling under industrial aerobic conditions as the preferred EoL option for a stream of post-consumer biodegradable bio-based plastics. Based on the analysis done in previous work, in the case that these products cannot be recovered by material recovery options, then they will be routed to organic

		recycling as the best alternative option, and the parameters dominating the techno-economic sustainability aspects will be defined based on the evaluation and synthesis of research results selected though a critical literature review.
Publication	AUA	Title: Depolymerisation and anaerobic digestion alternative options for nonrecyclable post-consumer /industrial bio-based plastics – Techno-economic sustainability criteria and indicators (possibly two publications) Authors: Demetres Briassoulis, Anastasia Pikasi, Miltiadis Hiskakis Description: This publication will present the techno-economic sustainability analysis (TESA) criteria and indicators that are proposed to assure the feasibility and viability of two EoL alternative options for post-consumer non-biodegradable biobased plastics that are characterized as non-recyclable by mechanical recycling. The innovative EoL options of chemical recycling (depolymerization) and anaerobic digestion routes will be analysed. The collection of parameters to define the relevant principles, criteria and indicators has been based on an extensive literature review and on the synthesis of the results come out of this procedure.
Publication	AUA	Title: Technoeconomic sustainability assessment and LLC analysis of bio-based plastics – Application in the case studies of packaging films and mulching films Authors: Demetres Briassoulis, Anastasia Pikasi, Miltiadis Hiskakis, et al. Description: In this publication the methodology developed for techno-economic sustainability assessment of the alternative End-of-Life routes of post-consumer bio-based products will be presented in brief as it has been analyzed in previous works. The TESA inputs-outputs of the case studies for bio-based and conventional packaging and mulch films will be presented analytically and the results will be used for LCC comparative analysis based on the results of calculated monetized environmental costs (externalities). The proposed criteria and indicators proposed for the alternative End-of-Life routes of post-consumer/post-industrial bio-based products will be implemented for specific scenarios of the two case studies for illustrative purposes.
Oral Presentation	AUA	Authors: Demetres Briassoulis, Anastasia Pikasi, Miltiadis Hiskakis Title of event: Biopol 2021 (to be announced) Place: to be announced
Publication	DBFZ and UNIBO	A paper on the low iLUC risk certification tools from WP7, tentative title: "Low iLUC risk certification tools – combining a risk-based approach with low iLUC production practices"

Publication	DBFZ	A review paper on "Recent developments in low iLUC policies and certification in the EU Bioeconomy"
Publication	DBFZ, UNIBO, AgroVet and SQ Consult	A paper on the SCT with Eva Merloni (TBC), Matthias Grill and Sergio Ugarte, tentative title: "Developing a smart improvement process for sustainability assessment and certification in the EU Bioeconomy".
Publication	DBFZ, SQ Consult, ECOS and TUB	A paper on the EU BE policy framework with Sergio Ugarte, Mathilde Crepy (TBC) and Luana Ladu, tentative title: "Developing a policy framework for a sustainable Bioeconomy"
Publication	UWM	Title: Land use change indicators for sustainability assessment of bio-based products: the EU context Authors: Barbara Kalisz, Krystyna Żuk-Gołaszewska, Wioleta Radawiec, Janusz Gołaszewski Draft
Publication	UWM	Title: Environmental sustainability indicators in estimation of efficient biomass resource use in biorefinery processing Authors: Izabela Samson-Bręk, Barbara Kalisz, Krystyna Żuk Gołaszewska, Janusz Gołaszewski Draft
Publication	Unitelma	Title: A socio-economic indicator for EoL strategies for bio-based products Authors: D'Adamo I., Falcone P.M., Imbert E., Morone P. Journal: *Ecological Economics* 1° round review received
Publication	Unitelma	Title: Consumers' willingness to pay a price premium for bio-based products: Do certifications matter? Authors: Morone P., Caferra R., D'Adamo I., Falcone P.M., Imbert E., Morone A. Submitted to *International Journal of Production Economics*
Publication	Unitelma	Title: A new socio-economic indicator to measure the performance of bioeconomy sectors in Europe Authors: D'Adamo I., Falcone P.M., Morone P. Journal: *Ecological Economics* 2° round review received
Publication	Unitelma	Data Article

