



D2.1 Stakeholder Mapping

BuiltHub D2.1



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1. Introduction

What the project is about?

The “Dynamic EU building stock knowledge hub - BuiltHub” is a 4-year European Project funded under the Horizon 2020 programme of the European Union. The project seeks to develop a roadmap to continuously enhance the data needed to inform building related policies and business through a community and its data hub. It seeks to positively disrupt policy and market decision making through a continuously community-enhanced evidence base. The BuiltHub community and its IT platform serving as data analytics and knowledge exchange hub shall change the way knowledge on the EU building stock is developed and shared and represent the full range of building stakeholders from across Europe.

Purpose of the Stakeholder Engagement

In more detail, the project develops and tests a concept of a data-exchanging community for building stock related data to deliver a roadmap for long-lasting data collection, based on insights from stakeholders’ needs and requirements. To build the community and test the concept with a platform, we need to know where the different stakeholders’ interests lie, what their restrictions are and what values can be produced for them to attract them to the community & platform and keep them involved. We are engaging three stakeholder groups: Lead Users that provide data, End-Users that use the BuiltHub platform as a source of data and information to enhance their analysis and Multipliers that benefit from enhanced analysis to base their decisions on.

This can only work if a sufficient number of suitable stakeholders participate (provide, share and exchange data, and feed back the process with their views) and stay active throughout and beyond the project. A major aspect of the Stakeholder engagement is thus to get and keep relevant stakeholders on board; the process to define this strategy starts with a stakeholder analysis and tailored communication.

Purpose and structure of the report

The main purpose of this document is to present the results of the stakeholder mapping by explaining who stakeholders are, and what the level of their interest in and potential influence on BuiltHub is, to feed the stakeholder engagement strategy and the roadmap¹.

In addition, this report describes stakeholder engagement, its overall and specific objectives, and the stakeholder engagement tool in the form of a stakeholder action template. These should (a) set the basis for future stakeholder engagement actions, and (b) help the reader to understand how stakeholder mapping fits the stakeholder engagement efforts.

Regarding the report structure, section 2 starts with explaining project objectives. It continues with explaining overall and specific objectives of the stakeholder engagement, and how these are linked with the project objectives. Section 3 briefly explains the initial stage of the stakeholder engagement – namely, its invitation phase. Focus of this report is on the chapter

¹ The roadmap is deliverable D6.6 of work package 6. It bases on inputs from several deliverables i.e., D2.1; D2.2; D3.1; D3.4; and D4.2.

4 that explains stakeholder mapping purpose, methodology, results, and conclusions/suggestions regarding future stakeholder engagement actions. Apart from briefly presenting stakeholder engagement actions planned throughout the project, chapter 5 introduces a very important concept of the stakeholder action template used for establishing the flow of information in and out of each engagement action. Finally, chapter 6 explains risks and risk mitigation actions stakeholder engagement can face during the project development.

This document is prepared in the first year of the project – more specifically, between the 1st and the 8th project month. Before writing this report, the project concluded the initial stakeholder outreach and received around 200 consents for joining BuiltHub.

2. Stakeholder engagement and its role in BuiltHub

BuiltHub is a project that heavily depends on data, information, and knowledge sharing, which implies a vast importance of the stakeholder engagement. The role of the stakeholder engagement and its objectives originate directly from the project objectives, as it will be explained in the following sections.

2.1. Project objectives

As defined in the project GA, main objective of BuiltHub is to create a continuous and durable flow of reliable building stock data at EU and national level. Building stock data covered by BuiltHub should enable an accurate understanding of the European building stock and guide the development of related technological innovations and policies.

In reaching this objective, BuiltHub will heavily rely on creating a long-lasting community of stakeholders who should support the project by [1] helping project partners to establish the building stock data flow and [2] engaging the data flow and making it effective, durable, and eventually sustainable.

BuiltHub will be executed and tested through its datahub, established as an online platform that will be populated with building related data and, through powerful data analytics, create an added value for stakeholders.

One of the most important roles for stakeholders will be to test the BuiltHub data valuation concept by using the BuiltHub platform and giving feedback. The desirable outcome is a living stakeholder community that would visit the platform for sharing building related data and exchange information and knowledge through appropriate open discussions in forums that will be monitored and stimulated throughout the project and that will depend on specific needs of stakeholders. Finally, by critically using the platform and participating in such forums, stakeholders would hopefully prove and test the feasibility of the BuiltHub concept.

In this sense and given that a long-lasting community of stakeholders is one of the most important tools for reaching the continuous data flow, explaining how a community of relevant stakeholders could be built and kept alive is of primary importance. Special attention should be paid to feasibility and prerequisites of such a community that will be expected to continuously share building stock data and subsequently generate value for each participating stakeholder, with the support of the platform.

One of the expected project outcomes is the concept roadmap² which shall include the conditions, needs, interests, and limitations of the different stakeholders for participating in BuiltHub and making the concept possible. In case a living community is achieved, effective and large-scale data exchange concepts will be evidenced. This success would potentially convince more stakeholders to join the community.

2.2. Stakeholder engagement objectives

2.2.1. Overall objective of stakeholder engagement

The main purpose of stakeholder engagement is ***to support the project by establishing a long-lasting stakeholder community based on an active exchange and a good relationship between BuiltHub and the participating stakeholders***. At the same time, stakeholder engagement should put efforts to activating stakeholders that may be inactive but potentially supportive.³

Stakeholder engagement will heavily depend on assessing whether, and under which conditions and with what benefits, stakeholders consider contribution of data as worthwhile for them and are ready to commit to data sharing.

2.2.2. Specific objectives of stakeholder engagement

The first specific objective of stakeholder engagement is thus to **reach and involve relevant stakeholders**. To achieve this, BuiltHub performed an initial stakeholder analysis based on feedback from all partners, followed by initial outreach to all relevant stakeholders. One of the results of this objective is stakeholder mapping that is presented in detail in the following chapters.

The second objective of stakeholder engagement is **to retain stakeholders and keep them interested and active**. To achieve this objective, BuiltHub will organize stakeholder engagement as a journey. At each step, stakeholders will receive tailored information on project progress, ongoing project activities, the actions to come, and their expected roles.

Stakeholders will learn upfront why a specific step may be important for them, how they can contribute/participate, and what the anticipated outcome will be, for them and the project. At each point in time, stakeholders will be informed about the engagement actions to follow, as well as how these actions, building on the earlier ones, contribute to the project development.

² Roadmap towards dynamic and automated building data collection, eventually leading to a “live” picture of the building stock. It shall explain the BuiltHub approach for long-lasting data collection, as well as the possible benefits for different stakeholders including policy makers and main lead and end users.

³ On the other hand, to keep stakeholders and the audience of the project informed is part of the communication and dissemination, and the related strategy.

2.2.3. Stakeholder engagement actions

The main actions to serve stakeholder engagement objectives are focused on a constant monitoring and evaluation of stakeholders to understand potentials and outcomes of their participation, and on regular updates of the relevant stakeholder database.

For instance, following the initial stakeholder engagement and mapping, stakeholder data will be updated for all stakeholders types⁴ after each major action⁵. Their mapping will show the participation by type and the stakeholder relationship analysis will point out stakeholders that need different levels of attention and suggest how subsequent engagement actions and communication could be tailored and adjusted to get and keep the relevant stakeholders involved and supportive.

Stakeholder engagement actions will be established around three main pillars:

- Pillar 1 Invitations to all relevant stakeholders to engage with BuiltHub project. This action takes place at the very beginning of the project following the initial assessment of stakeholders suggested by the project partners.
- Pillar 2 Identification of stakeholders' needs and requirements, as well as their limitations and conditions for participating in a sharing community for building-related data. This action follows the invitations sent to stakeholders and will be concluded in the first year of the project.
- Pillar 3 Establishing a continuous feedback loop between the project progress and its services on one side, and the stakeholders on the other. This will ensure that the project develops towards satisfying the needs and resolving the obstacles stakeholders may encounter along the way. These actions will start as soon as first consents for joining BuiltHub are received and will continue throughout the project.

3. Initial stakeholder engagement

Stakeholder engagement started with the invitation phase that aimed at contacting relevant stakeholders and inviting them to join BuiltHub.

The invitation phase was initiated by collecting project partners' proposals regarding potential stakeholders. Partners were also asked to describe the stakeholders they proposed by filling the Stakeholder Registry. The next step was to analyse proposed stakeholders based on the needs of each work package and to fill the gaps by adding missing stakeholders. Finally, after preparing the outreach material – emails and two-pagers – initial invitations were sent out and responses from contacted stakeholders were collected.

