



D3.5: Methodological Framework



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EXECUTIVE SUMMARY

Stakeholder engagement activities are key for successful implementation and market introduction of novel technologies. Hence, two work packages (WP) in the MUSIC carefully consider the engagement with these stakeholders. In this deliverable, the methodological framework for the upcoming work in WP3 is presented. Based on the methodological framework, an action plan on stakeholder engagement and mobilisation activities for each of the four case studies was developed. Engagement activities include interviews and workshops (see D3.6); these will not only generate data for WP3 but also for each case study (CS). The data will provide the baseline for determining and analysing hindrances and enablers along the IBC supply chain. Based on their unique needs and aims, the action plan is tailored to each CS.



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Abbreviations

CS	Case study
Dx.x	Deliverable
RDT	Resource Dependency Theory
WP	Work Package
Tx.x	Task



1 Introduction

Intermediate bioenergy carriers (IBCs) are biomass that is processed to energetically denser materials, analogous to oil, coal and gaseous fossil energy carriers. This means they are easier to transport, store and use. The MUSIC project will support market uptake of three types of [IBCs] by developing feedstock mobilisation strategies, improved cost-effective logistics and trade centres. IBCs covered in MUSIC include pyrolysis oil, torrefied biomass and microbial oil. [...] They can be used directly for heat or power generation or further refined to final bioenergy or bio-based products. IBCs contribute to energy security, reduce greenhouse gas emissions and provide a sustainable alternative to fossil fuels in Europe. (MUSIC Website, 2020).

Within the MUSIC project, WP3 (Stakeholder engagement and mobilisations) focuses on engaging different groups of stakeholders, and assessing their views on IBCs, with the aim of developing specific and strategic recommendations on supply chain development. Hence, within this deliverable, it is determined how best to engage with stakeholders from the different case studies to collect and analyse data to identify hindrances and enablers of IBC market uptake. To conduct this analysis and to develop suggestions to overcome identified hindrances and utilise the enablers the here presented methodological framework was developed.

2 Methodological Framework

The methodological framework is part of the overall approach to the work in WP3 and describes data collection and analysis (see Figure 1). Based on on-going activities, such as the stakeholder identification and assessment process (see D3.1/D3.2) and a literature review, the methodological framework provides an approach for data collection and analysis. The regional workshops in year 1 also inform the methodological framework (see D3.6a). The data collection is tailored to the needs of each case study (CS) and is presented as part of the Action Plans (see Chapter 3). The regional workshops in year 2 are also part of the methodological framework as they are informed by the preliminary results and can help to validate the findings (see D3.6b for details on the year 2 workshops). In D3.6 it is also considered, whether these workshops should be combined with other (industry-specific or regional) events, such as trade shows, fairs or conferences, to increase visibility and willingness to participate.