		Title: Survey data for assessing the socio-economic performance of End of Life options of a bio-based product based on expert knowledge Authors: D'Adamo I., Falcone P.M., Imbert E., Morone P. To be submitted to *Data in Brief*
Publication	TUB, Unitelma, SQ Consult WP5	Publication on the results of the 3 – rounds Delphi survey. Title: Acceptances factors for consumers and businesses. Authors: Luana Ladu, Simone Wurster, Enrica Imbert, Sjors van Iersel, Pasquale Marcello Falcone, Idiano d´Adamo
Publication	Novamont, TUB, Unitelma WP8	Title: An Integrated Assessment Tool for assessing the sustainability of Bio-based products. Authors: Francesco Razza, Luana Ladu, Piergiuseppe Morone
Publication	Novamont, TUB, AUA, Unitelma WP8	Publication on the application of the Integrated Assessment Tool to a specific product. Authors: Francesco Razza, Luana Ladu, Apostolis Koutinas, Enrica Imbert and other partner organizations (to be discussed).
Publication	AUA	Title: Life cycle costing and techno-economic risk assessment for poly(lactic acid) and poly(butylene succinate) production using renewable resources Authors: Ioannidou, S.M., Moutousidi, E., Dheskali, E., Pateraki, D., Camara Salim, I., Moreira, M.T., Kookos, I.K., Koutinas, A., Ladakis, D. Description: This publication will present the life cycle costing for the production of poly(butylene succinate) (PBS) and poly(lactic acid) (PLA) using three renewable feedstocks, namely corn-derived glucose, corn stover and sugar beet pulp. Life cycle costing will include the estimation of the production cost and minimum selling price, based on process design and preliminary techno-economic evaluation principles, and monetized environmental costs (externalities). Specific techno-economic indicators will be employed describing the potential feasibility and profitability of process implementation. Biorefinery development is applied in the case of sugar beet pulp including the extraction of pectins as value-added co-product. Techno-economic risk assessment will focus on Monte-Carlo simulations for the evaluation of process profitability at varying process parameters.
Publication	AUA	Title: Life cycle costing for the production of bio-based mulch film using various renewable resources Authors: Ioannidou, S.M., Moutousidi, E., Camara Salim, I., Moreira, M.T., Kookos, I.K., Koutinas, A., Ladakis, D.

		Description: This publication will present the life cycle costing for the production of bio-based mulch film containing 35% PLA and 65% PBAT using three renewable feedstocks, namely corn-derived glucose, corn stover and sugar beet pulp. Life cycle costing will include the estimation of the production cost and minimum selling price, based on process design and preliminary techno-economic evaluation principles, and monetized environmental costs (externalities). Specific techno-economic indicators will be employed describing the potential feasibility and profitability of processes implementation and comparing their performance to a possible fossil counterpart. Biorefinery development is applied in the case of sugar beet pulp including the extraction of pectins as value-added co-product.
Oral Presentation	AUA	Title of presentation: Techno-economic and environmental sustainability assessment of poly(butylene succinate) production using sugar beet pulp through biorefinery development. Authors: Ioannidou, Sofia Maria, Ladakis, Dimitrios, Koutinas, Apostolis Title of event: 9th IUPAC International Conference on Green Chemistry (9th ICGC) Place: Athens

Annex 1: Detailed forms for publications

Scientific publications

Non-scientific publications

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the Detailed forms for publications

Annex 2: Detailed forms for Conferences, workshops and other oral communication

Internal workshops and experts focus groups

Oral presentations and panel discussions

Attendance to specialised seminars

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the Detailed forms for Conferences, workshops and other oral communication

Annex 3: Detailed forms for other general dissemination activities

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the Detailed forms for other general dissemination activities

Annex 4: Fourth STAR-ProBio newsletter

This newsletter is available online: https://mailchi.mp/2566111e4d80/fourth-star-probio-newsletter

Annex 5: Fifth STAR-ProBio newsletter

This newsletter is available online: https://mailchi.mp/b38eb6627e2f/fifth-star-probio-newsletter-2019

Annex 6: Final STAR-ProBio newsletter

This newsletter is available online: https://mailchi.mp/dc4a1cbe55ef/final-star-probio-newsletter-project-completed

Annex 7: Full report on outcomes of the second annual workshop

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the Full report on outcomes of the second annual workshop

Annex 8: Report on outcomes of the third annual workshop

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the Report on outcomes of the third annual workshop

Annex 9: STAR-ProBio leaflet

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the STAR-ProBio leaflet

Annex 10: STAR-ProBio Outreach: Bio-based experiments and games for school children

This annex is not part of the public version of this report. You can request access by sending an email to projectmanager@STAR-ProBio.eu explaining your intentions with the STAR-ProBio Outreach: Bio-based experiments and games for school children