The invitation phase was conducted before month 6 of the project (March 2021) and contained follow-up emails and explanatory meetings with potential stakeholders. Subsequently, we

⁴ See mapping in chapter 4.5 Mapping results

⁵ described in chapter 5 Engagement Actions

managed to ensure a pool of interested stakeholders who provided the consent for being involved in BuiltHub.

4. Stakeholder Mapping

4.1. Mapping purpose

As explained in chapter 2.2, overall objective of the stakeholder engagement is to establish a long-lasting community of BuiltHub stakeholders by reaching relevant stakeholders, making them involved, and keeping them interested and active throughout the project.

One of the prerequisites for the success of the stakeholder engagement is stakeholder mapping that aims at specifying and categorizing various stakeholders by explaining:

1. who they are,
2. their expected level of interest and engagement in BuiltHub,
3. their potential significance for and influence on the project.

This chapter describes in which groups we categorized stakeholders to serve the project purpose. It also contains an analysis of the stakeholders, the target groups, their composition and their geographical representation.

4.2. Mapping methodology

Stakeholder mapping will answer the items listed in chapter 4.1 by:

1. Grouping the stakeholders in 3 different ways: per their role in the project, per organisation type, and per region covered.
2. Showing the following statistics, per group:
 - a. number of invited stakeholders, and
 - b. number of stakeholders that accepted the invitation to join BuiltHub.
3. Using 1. and 2. to explain:
 - a. Who stakeholders are (mapping purpose 1.)
 - from how we group stakeholders,
 - b. Stakeholders' level of interest (mapping purpose 2.)
 - from the share of invited stakeholders who decided to join BuiltHub,
 - c. Representation a stakeholder group will have in BuiltHub (mapping purpose 3.)
 - from the group size and share in total number of stakeholders joining BuiltHub.
 - d. Significance of a stakeholder group for the BuiltHub project, which lies in the type and amount of data available for sharing. Which is at this point only done by their identification as a potential data contributor⁶.
4. Using 3. to suggest:

⁶ Potential data contributors are categorized as Lead User in chapter 4.4.2.

- a. Where our outreach and stakeholder engagement should be improved – from 3.b, and
- b. Who are the stakeholders we should try to engage more - from 3.c.

4.3. Timeline of stakeholder mapping

Given its importance, stakeholder mapping was implemented at the beginning of the project (M1-M8) and built on the invitation phase of the stakeholder engagement (explained in 3 Initial stakeholder engagement).

Stakeholder mapping practically started with project partners suggesting potentially relevant and useful stakeholders from their networks. After gathering this info, the mapping was conducted by grouping, reviewing, and analysing stakeholders through an extensive coordination with all project partners. This also served to make sure that all relevant stakeholders are invited.

4.4. Defining and grouping stakeholders

Within this project we are interested in stakeholders as organizations, as the project aims at identifying private and public organizations that can continuously contribute to a database for buildings and their infrastructure. In this context, data are rather in the control of an organisation than individuals. Therefore, in BuiltHub we consider individuals only as contacts of organizations which are data providers, or other types of stakeholders. However, self-employed professionals can be End-Users.

Stakeholder data were initially recorded in the stakeholder registry managed by BPIE, and subsequently transferred to the GDPR-compliant CRM database developed by Sympraxis under WP1. Stakeholder data included the following details:

- i. organisation name
- ii. notes on the organisation,
- iii. organisation background⁷,
- iv. organisation unit,
- v. project role⁸,
- vi. organizations economic activity⁹,
- vii. stakeholder group¹⁰,

⁷ This field is used to describe of what the organisation does, what their products/services are .

⁸ See Table 1 in chapter 4.4.2.

⁹ Such as architect, building professional, Academia, Consulting, Education, Energy Agency, Municipality, National government, Statistics office, Real estate, Manufacturer.

¹⁰ The different groups are shown in table Table 2.

- viii. territory,
- ix. governance level,
- x. countries covered by stakeholder's activities,
- xi. country of the stakeholder's legal seat.

4.4.1. Grouping by organisation type

In addition, based on offered services and business approaches applicable, stakeholders are categorized¹¹ as:

- i. researchers,
- ii. facility managers,
- iii. real estate developers,
- iv. utilities/aggregators,
- v. policymakers,
- vi. designers,
- vii. associations (replacing citizens),
- viii. local and national authorities.

¹¹ This categorization was suggested in the Grant Agreement related to task 3.4. As not all stakeholders fit these categories it was extended as seen in the results in The mapping in Table 2 shows that the majority of confirmed stakeholders are researchers (92 people, i.e., 63%) followed by policy consultants working in associations and non-profit organizations (14 people, i.e., 10%) and national or local authorities (10 people, i.e., 7%).

From Table 2, we identify stakeholders that are important but not yet represented: statistics offices, utilities and the construction and energy industry. The statistics offices and utilities are an important data provider (Lead-User). The construction and energy industry are private decision makers that may contribute data but also benefit most from a better building data. They can therefore be an important supporter of the vision. We shall investigate how to involve statistics offices, utilities and the construction and energy industry more..

Comparing the confirmed stakeholders in Table 2 with the categories in Table 1 we find that none of the identified stakeholders belong to the real estate developers or facility managers, which identifies another potential gap.

Both findings will be concluded in the conclusion section 4.6. For a better overview and a different perspective, the stakeholder groups are further summarised in 9 categories, listed with their respective statistics in the table below.

Table 2.

This categorization was originally done in the proposal phase and refined in the Communication, Dissemination, and Exploitation (CDE) strategy¹². Following discussion with partners, we determined that the citizens are not invited as individuals but represented through associations, such as housing and homeowner associations. The category citizens is therefore removed and associations added to the list. In addition to this original list from the grant agreement, we identified additional stakeholder types in discussion with the work package leaders that are added further down in Table 2.

4.4.2. Grouping according to project role

For the purpose of the project, it is important to recognize stakeholders' role in BuiltHub by understanding how they will support the project or use and disseminate the project results and knowledge. For this purpose, three stakeholder types were defined in the project proposal and included in the Grant Agreement.¹³ These types are:

- i. Lead-Users, expected to contribute data and use knowledge and results from BuiltHub in return,
- ii. End-Users, supposed to exploit the platform, or
- iii. Multipliers, expected to disseminate the results and enlarge the stakeholder community.

The CDE¹⁴ strategy further clarifies Lead and End Users:

Lead-users will be able to directly feed their data into the BuiltHub platform and to apply BuiltHub analysis results for their purposes. For example, this could be a real estate developer or building stock manager singling out possible green energy technology solutions based on their building stock data provided to BuiltHub. Lead users are, hence, mainly owning and providing data in exchange for a service, i.e., transforming their data into knowledge.

End-users on the other hand, will mainly exploit the platform and its results in their activities by consulting the data fed in by others. In doing so, they will also give feedback on platform usability and effectiveness. In some cases, they may feed their own data into BuiltHub, thereby becoming lead users. For example, this could be a regional energy agency or energy department looking to revise their renovation benchmark and targets or policy scheme.

Lead-users are, hence, actors who mainly collect or create data and provide it to the platform in exchange for BuiltHub's service (either through the community or the platform), and who use this gained knowledge to take decisions or inform processes; while **End-users** are typically using but not necessarily creating or sharing data but, who through feedback processes, inform rules and requirements for collecting and sharing data. In some cases energy agencies have their own data, so they could therefore also become Lead-users.

¹² Deliverable D7.1

¹³ Grant Agreement, Table 7.

¹⁴ Communication, dissemination, and exploitation strategy (CDM strategy)

Finally, **Multipliers** will disseminate BuiltHub achievements among lead and end-users, thereby enlarging the related engaged community and boosting the building stock transformation. All stakeholders, including multipliers, will be contacted and receive information about the knowledge gathered through the data platform.”

The stakeholders collected in the registry were mapped to these types with the help of the following mapping table.