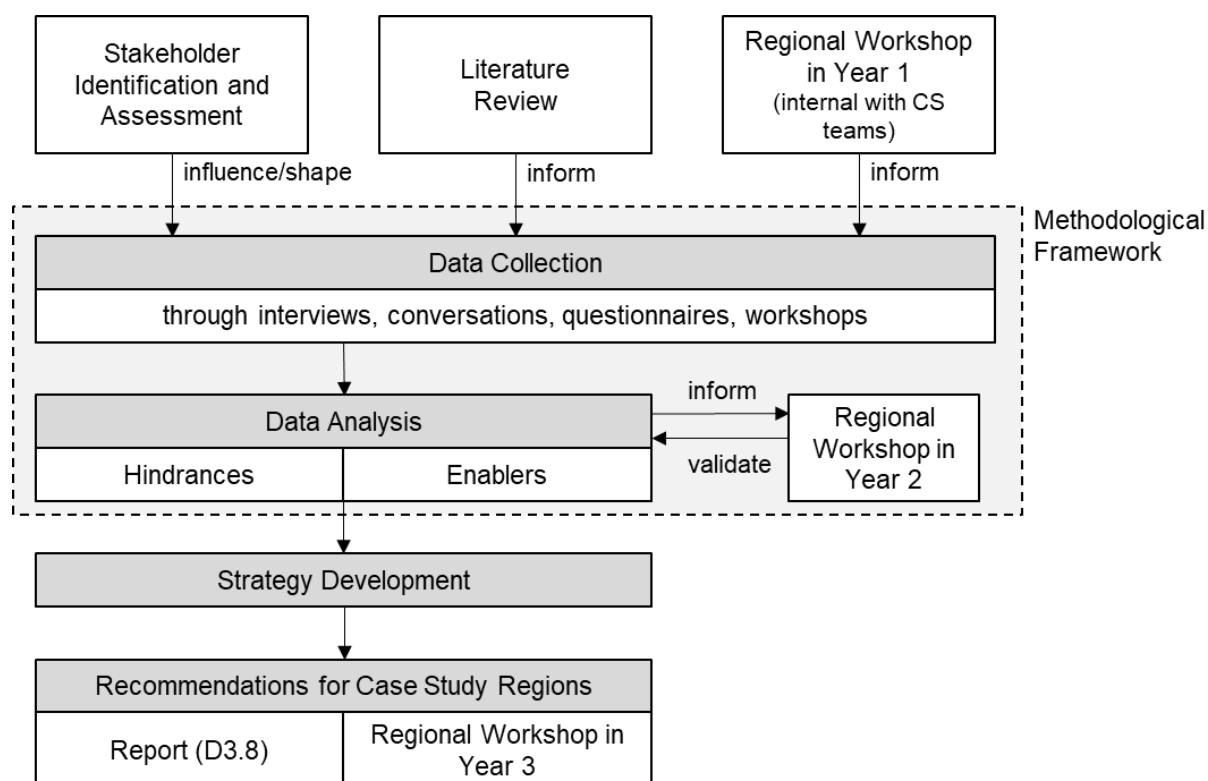


Figure 1 | Approach for WP3

2.1 Theoretical Foundation

In order to provide a theoretical foundation for data collection and analysis, Resource Dependency Theory (RDT) was selected. According to Pfeffer and Salancik (1978), RDT presents the view that an organisation depends on its external environment in order to gain access to resources which are necessary for achieving competitive advantage. It is “concerned with the relationship between an organization and a set of actors in the environment” (Hessels and Terjesen, 2008, p205). The unit of analysis in RDT is the “transaction and the structural relationship that exists between buyers and sellers” (Chicksand et al., 2012). In the context of the MUSIC project, this theoretical foundation will guide data collection and analysis since it recognises the importance of resource availability and influence over said resource. The upstream supply chain and securing stable feedstock supply for IBC conversion technologies was identified as important in all four case studies; hence, applying RDT is plausible. Based on RDT, propositions on the behaviour of stakeholders will be developed which will directly guide the (preparation of) data collection and analysis as described in the next chapter.

2.2 Data Collection and Analysis

The data collection will take place in the form of interviews and workshops. The details of the workshops will be elaborated in the associated deliverable D3.6. Ten to 25 interviews per CS are anticipated, or until the information is saturated. The number of interviewees also depends on access to interviewees, progress and needs of the individual CS as well as availability of secondary data (e.g. from other projects or literature). The interviewees will be established



through network sampling (Merriam, 2009); once a few key participants are determined based on their relevance to the project/CS, these can suggest further interviewees in order to generate further information.

The interviews will be semi-structured in nature, which means that a set of themes and questions is used but that the interviewer still has flexibility to react to the responses (Merriam 2009). The data collected through the actions described in the following chapters will be available as audio files and comprehensive note sets. Transcripts will only be produced when translation to English is necessary. English is the preferred language for data collection; however, CS teams can conduct interviews in the language native to the CS region if necessary.