Table 1 Stakeholder types by the stakeholder’s role for the project

Lead-users	End-users	Multipliers
<ul style="list-style-type: none"> - Construction and renovation sector - Academia and research institutions - Public and private utilities and aggregators - Facility managers - Real estate developers - National, regional and local statistics institutes - Construction industry players 	<ul style="list-style-type: none"> - National, regional & local governments, particularly policymakers - Engineers, architects and professionals related to the building value chain - Regulatory bodies and agencies - Standardisation organisations - Citizens and individual property owners - Social Housing organizations 	<ul style="list-style-type: none"> - Stakeholder associations - Property owner associations - National, international and EU agencies (e.g. EASME) - Civil society and media - Local government networks (e.g. Covenant of Mayors Coordinators and Supporters) - Property owner associations

4.4.3. Geographic grouping

The participation is analysed by geography, considering the stakeholders’ geographic scope of their work. We distinguished four groups of geographical scope:

1. stakeholders that focus on a single EU Member State or on a smaller scale,
2. stakeholders that focus on the EU as a whole
3. stakeholders that focus on associated countries¹⁵
4. stakeholders that focus on a different territory, such as Asia.

The results are displayed in a map in Figure 5.

¹⁵ Associated countries are per EU Horizon 2020 Regulation: Iceland•Norway•Albania•Bosnia and Herzegovina•North Macedonia•Montenegro•Serbia•Turkey•Israel•Moldova•Switzerland•Faroe Islands•Ukraine•Tunisia•Georgia•Armenia, see https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf

4.5. Mapping results

4.5.1. Distribution of organisation types

As one of the first mapping results, the following table shows the distribution of identified and invited stakeholders per different categories ¹⁶, also including the distribution of received consents for participating in the project. In the course of the project the stakeholder community will expand as the project is expected to gain more visibility and further potential stakeholders will be identified and contacted. Table 2 provides an overview of the stakeholders mapped until now.

The mapping in Table 2 shows that the majority of confirmed stakeholders are researchers (92 people, i.e., 63%) followed by policy consultants working in associations and non-profit organizations (14 people, i.e., 10%) and national or local authorities (10 people, i.e., 7%).

From Table 2, we identify stakeholders that are important but not yet represented: statistics offices, utilities and the construction and energy industry. The statistics offices and utilities are an important data provider (Lead-User). The construction and energy industry are private decision makers that may contribute data but also benefit most from a better building data. They can therefore be an important supporter of the vision. We shall investigate how to involve statistics offices, utilities and the construction and energy industry more..

Comparing the confirmed stakeholders in Table 2 with the categories in Table 1 we find that none of the identified stakeholders belong to the real estate developers or facility managers, which identifies another potential gap.

Both findings will be concluded in the conclusion section 4.6. For a better overview and a different perspective, the stakeholder groups are further summarised in 9 categories, listed with their respective statistics in the table below.

¹⁶ The categories are based on the categories suggested in **Error! Reference source not found.** but extended by new categories to cover all stakeholders.

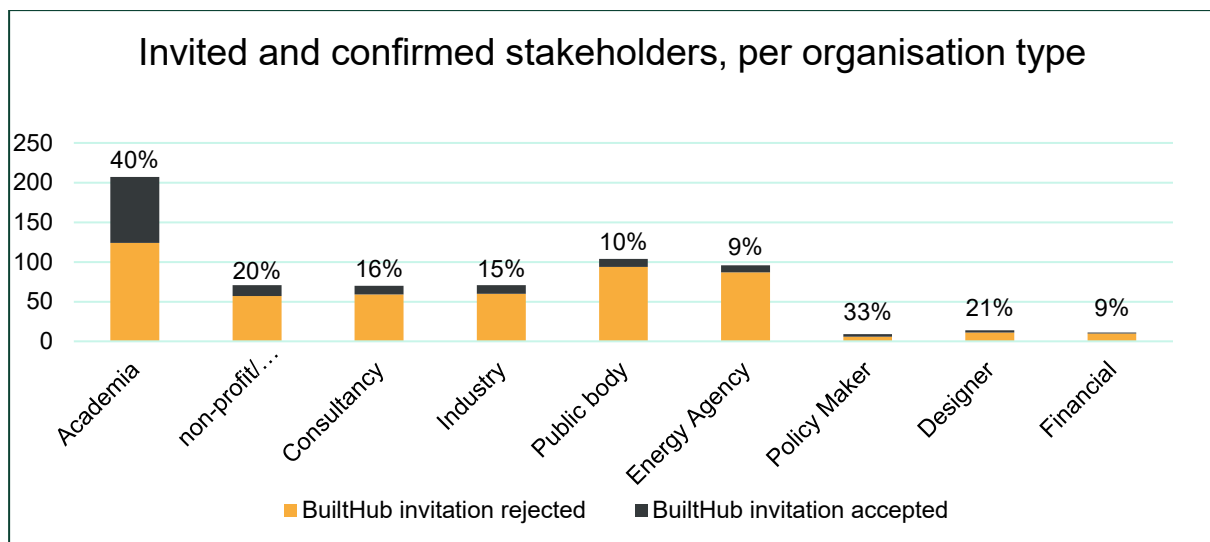
Table 2 identified and invited stakeholders

	Identified and invited	Confirmed ¹⁷	Success rate
Researcher, thereof	281, thereof	92	33%
... Academia	205	82	40%
... Consulting	68	10	16%
... Energy Agency	5	0	
... Financial Inst.	5	0	
... other	4	0	
Local or national authorities	103	10	10%
Energy Agency	90	9	10%
Non-profit/ Association/ Lobby ¹⁸	70	14	20%
Industry (not construction or renovation related)	26	7	29%
Designer; Architect	23	5	22%
Policy Maker	15	3	20%
Construction & Renovation products & materials	24	3	8%
Construction	5	0	10%
Financial	10	1	10%
Utilities/ Aggregators	8	0	0%
Statistic office	5	0	0%
Construction & Renovation services	7	0	0%
Renewable energy related services	1	0	0%
Total	658	145	22%

Additionally, we see how many of the researchers are in academic organizations (82) and how many are in consulting organizations (10). Academia is more research driven and consultancies are closer to the decision makers, as they consult them. Their clients may be either policy makers or industry, which are categorized as multipliers and could benefit from improved consulting due to better data.

That consultants are working for profit may be one explanation why we see also a significant difference in positive response. Figure 1 shows 40% of the invited researchers from academia confirmed while only 16% of the invited consulting researchers confirmed. Even lower positive response rates are observed for Energy Agencies (9%), public bodies (10%), all construction related organizations (>11%) and organisations related to finance (10%). It would be interesting to understand better why the rate is so low. It may be connected to not perceiving their benefits from the BuiltHub project enough. We will consider and discuss adding questions about this in our interviews to these stakeholder types. However, the interviewees are engaged stakeholders and therefore can only imagine why their peer group did not want to get involved.

Figure 1: Invited and confirmed stakeholders, per organisation type



As a response to this result and for keeping the consultants, Energy Agencies, local or national authorities, finance, and construction organizations on board, we may look out during the project to keep this group informed and satisfied by paying attention to their feedback and answering questions quickly. We will consider and discuss shaping specific engagement actions to address more of these stakeholder types, for example with actions in or back-to-back with peer group events as foreseen for the policy makers, by asking stakeholders in the BuiltHub community about possibilities to bring them onboard through the community's network and by engaging with the other initiatives and projects BuiltHub is liaising with, in particular the big data projects BEYOND, BIGG and MATRYCS¹⁹.

¹⁷ Other stakeholders have not answered or declined the invitation.

¹⁸ related to the following fields and organizations: climate change, energy savings, buildings, technology in buildings, manufacturers of technologies in buildings, construction industry, real estate developers

¹⁹ See, respectively: <https://cordis.europa.eu/project/id/957020> - <https://cordis.europa.eu/project/id/957047> - <https://cordis.europa.eu/project/id/101000158>

4.5.2. Distribution per project role

After this mapping we observe the distribution of stakeholders per their role. Table 3 shows the majority of our stakeholders. 116 organizations are Lead-users, 15 are End-users and 15 are multipliers, see chapter 4.4.2 for a definition of the roles of these groups.

Table 3: Invited and confirmed stakeholders by role in the project

	Identified invited	and Confirmed	Success rate
Lead-users	454	116	26%
End-users	132	15	11%
Multipliers	72	15	20%
Total	658	145	22%

Figure 2: Invited and confirmed stakeholders, per project role

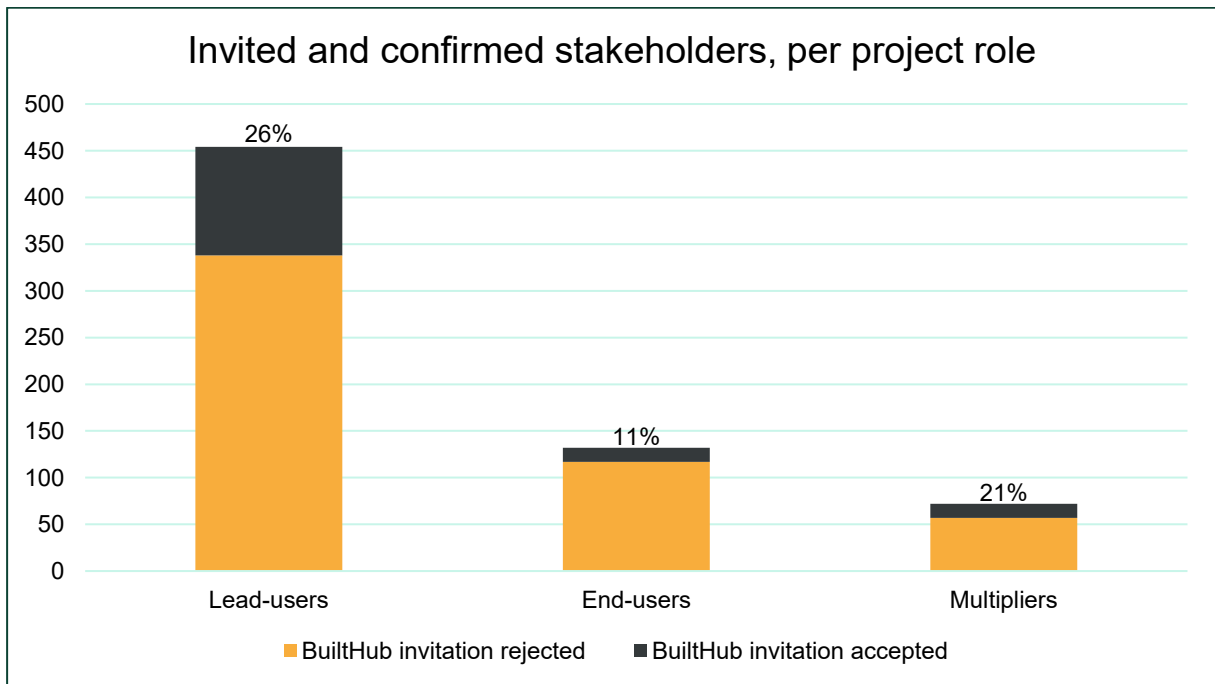
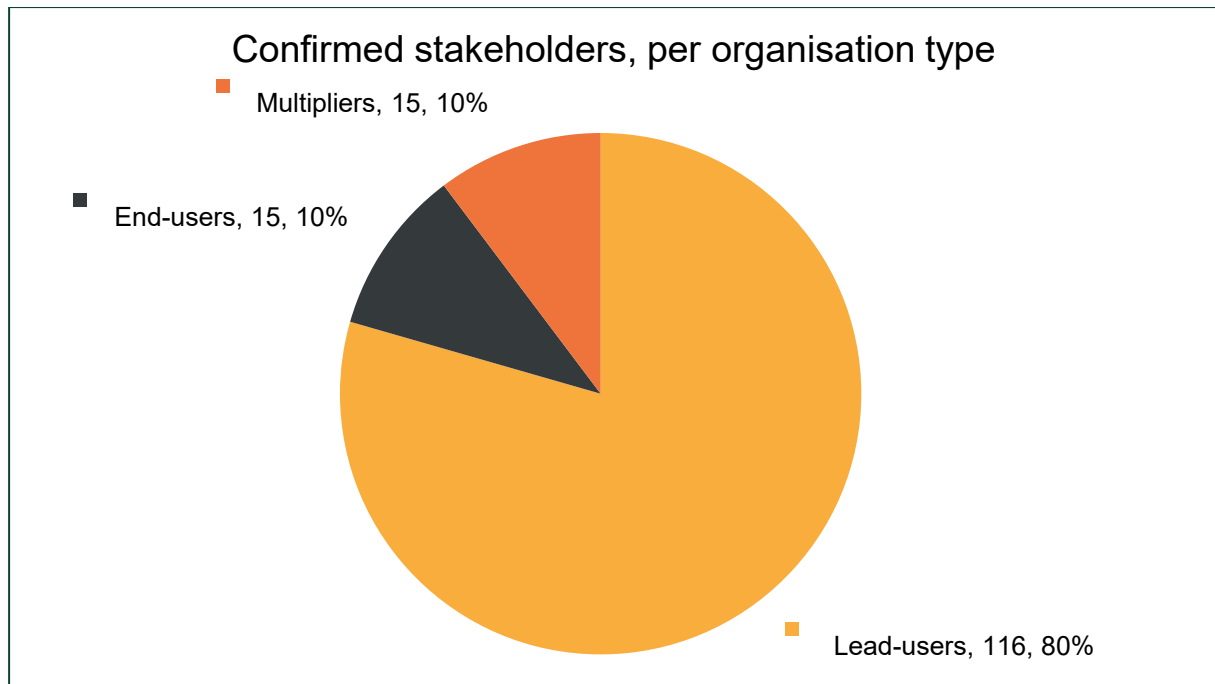


Figure 2 shows that we had a high consent success rate with Lead-Users (potential data providers) of 25%. End-Users confirmed in 11% of the cases and 21% of invited Multipliers confirmed.

Additionally, Figure 3 shows that End-Users and Multipliers each make up only about 10%, of all confirmed stakeholders which is not a lot. However, during the project we may find that some Lead-Users switch into the End-User role, because some of the former group will not provide data but find the platform valuable. The switch in the other direction is also possible. The original categorization as Lead-User and End-User based on the organisation type in Table 1 will evolve, therefore we may want to observe the number of End-Users. But it is likely their number will increase. For Multipliers, however, we need to make sure that we address enough multipliers. A monitoring of their and all other stakeholder type's participation in the

engagement actions is foreseen in the engagement action template. Furthermore, additional multipliers are informed by ICLEI through the project newsletter that is sent out to everybody who signed up through the website, this is a larger audience than addressed by the initial outreach. Additionally all partners are called to distribute the newsletter to their networks. This process is part of the CDE Strategy in deliverable 7.1.

Figure 3: Confirmed stakeholders, per project role

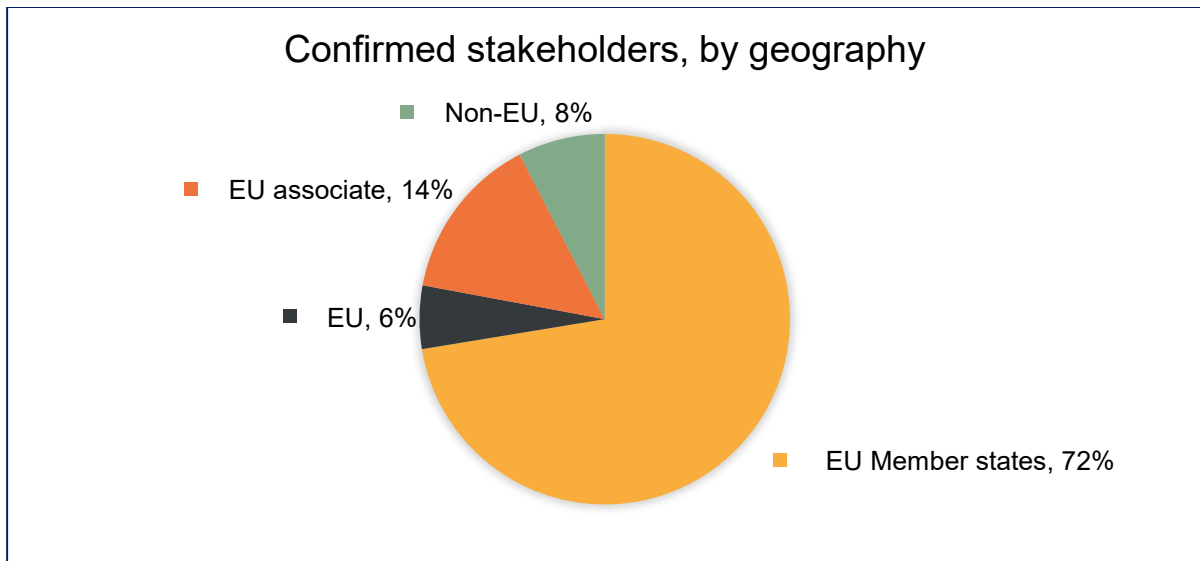


4.5.3. Geographic distribution

Figure 4 shows 6% of the stakeholders focus on the EU as a whole, most of the stakeholders (72%) work in one or more single EU Member States, 14% focus on countries beyond the EU MS but in the Horizon 2020 associate countries²⁰, and 8% focus on territories outside the EU. This mix allows a focus on the EU and bringing in experiences from other territories.