The data will be analysed with the qualitative analysis software NVivo (QSR International Pty Ltd., 2018) applying an appropriate qualitative coding structure to establish hindrances and enablers. The coding structure and analysis are based on Miles and Huberman (1994). Codes “are tags or labels for assigning units of meaning to the descriptive [...] information compiled during a study” (Miles and Huberman, 1994, p56). The details of coding and data analysis are currently being developed and will be explained in later deliverables (e.g. D3.8, D3.9).

Once data collection and analysis are completed, the findings are used to derive strategies and recommendations. These will be presented to each CS team for feedback and comments prior to making them publically available as part of D3.8 (National strategies and recommendations) and D3.9 (EU level strategies and recommendations).

3 Action Plans for the Four Case Studies

As the four case studies with their sub-case studies (advanced/strategic) consider different feedstock, technologies and end uses, the associated action plans are adapted to the specific needs and aims of each case study. The presented actions were established based on in-depth conversations with the respective case study leads and the WP5 lead. The different stakeholder groups, which are referred to in this deliverable align with the stakeholder categories of D3.3. In the beginning of each CS specific section, the stakeholder categories addressed in the action plan are highlighted (yellow = primary focus, light yellow = secondary focus/ important for holistic consideration).

3.1 CS Sweden/Finland

For CS Sweden/Finland, three stakeholder categories were identified as key for the stakeholder engagement activities (see Figure 2).



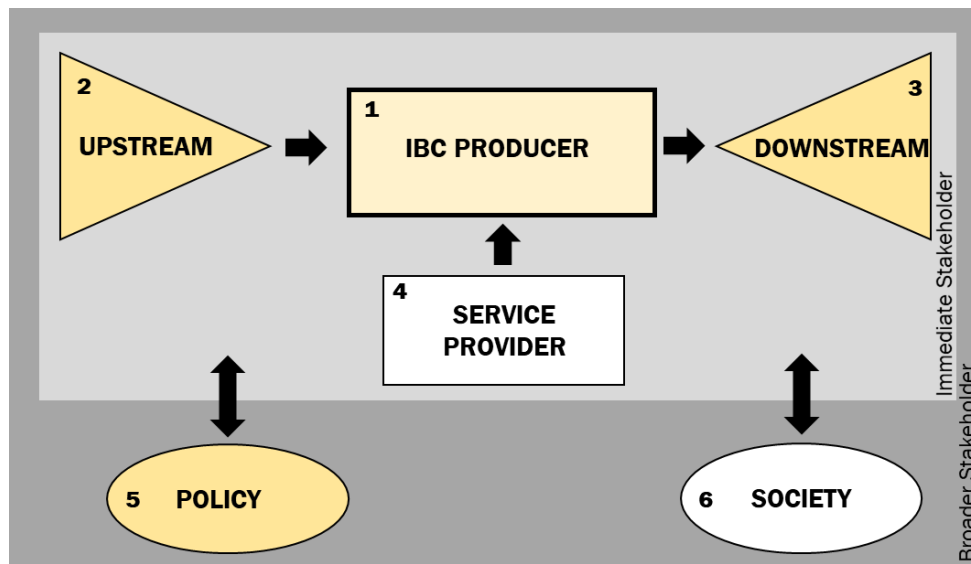


Figure 2 | CS Sweden/Finland: Key Stakeholder Categories (yellow)

With regard to immediate stakeholders, the CS leads¹ identified wood processing industry on the upstream side (#2 in Figure 2) and the (crude) oil processing industry on the downstream side (#3 in Figure 2) as key stakeholders. Especially bringing stakeholders from these two categories together, seems to be crucial for the market uptake of IBCs. In addition to that, the broader stakeholder category #5 policy was identified as important, as during conversations with the CS leads a (perceived) mismatch between national and European level policy became apparent. In the policy stakeholder category, national as well as EU legislation and policy makers are relevant. When considering EU stakeholders, close collaboration with WP7 is anticipated. Based on these discussions, the following action plan was derived:

¹ There are two CS leads, one each for Sweden and Finland.