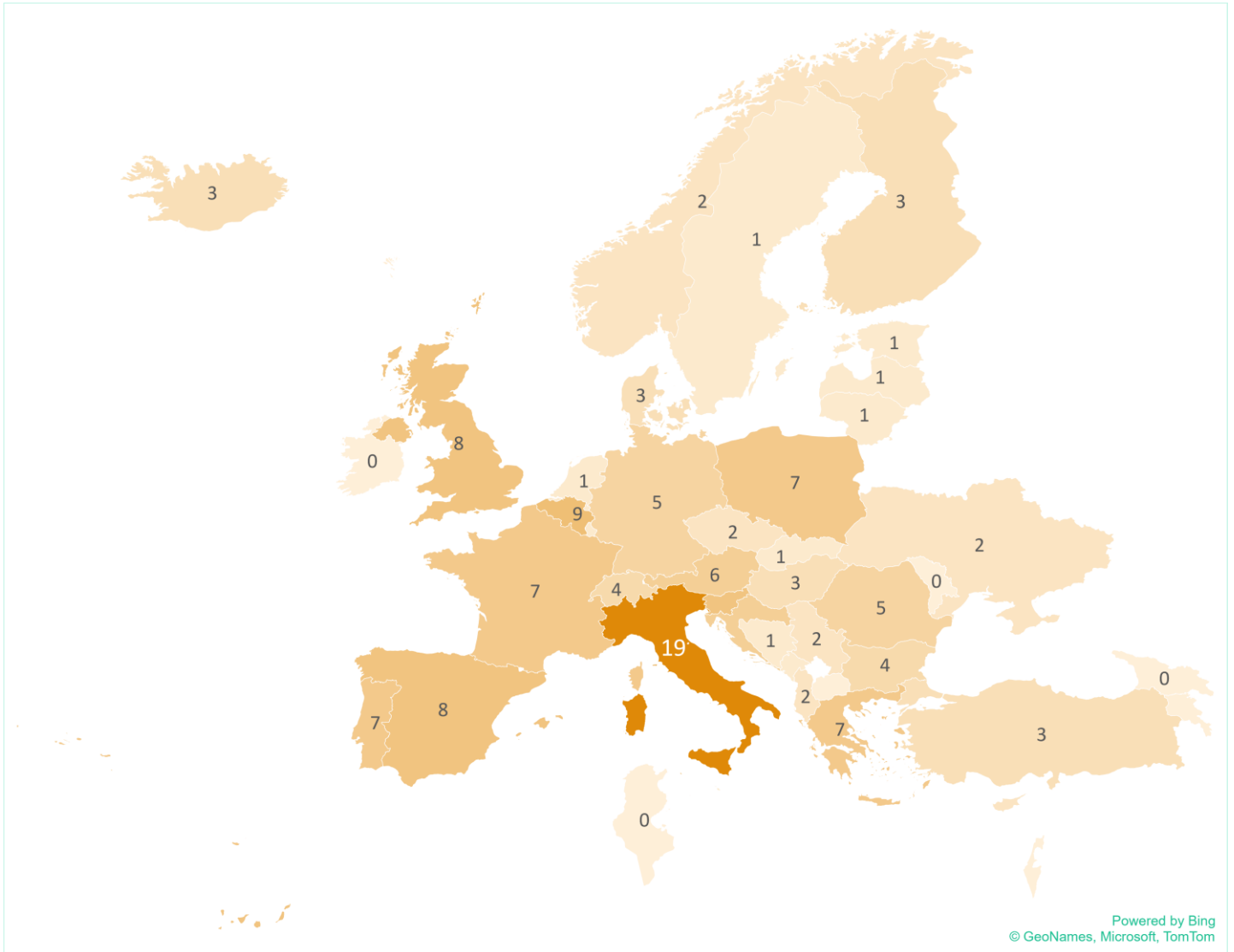
²⁰ Associated countries are per EU Horizon 2020 Regulation: Iceland•Norway•Albania•Bosnia and Herzegovina•North Macedonia•Montenegro•Serbia•Turkey•Israel•Moldova•Switzerland•Faroe Islands•Ukraine•Tunisia•Georgia•Armenia, see https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf

Figure 4 Distribution of invited and registered stakeholders among EU Member states, Associate countries, EU and Non-EU



Apart from a high representation of EU countries, it is desired to have a roughly balanced representation of different member states and regions across Europe, because the platform is focussing on Europe. That is why we analysed the distribution by country. In Figure 5 we can see that both the East-West as well as the North-South distribution is quite balanced. Maybe there is a small underrepresentation of the Northern countries. And we can work on that with our Partner RISE to improve that.

Figure 5 Geographical distribution of all stakeholders



In Figure 5 we can see that almost all countries are covered. We shall investigate if we find a lead stakeholder in Ireland. Also, by the number of stakeholders both the East-West as well as the North-South distribution is quite balanced. Maybe there is a small underrepresentation of the Northern countries by numbers. However, a good representation depends on the contribution of the stakeholder and not on their number, so we will investigate representation throughout our project. And we can work with our Partner RISE to increase the number of stakeholders in Northern countries, if necessary.

As the number of the stakeholders alone does not indicate a good coverage, we designed a template to monitor the different groups participating in each engagement action and thus monitoring them throughout the project. We will consider extending this monitoring to include showing the data contributors by country.

Table 4 Geographical distribution of all stakeholders by territory

Geographic scope of stakeholder activity	Lead-User	End-Users	Multipliers	Total
Total confirmed stakeholders	133	15	15	162
Focus on EU as a whole	10		6	16
Focus on one or more EU Member States	93	13	5	112
Austria	4	1		5
Belgium	9			9
Bulgaria	4			4
Croatia	4	1		5
Cyprus	2			2
Czech Republic	2			2
Denmark	3			3
Estonia	1			1
Finland	1	1		2
France	3	2		5
Germany	5		2	7
Greece	3	2	2	7
Hungary	1	1		2
Italy	18	1		19
Latvia	1			1
Lithuania	1			1
Luxembourg	1			1
Malta	1			1
Netherlands	1			1
Poland	5	1	1	7
Portugal	7			7
Romania	3	1		4
Slovakia	1			1
Slovenia	4	2		6
Spain	8			8

Sweden	1			1
Non-EU	4		1	5
Kosovo	2			2
USA	2		1	3
Associate country Total	24	2	4	30
Albania	2		1	3
Bosnia and Herzegovina	1		1	2
Iceland	1	1		2
Montenegro	1			1
Norway	2		1	3
Serbia	2			2
Switzerland	4			4
Turkey	3			3
Ukraine		1		1
United Kingdom	8		1	9

From Table 4 we collect the following 3 main observations and draw some results about the representation of the stakeholder groups and identify for example stakeholders that need more attention especially considering the project purpose.

(1) We identified and confirmed 16 stakeholders with a scope on the EU as a whole. These stakeholders are categorized as

- 5 Lead Users including 2 Energy Agencies, 2 Policy Makers and 2 manufacturers of construction products and materials, 3 academic researchers and one energy consulting organisation for industry.
- 6 multipliers amongst them 3 industry associations and 3 organisations concerned with climate protection or energy saving.
- There are no dedicated End-Users at EU Level so far, however we know that many of the End-Users that focus their work one or more MemberStates also cover the EU as a whole. Additionally, during the project we will may find that some of these EU Lead-Users will switch into the End-User role, because we find that they will not provide data but find the platform valuable. The switch in the other direction is also possible.

First of all, this is a very balanced mix at the EU level. Secondly, the EU Lead Users and the EU multipliers are critical stakeholders and we shall take specific care of them and define strong targeted action. This means, beyond keeping them informed with the newsletter, we will consider sending them conclusions from the specific engagement actions. Also, we will discuss to dedicate an event to this group.

(2) It is noteworthy that the number of stakeholders from Italy (17) and from the UK (10) is comparably large in their peer group, where the average is 4.2 and 3 respectively. This was to be expected and wishful as both Italy and UK (as Belgium and Austria) are governed by different regions.

From Italy 15 researchers, one energy agency and two architects confirmed their participation. A similar distribution is true for the UK, where 8 out of 9 stakeholders are researching of which 7 in academia and one in an advisory organisation for zero carbon. The 9th stakeholder is a multiplier working in the climate protection. For the engagement actions we can consider selecting the most relevant researchers according to the topic and focus of the engagement action. However, for the cross-country exchange it would be beneficial for all stakeholders to bring in the competencies and experience.

We shall report on the geographical distribution for each of the engagement actions.

(3) The third observation includes the question what we hope to achieve by including stakeholders that focus on non-EU territories. These are 2 researchers from Kosovo, a Country very close to Europe, 2 researchers and one consultant from the USA with insights from a different perspective. We can exchange, spread and learn from the research results of the non-EU stakeholders.

4.6. Conclusions and suggestions

The Mapping resulted in multiple findings that will be summarized in the following 5 points.

We find the most positive responses amongst Lead-Users which supports that the topic is of relevance for these stakeholders and that we addressed the suitable stakeholders. Whether all these potential data providers will be willing to share their data on the BuiltHub platform will show over time. Otherwise i.e., if they don't provide data, they will likely move into the second most important stakeholder role, the End-Users.

The Lead Users on EU level are a critical audience, and we shall take specific care of them and define strong targeted action. This means, beyond keeping them informed with the newsletter, we will consider sending them conclusions from the specific engagement actions. Also, we will discuss to dedicate an event to this group.

End-Users and Multipliers currently each make up 10% of the BuiltHub stakeholders. As this number is rather low, we need to make sure that we address enough of them and should incorporate these findings in the future stakeholder engagement. It should be noted that if we build a good relationship with the lead users and get their support and their data on the BuiltHub platform, the other two groups will follow as they will see the benefits. These stakeholders shall benefit from the knowledge gathered and provided through the data platform. Especially the multipliers that benefit through better analysis shall hence promote the platform and its usefulness for policy and industry decision making. We shall consider providing them with material i.e., digital flyer, that multipliers can use to promote BuiltHub and potentially collect statements from Multipliers in form of for our communication and dissemination. Also, we can collect statements and facts from Lead-Users to share with multipliers e.g. in the form of press releases, infographics, etc.

As the main beneficiary and multipliers, policy makers can be strong supporters and crucial to convincing other stakeholders. Their participation is very low (3), see chapter 4.5.1. Hence, we may consider expanding the visibility and participation of these stakeholders with an event that is back-to-back with another event that is important to them, for example an EPBD workshop (May 11th, 2021), the CA EPBD plenary meeting May 26-28, 2021, the EUSEW, or at the ECEEE.

In chapter 4.5.1, we also identified statistics offices, utilities, the construction, and the energy industry are not yet represented. Yet, they are important for BuiltHub because they are potential data providers (Lead-User) and can provide valuable insight on data collection, interoperability, and re-use processes. Additionally, the construction and energy industries are private decision makers that may contribute data but also benefit most from a better building data. For these stakeholder groups we will analyse those that never replied and consider a fresh outreach will at a key moment when we actively need their participation. Then we will consider preparing a detailed and evolved value proposition and try different channels such as to get on the phone.

Consultancies have a close relation to the decision makers in policy and industry, who are their clients. They have a comparably low positive response rate from the start, only 16% compared to 22% on average, see Figure 1, hence, we may want to pay attention to keeping them. Similarly low response rates between 16% and 0% were observed for Energy Agencies, local or national authorities, finance, and construction organizations. As a reaction to this result and for keeping these stakeholders onboard, we may take care during the project to keep this group

informed and satisfied by paying attention to their feedback and answering questions quickly and following up on their discussions. We will consider specific engagement actions to address especially Energy Agencies and local or national authorities that are important for BuiltHub. Furthermore, we will add questions about the perceived benefits to the interviews. However, the interviewees are engaged stakeholders and therefore can only imagine why their peer group did not want to get involved.

None of the confirmed stakeholders are real estate developers or facility managers. These stakeholder types were considered quite relevant for some work packages. This potential gap needs to be reflected with the partners and, if necessary, solutions need to be developed. Solutions include using different channels and networks for reaching out to these organizations, such as interviewing them, preparing a panel in a conference for this audience or reaching out to them through the big data projects BEYOND, BIGG, MATRYCS that BuiltHub is in contact with. Potential conferences are ranked in the following table:

Table 5 Conferences to meet real estate, facility management and housing stakeholders

Conferences	Geographic scope	Time	Recommendation by the author ²¹
World Facility Management Day	EU	May 12, 2021	*
Social Housing Finance Conference	UK	May 18-20, 2021	**
Renovation Summit 2021 – Housing EUROPE	EU	May 10-11, 2021	***
Spring conference European Federation for Living (EFL)	EU	May 26-27, 2021	*
European Real Estate Society's (ERES) Annual Conference	EU	June 2-5, 2021	**
MIPIM – The world's leading property market	EU	June 7-10, 2021	***
International Social Housing Festival	International	14-17 June 2022	**
EuroFM Business & Associations Summit	EU	June 30, 2021	***
REAL PropTech	EU	September 2-3, 2021	**
Housing 2021	Europe	September 7-9, 2021	**
CREW Network Convention	International	September 28-30, 2021	*

²¹ * After review of the conference website the conferences were perceived as *** highly relevant if they fit either the real estate, facility management or (social) housing audience, if they have a European scope and if they include aspects of climate protection, energy savings or digitalisation.

2nd Forum of Mayor's by United Nations Economic Commission for Europe (UNECE)	EU	April 4-5, 2021	**
International Social Housing Festival	International	14-17 June 2022	*

The geographic mix of the stakeholders allows a focus on the EU Memberstates and on the EU as a whole but also brings experiences from other territories.

Almost all countries are covered and by numbers we observe a balanced distribution. We will keep observing the stakeholders contributions by country to give a better view on representation.

5. Engagement Actions

This chapter elaborates on how the different engagement actions can contribute to the success of the project. After shortly revisiting the objectives for each action type, this chapter presents a template that shall be filled in the course of each stakeholder engagement to ensure an efficient communication between the actions, with the work packages and with the communication and dissemination activities.

The template serves to design the following steps:

- Engagement action and the communication around it,
- Information flow between engagement actions,
- Interaction/connection between the engagement actions and the work packages,
- Interaction/connection between the engagement actions and the communication and dissemination, and
- Interaction/connection of the engagement actions and strategy with sister projects.

Table 6 Engagement action types and their objectives

Engagement Action Type	Objective
Stakeholder mapping and outreach	Relevant stakeholders that are most likely to use the BuiltHub platform and its tools are mapped at the beginning of the project. They were invited and upon consent added to the BuiltHub stakeholder community.
Surveys	Stakeholders will be surveyed to understand and collect their needs and technical requirements. Surveys will be used to provide continuous feedback on the BuiltHub

	platform -its user-friendliness, available data and services- and community-building throughout the duration of the project.
Interviews	Building on outreach and surveys, a selected sample of experts will be interviewed to identify more specific needs and technical requirements, and identify building datasets not known by the consortium, as well as services encouraged/supported/expected to be provided by the hub in return to its users.
Workshops	Organised ideally back-to-back with relevant conferences and events, online or in-person workshops will inform various stakeholders about the project, its progress and outcomes. They will also be used to promote and collect feedback on BuiltHub platform, as well as to promote knowledge sharing and connect people from different target groups. This includes a special event featuring sister projects and representatives from key target audiences, beneficiaries and multipliers. (1) needs and technical requirements, (2) data sources needed and analysis proposing value, (3) business case and legal & organisational aspects of the platform, (4) Dissemination
Webinars	Webinars will support awareness rising and capacity building on the status and decarbonisation of the building stock, the relevance of data collection, BuiltHub solutions and results and their potential for different stakeholder groups.
Stakeholder Dialogues	Dialogues are a direct means to ensure the engagement and feedback loops between project partners and key stakeholders throughout the project lifetime to ensure the platform is meeting user needs. These dialogues will also contribute to the setting up/enlarging of the pioneer user and ambassador group. Focussed on the 3 target groups Lead-User, End User & Multiplier: (1) needs and technical requirements, (2)

	needed/appreciated data and analysis, (3) business case and legal & organisational aspects of the platform,
1 on 1 Meeting	One-to-one meetings will be organised with specific lead and end-users to communicate/ disseminate knowledge and results coming out of the project, particularly the platform and community, to encourage their participation, uptake and use of the BuiltHub platform, to identify more specific needs and technical requirements, as well as other possible building datasets, and encourage their active participation to the community and collect feedback to improve the services and strategies provided.
Training	<p>The training shall be a precursor of quality, identify biases and strengths, identify bugs as well as making improvements on the tool. It will also help in collecting feedback about provided services and opportunities for community building.</p> <p>The training will be led in form of 2 to 4 physical workshops (exercise of presenting and using the services), and demonstrated for 2 demo-cases, for example, specific regions or cities.</p>

5.1. Engagement action template

The template shall orchestrate the flow of information in and out of each engagement action from and to the work packages, from and to the general communication and amongst engagement actions. These information flows contain stakeholder discussion points, questions that come up and issues that we face in addressing them. Stakeholder engagement should pay attention to keeping the information flow alive and effective throughout the project in order to ensure BuiltHub takes up the stakeholders' considerations and keeps developing the appropriate solutions for them.