Table 1 | CS Sweden/Finland: Action Plan

What	Why	Who	When
Add to existing stakeholder list with focus on stakeholder category 2, 3 and 5.	To get a comprehensive overview of stakeholders in the key categories	DBFZ will send template; CS leads will fill in	August – September 2020
Interviews with national and EU policy makers	Better understand mismatch between EU and national legislation and how to overcome it → important for investment security for IBC plants	DBFZ, CS leads will help to establish contact (especially on national level)	August 2020 – January 2021
Individual interviews or small local workshop with stakeholders from the wood processing industry ²	Understand their needs and inform of IBC technologies; establish hindrances and barriers associated with feedstock supply	DBFZ, CS leads will help to establish contact	August 2020 – January 2021
Individual interviews or small local workshop with stakeholders from the (crude) oil processing industry ¹	Understand their needs and inform of IBC technologies; establish hindrances and barriers associated with pyrolysis oil/IBC for further processing	DBFZ, CS leads will help to establish contact	August 2020 – January 2021
Workshop(s) bringing together upstream and downstream stakeholders = Regional Workshop(s) in Year 2	Networking of crucial stakeholders along the supply chain to promote IBC market uptake; details as part of D3.6b (due Nov. 2020)	DBFZ (lead) and CS teams	Spring 2021
Study tours ³	Potentially in combination with the workshop; showcasing pyrolysis oil plants in Sweden and Finland	DBFZ (lead) and CS teams	Spring 2021

² Depending on how the COVID-19 situation develops; small workshops (max. 20 participants) are preferred but interviews might be easier to be carried out.

³ Visit of a plant, facility or organisation to gain insights into the IBC technology or associated products.



3.2 CS Italy

For CS Italy, organisations in the upstream supply chain were established as the key stakeholder category (see Figure 3). As IBC producers and the downstream supply chain are covered through project partners (AcelorMittal and ENI) the focus is on upstream stakeholders; however, the downstream aspects will not be neglected but instead raised through conversations with CS partners.

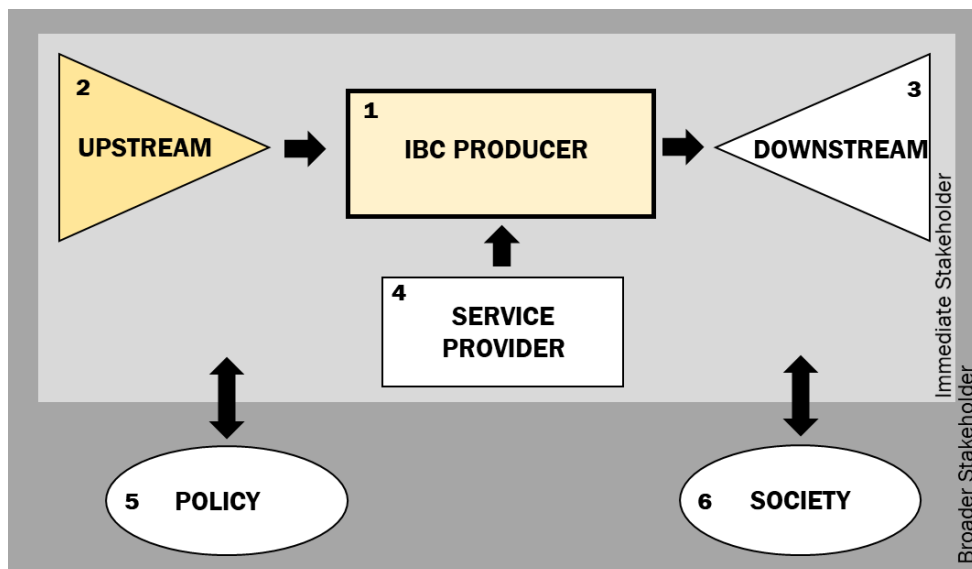


Figure 3 | CS Italy: Key Stakeholder Categories (yellow)

In the immediate stakeholder category #2 “upstream”, agricultural organisations were identified as crucial for the successful market uptake of IBCs. The strategic and advanced sub-case studies consider different technologies (microbial oil production and slow pyrolysis respectively); hence, the upstream supply chain is the common denominator. For both technologies, the feedstock is sourced from agricultural organisations, with a focus on agricultural residues (e.g. olive prunings, Xyella infected olive trees, other agricultural residues). Based on this focal point, the following action plan is derived:



Table 2 | CS Italy: Action Plan

What	Why	Who	When
Add to existing stakeholder list with focus on stakeholder category 2	To get a comprehensive overview of stakeholders in the key categories	CS lead send template to CS team, DBFZ will transfer to overall stakeholder list	August – September 2020
Individual interviews with CS team members from the downstream supply side ⁴	Understand their needs; establish hindrances and barriers associated with IBCs for further processing and their requirements for feedstock sourcing	DBFZ (preparation, conduction of interviews), CS team members Arce-lorMittal and ENI (participation as interviewees)	August 2020 – January 2021
Individual interviews with representatives from agricultural associations and agronomists	Understand the agricultural structure in the considered regions and get access to agricultural businesses	DBFZ (preparation), RE-CORD (carrying out of the interviews) ⁵	August 2020 – January 2021
Local workshop(s) in the case study regions with representatives from agriculture = Regional Workshop(s) in Year 2	Inform agricultural businesses of the advantages IBCs can have for them, showcase successful biomass supply chains ⁶ ; details as part of D3.6b (due Nov. 2020)	DBFZ (preparation), RE-CORD (carrying out of the workshops) ²	Spring 2021

3.3 CS Greece

For CS Greece, the upstream and downstream stakeholder categories were identified as key (see #2 and #3 in Figure 4). Since the start of the project, the CS team leads CRES and CERTH have already established contacts along the downstream supply chain and evaluate the interest in using IBCs of district heating companies as well as energy heavy industries (magnesium and calcium). A first draft of position papers of downstream stakeholders is currently prepared and will be shared with DBFZ in August 2020. These position papers will provide the baseline for the action plan presented in Table 3.

⁴ Although not identified as key stakeholder group, it is important to identify the needs of the downstream supply side to inform the interaction with key stakeholders.

⁵ Due to language barriers, the interviews will be conducted in Italian through CS lead RE-CORD. The interviews will be recorded, transcribed and translated. The translated transcripts will be made available to DBFZ for further analysis. RE-CORD has budget for transcription and translation in WP3.

⁶ If possible, in combination with other established events/trade shows/fairs to attract attendance.



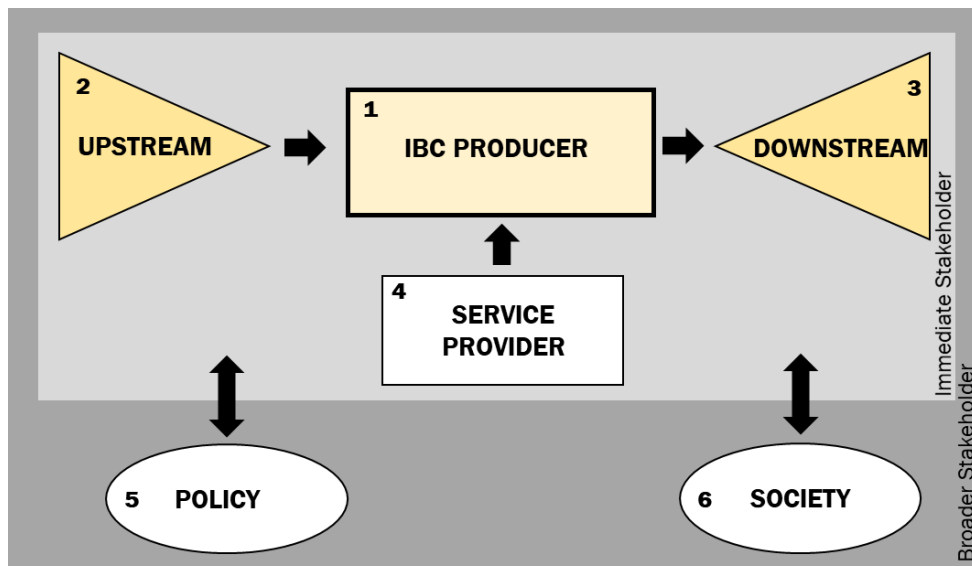


Figure 4 | CS Greece: Key Stakeholder Categories (yellow)