The engagement action template is designed in Excel and delivered as part of this report. Each action shall fill the template in a separate sheet so the filled templates will be collected throughout the project in the Excel file. The template is visually presented and explained below.

Figure 6 Engagement action template page 1 of 3: connecting the engagement actions

Stakeholder Engagement Template		
<p>From the previous Engagement Action fill the column below.</p>	<p>Engagement Type: Outreach</p> <p>Engagement Action Title: Initial outreach</p> <p>Partner: BPIE</p> <p>Work Package: WP2 - Stakeholders' community engagement (BPIE)</p> <p>Task: Task 2.1 Stakeholders mapping and engagement strategy</p> <p>Focus stakeholder type: N/A</p> <p>Focus target group: N/A</p>	<p>Distribute the filled template to</p> <ul style="list-style-type: none"> <input type="checkbox"/> 0 WP previous engagement action <input type="checkbox"/> 0 WP next Stakeholder engagement action <input type="checkbox"/> 0 WP2 Stakeholder engagement <input type="checkbox"/> 0 WP7 Communications
Before	During this engagement action	After
<p>Open questions/ discussion points:</p> <ul style="list-style-type: none"> * Lorem ipsum dolor sit amet, consectetur adipiscing elit. * Aenean commodo ligula eget dolor. Aenean massa. * Nulla consequat massa quis enim. <p>Main conclusions from previous actions:</p> <ul style="list-style-type: none"> * Cum sociis natoque penatibus et magnis dis parturient montes, * Lorem ipsum dolor sit amet, consectetur adipiscing elit. * Aenean massa <p>Current formulation of BuiltHub policy messages</p> <ul style="list-style-type: none"> * Nullam dictum felis eu pede mollis pretium. * In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. 	<p>New questions/ discussion points from this Outreach :</p> <ul style="list-style-type: none"> * Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. * Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. Donec pede justo, fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis * In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. Nullam dictum felis eu pede mollis pretium. <p>New learnings/ messages from stakeholders from this :</p> <ul style="list-style-type: none"> * In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. Nullam dictum felis eu pede mollis pretium. * Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. * Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. Donec pede justo, fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis * In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. Nullam dictum felis eu pede mollis pretium. <p>Answers/ closed questions/ discussion points:</p> <ul style="list-style-type: none"> * Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. * Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. Donec pede justo, fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis 	<ul style="list-style-type: none"> <input type="checkbox"/> Sent conclusions from the Outreach to the participants <input type="checkbox"/> Share conclusions and summary with Work package WP2 - Stakeholders' community engagement (BPIE). <input type="checkbox"/> Share conclusions and summary with the following work package. <input type="checkbox"/> Sent summary from the Initial outreach to (1) communication and dissemination <input type="checkbox"/> Consult with communication and dissemination to update the policy messages.

The first page of the template contains a section for identifying the engagement action in the top middle. A summary of the previous engagement action and policy messages are collected on the left. Notes on this engagement action shall be added in the middle and a checklist is provided on the right to facilitate the information flow.

Summary

The [engagement action] was conducted on [Date].

Purpose, goal and actions

The purpose of this engagement action is connected to the **purpose of work package [X]**, which is [e.g. for WP2 "to build and maintain a diverse, relevant and active stakeholder community to determine their interest, restrictions and preconditions for sharing building related data and involve the right stakeholders that share data for the platform. "]. The **purpose** of this [engagement action] is [e.g. "to increase the chances that we have the right stakeholders that share data and others that use the data "]. To fulfil this purpose we aimed at [goal e.g. "initially growing the community as much as possible "]. To do this we [action, e.g. "reached out to as many stakeholders as possible, address them with target group oriented communication and a follow up. Additionally, we analysed the initial collection of stakeholders and ask all partners leading different work packages to review this mapping and tell us which stakeholder groups are missing and which are underrepresented."]

Discussion points

The main questions asked to the stakeholders were: [e.g. "Do you want to be part of the stakeholder community? "]

And Stakeholders answered: [e.g. "From about 800 contacted stakeholders, we obtained consent by about 200 stakeholders."]

The main questions and discussion raised by the stakeholder were: [e.g. "More information on the project (~4). Clarification via a meeting (4). Participation in the project as a partner (~2). Is there any funding to monitoring the buildings and collect data of them? (~2)"]

The main achievements of this step [besides the community was the reflection and in depth feedback from all work packages on which relevant stakeholders are missing to satisfy the work package information and involvement needs. This was done around the first project meeting and possible only in a very close collaboration amongst work packages.]

Participation

We observed participation by [###] Lead-Users, [###] End Users and [###] Multipliers. The distribution according to the Task 3.4 categories is shown on the right.

The most active participants were from the stakeholder organizations: ...

The most supporting voices were from the stakeholder organizations: ...

The most critical, demanding stakeholder organizations were: ...

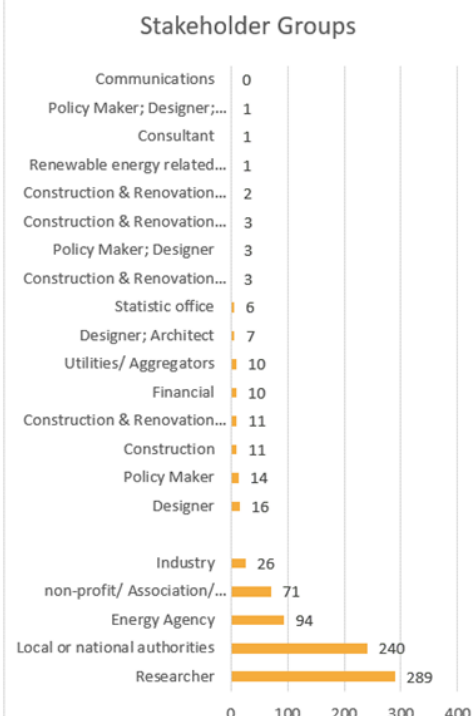
Details are in the table to the right.

Conclusion

Did we achieve the goal and fill the purpose? [e.g. ...]

What learning/experience/input feels important to pass on to other work packages, engagement actions, communications and sister projects?

Stakeholder Groups



Stakeholder Group	Count
Communications	0
Policy Maker; Designer;...	1
Consultant	1
Renewable energy related...	1
Construction & Renovation...	2
Construction & Renovation...	3
Policy Maker; Designer	3
Construction & Renovation...	3
Statistic office	6
Designer; Architect	7
Utilities/ Aggregators	10
Financial	10
Construction & Renovation...	11
Construction	11
Policy Maker	14
Designer	16
Industry	26
non-profit/ Association/...	71
Energy Agency	94
Local or national authorities	240
Researcher	289

Conclusions

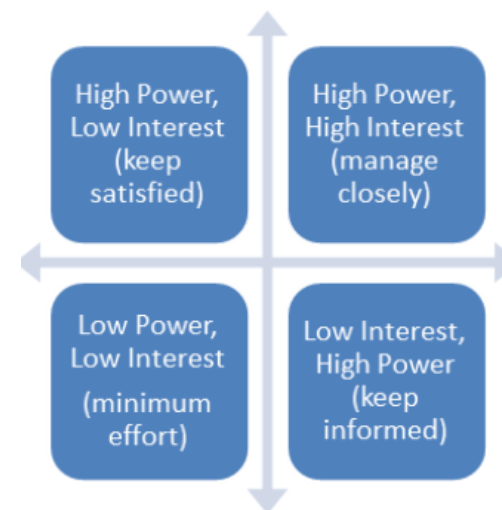
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. Donec pede justo, fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo. Nullam dictum felis eu pede mollis pretium. Integer tincidunt. Cras dapibus. Vivamus elementum semper nisi. Aenean vulputate eleifend tellus. Aenean leo ligula, porttitor eu, consequat vitae, eleifend ac, enim. Aliquam lorem ante, dapibus in, viverra quis, feugiat a, tellus.