Table 3 | CS Greece: Action Plan

What	Why	Who	When
Add to existing stakeholder list with focus on stakeholder category 2 and 3	To get a comprehensive overview of stakeholders in the key categories	DBFZ will send template; CS leads will fill in	August – September 2020
Individual interviews with downstream stakeholders	Understand their needs; establish hindrances and barriers associated IBCs for further processing and their requirements for feedstock sourcing	DBFZ (preparation), CRES/CERTH (carrying out of the interviews) ⁷	August 2020 – January 2021
Individual interviews with representatives from agricultural associations and agronomists	Understand the agricultural structure in the considered regions and get access to agricultural businesses	DBFZ (preparation), CRES/CERTH (carrying out of the interviews) ⁴	August 2020 – January 2021
Workshop(s) bringing together upstream and downstream stakeholders = Regional Workshop(s) in Year 2	Networking of crucial stakeholders along the supply chain (including agricultural logistics providers) to promote IBC market uptake, showcase successful biomass supply chains ⁸ ; details as part of D3.6b (due Nov. 2020)	DBFZ (lead) and CS teams	Spring 2021
Attendance of relevant exhibitions/trade shows/fairs	Increase project visibility	CRES/CERTH with support of DBFZ	On-going
Interviews with experts on logistics and biomass trade	To move from the advanced CS to a large scale implementation as part of the strategic CS and thus, examine the need for sourcing larger quantities	DBFZ	Spring 2021

⁷ Due to language barriers, the interviews might need to be conducted in Greek through CS lead CRES/CERTH. In that case, the interviews will be recorded, transcribed and translated. The translated transcripts will be made available to DBFZ for further analysis. CRES/CERTH have budget for transcription and translation in WP3.

⁸ If possible, in combination with other established events/trade shows/fairs to attract attendance.



3.4 CS International

For CS International, two stakeholder categories were identified as key: stakeholders of the upstream supply chain and policy (see #1 and #5 in

Figure 5).

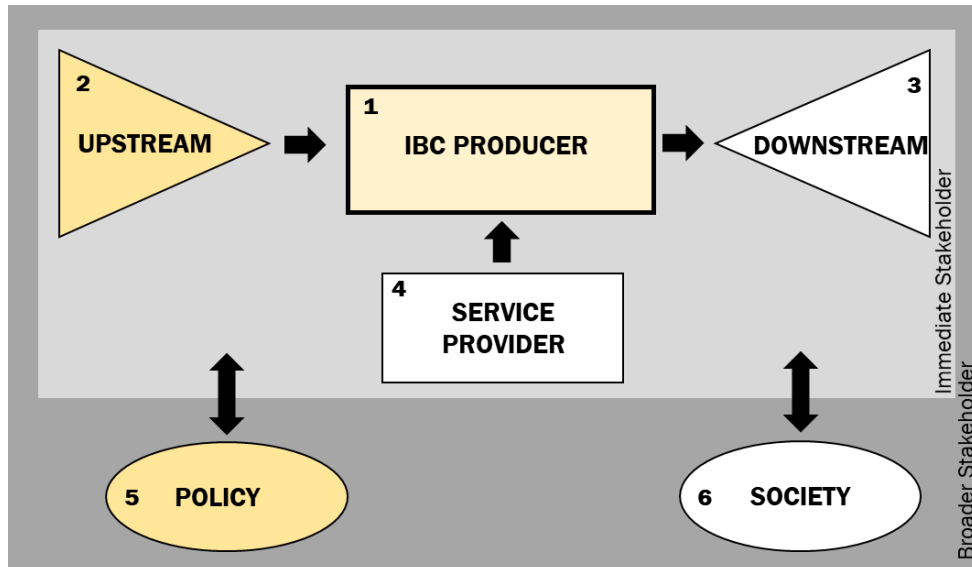


Figure 5 | CS International: Key Stakeholder Categories (yellow)