The second template page contains a detailed summary of the engagement action written by the example of the initial outreach on the top left. It includes details on the stakeholder participation, visualized by the mapping on the right. The needed management effort is determined through the stakeholder relationship analysis, as described on the next page. Finally, conclusions of the engagement action are summarized in the final section of the template.

5.2. Stakeholder relationship analysis as part of the engagement action template

As part of the engagement action template, we introduce the stakeholder relationship analysis table, which the responsible partner shall fill after each engagement action.

The stakeholder relationship analysis is a method to assess the communication need based on the interest and power of the stakeholders. The illustration on the right shows that stakeholders with high power and interest need to be managed closely. The table below translates this idea into 4 categories that should be assessed: supportiveness, Influence & Power, geo-location and open conflict. These categories help to identify power and interest and where further action is needed to support the project success. Supporting voices and critical voices shall be answered, and their concerns taken into consideration. The analysis shall be shared with the whole consortium as part of the engagement action template after every engagement action.



The template for each engagement action will be available to all partners and to the work package leads for communications/dissemination (WP7), as well as for exploitation and sustainability (WP6). This way we want to ensure that the feedback, questions, concerns, requirements and motivations from the stakeholder will not go unheard and can be considered in every step of the process.

Figure 8 Engagement action template page 3 of 3: Stakeholder Relationship Analysis

Stakeholder Relationship Analysis															
Engagement Action Name	SUPPORTIVENESS			INFLUENCE & POWER			GEO-LOCATION				OPEN CONFLICT			Weighting	
Weighting	0.25			0.25			0.25				0.25			Good	
Stakeholder Dimensions	Promoter	Bystander	Adversary	Strong	Moderate	Weak	EU	EU Member State	Associate EU	Non-EU	Significant	Developing	None	Calculated Rating	Attention Level
Weighting	0.40	0.20	0.40	0.60	0.30	0.10	0.45	0.35	0.15	0.05	0.60	0.30	0.10		
Weighting Verification	Good			Good			Good				Good			0.00	minimum effort
Lead-Users														0.41	manage closely
1	0	0	1	1	0	0	0	0	0	1	1	0	0	0.41	manage closely
2	0	1	0	0	0	1	1	0	0	0	0	0	1	0.21	minimum effort
End-Users															
1	0	0	1	1	0	0	0	0	0	1	1	0	0	0.41	manage closely
2	0	1	0	0	0	1	1	0	0	0	0	0	1	0.21	minimum effort
Multipliers															
1	0	0	1	1	0	0	0	0	0	1	1	0	0	0.41	manage closely

6. Risks to the success of stakeholder engagement

The following list of stakeholder engagement risks builds on the overall risk assessment as part of the Risk Management Plan²². It feeds into the project’s overall quality assurance and risk management (WP1) which will be updated throughout the project, when necessary.

Table 7: Stakeholder engagement risks

Description of risk	Likelihood	Impact	Risk-mitigation measures
<p><i>Risk:</i> Lack of stakeholders committed to provide data</p> <p><i>Result:</i> Main objective failed, BuiltHub ceases to exist</p>	<p>Medium High</p>	<p>High</p>	<p><i>Prevention:</i> The consortium has already identified a list of Lead Users that are willing to contribute data.</p> <p><i>Mitigation:</i> During the implementation phase, the consortium will further engage and liaise, under community building in WP2, with a number of key stakeholders to exchange views and create the value proposition concept developed under WP6. Work package WP6 develops a Data Provision Model Agreement to manifest the commitment. A broader consortium network may be further utilised/consulted to identify potential data providers if needed. Also, automatic feed of BuiltHub is considered to offer a strong value against manual data provision by certain stakeholders.</p> <p><i>Update:</i></p> <p>The outreach has led to confirmation by 97 stakeholders that are categorized as Lead-Users i.e. data providers. Also, we have conducted phone calls with interested stakeholders of which some have already declared interest to contribute data and use BuiltHub as a dissemination channel.</p> <p>Prior to preparing this report, the consortium already identified a list of key users willing to share building related data.</p>

Description of risk	Likelihood	Impact	Risk-mitigation measures
<p><i>Risk:</i> Data providers do not recognise the community value and are unwilling to contribute data</p> <p><i>Result:</i> Community of data providers at risk, BuiltHub's main objective failed</p>	Medium	Medium High	<p><i>Prevention:</i> There will be in-depth interaction with stakeholders to ensure that the community framework is targeted to their specific needs and interests.</p> <p><i>Mitigation:</i> WP6 (along with the EDCS) is to conceptualise and define the reasoning, methodology, schemes and relationships in support of a sustainable community of data providers and users under BuiltHub, leading to the scaling up and upgrade of data collection and processing of building-related information across the EU. This includes specific approaches and tools, such as the value proposition, business case, strategies, etc., which support the exploitation of results and enable the long-term maintenance and expansion of its legacy of a selfreinforcing community of practice.</p>
<p><i>Risk:</i> Not possible to cover all target countries</p> <p><i>Result:</i> Not fulfilling a contractual obligation</p>	<p><i>Originally:</i> Medium High</p> <p><i>Now:</i> Low</p>	Medium	<p><i>Prevention:</i> The consortium has a broad spectrum of networking across the EU and beyond</p> <p><i>Mitigation:</i> Multipliers involved in establishing connections with other country users.</p> <p><i>Update:</i> We have confirmed stakeholders from all countries, see Figure 5. Consequently we assess the Likelihood as low.</p>
Lack of representation of critical stakeholder groups in all geographies	High	Low	<p>Representation of critical stakeholder groups is assessed as part of the engagement action template.</p> <p>In case of low representation, we will assess the need to reach out to underrepresented groups through various channels, for instance, through workshops customized to specific interests of its members.</p> <p>Close coordination with the consortium overall and with the communications lead specifically, to identify strategies and mobilise specific groups at those points in time, when they are needed.</p>

Description of risk	Likelihood	Impact	Risk-mitigation measures
<p><i>Risk:</i> Hub not meeting the requirements of its end users / no added value</p> <p><i>Result:</i> Proposed BuiltHub services not attractive to some stakeholders</p>	Medium	High	<p><i>Prevention:</i> There will be in-depth interaction with stakeholders to ensure services are targeted to their specific needs and interests. An online survey will help to list the stakeholder needs and their technical requirements that are relevant for the services to be provided under BuiltHub. As part of WP6 A QFD tool is used to translate the stakeholder needs into product or service design characteristics. Interviews will collect more detailed input from stakeholders and in depth understanding of their needs and missing datasets. Training material will be developed to train different stakeholders and test the beta version of the BuiltHub platform as a precursor of quality, identifying skewness and strengths, identifying bugs as well as making improvements on the tool. An ambassador programme will be defined and setup to propagate and disseminate the BuiltHub approach and services and raising its awareness to a wider audience, in close cooperation with WP7. A group of pioneer users will test the BuiltHub platform and provide direct feedback to the consortium in direct connection with WP3 and WP4. EU workshops and stakeholder dialogues will further support the process of stakeholder needs identification.</p> <p><i>Mitigation:</i> Regular follow-up and pioneer testing will be established as part of the work to ensure the services are covering stakeholders needs. Procedures will be adapted accordingly.</p> <p><i>Additionally:</i> Mitigated by intense stakeholder mapping, with direct interaction with the partners that signed a LOI, which contain 4 multipliers, 5 End-Users and 3 Lead-Users. In addition, BuiltHub services, i.e. the data analysis proposing value to the data providers and end users, will be targeted according to the specific needs.</p>

Description of risk	Likelihood	Impact	Risk-mitigation measures
Insufficient number of stakeholders engaged in the project	Low	High	<ul style="list-style-type: none"> • Early set-up of stakeholder network • Capitalising on the LOS already signed and on those that expressed interest by other means and on consortium partners' network
Lack of commitment from supporting stakeholders	Low	Medium	<ul style="list-style-type: none"> • Clear definition/communication of stakeholder benefits throughout the project • Informing stakeholders about successful examples/benefits of sharing of building stock related data by stakeholder groups • Benefits shall therefore be defined by stakeholder group