The main feedstock considered for this case study is waste wood, which will be needed in large quantities. Hence, a thorough understanding of the upstream supply chain, waste wood sourcing and associated policy is crucial for the market uptake of IBCs in this context. Conversations with CS partner Renewi were identified as a good starting point for understanding the upstream supply chain to provide a baseline for discussions with policy makers. The concrete action plan can be found in Table 4.



Table 4 | CS International: Action Plan

What	Why	Who	When
Add to existing stakeholder list with focus on stakeholder category 2	To get a comprehensive overview of stakeholders in the key categories	CS lead send template to CS team, DBFZ will transfer to overall stakeholder list	August – September 2020
Individual interviews with CS team members from the downstream supply side ⁹	Understand their needs; establish hindrances and enablers associated with IBCs for further processing and their requirements for feedstock sourcing	DBFZ (preparation, conduction of interviews), CS team member ArcelorMittal (participation as interviewee)	August 2020 – January 2021
Individual interviews with CS team members from the upstream supply side	Understand current waste wood sourcing and associated legislation as well as associated hindrances and enablers	DBFZ (preparation, conduction of interviews), CS team member Renewi (participation as interviewee)	August 2020 – January 2021
Interviews with national and EU policy makers	Better understand EU and national waste wood legislation	DBFZ, CS leads will help to establish contact (especially on national level)	August 2020 – January 2021
Individual interviews with representatives from the upstream supply chain	Gain deeper insights into hindrances and enablers associated with waste wood based on initial conversations with Renewi	DBFZ	August 2020 – January 2021
Workshop(s) bringing together upstream and downstream stakeholders = Regional Workshop(s) in Year 2	Networking of crucial stakeholders along the supply chain to promote IBC market uptake, showcase successful applications ¹⁰ ; details as part of D3.6b (due Nov. 2020)	DBFZ (lead) and CS teams	Spring 2021

⁹ Although not identified as key stakeholder group, it is important to identify the needs of the downstream supply side to inform the interaction with key stakeholders.

¹⁰ If possible, in combination with other established events/trade shows/fairs to attract attendance or combined with a site visit of the TORERO plant.



4 Conclusions

The action plans which were developed for each CS will be carried out according to the timeline above. Frequent exchange between CS leads, WP5 lead and WP3 lead will be continued through monthly telephone or web conferences. The action plans will be revised regarding progress regularly and adapted if changes in the case studies require it.



List of References

- Chicksand, D., Watson, G., Walker, H., Radnor, Z., Johnston, R. 2012. "Theoretical perspectives in purchasing and supply chain management: an analysis of the literature". *Supply Chain Management: An International Journal*, 17, 454-472.
- Hessels, J., Terjesen, S. 2010. "Resource dependency theory and institutional theory perspectives on direct and indirect export choices". *Small Business Economics*, 34, 203-220.
- Merriam, S. 2009. *Qualitative Research. A Guide to Design and Implementation*. Jossey-Bass/John Wiley & Sons Inc.
- Miles, M., Huberman, A.M. 1994. *Qualitative Data Analysis* 2nd edition. Sage Publications.
- Pfeffer, J., Salancik, G. R. 1978. *The External Control of Organizations: A Resource Dependence Perspective*. Harper & Row.
- QSR International Pty Ltd. 2018. NVivo (Version 12 Plus), <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>
- WIP 2020. MUSIC project website (online). Available at: <https://www.music-h2020.eu/>, accessed on 09.03.2020



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