OPEN SCIENCE HUB

EMPOWERING CITIZENS THROUGH STEAM EDUCATION WITH OPEN SCHOOLING

DELIVERABLE 7.2

Business Models

Authors

Mariam Suheli Chrouda (IH), Alba Bellofiore (IH)

Contributors

All Partners

Reviewers

Andrew Newman (AE L), Pandora Sifnioti (SCICO), Maria Vicente (ULEI)

Disclaimer

Reference

Please cite this work as:
OSHub Consortium, 2020. OSHub: D7.2 Business Models, Impact Hub, Siracusa

Copyright Notice

Acknowledgement

OSHub has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 824581

Document Identification Sheet

Project Ref. No.	824581
Project acronym	OSHub
Project Full Name	Open Science Hub Network Empowering Citizens Through STEAM Education with Open Schooling
Document Name	OSHub.Network_D7.2BusinessModels_20211108
Security	Public
Contractual Date of Delivery	31/10/2021
Actual Date of Delivery	08/11/2021
Type	Report
Deliverable number	D7.2
Deliverable name	Business Models
WP / Task	7
Number of pages	46
Authors	Mariam Suheli Chrouda, Alba Bellofiore
Contributors	All Partners
Reviewers	Andrew Newman (AE L), Pandora Sifnioti (SCICO), Maria Vicente (ULEI)
Project Officer	Simona Abbatangelo
Abstract	In this deliverable attention is given to the path of each partner in the building of a business model for each OSHub explaining similarities and differences in the creation and implementation.
Keywords	OSHub, Open Schooling, Business Model, Sustainability

Revision History

REVISION	DATE	AUTHOR	ORGANISATION	DESCRIPTION
0.1	24 October 2021	Mariam Suheli Chrouda & Alba Bellofiore	IH	Draft Version
0.2	27 October 2021	Andrew Newman	AE L	Review
0.3	03 November 2021	Pandora Sifnioti	SCICO	Review
0.4	07 November 2021	Maria Vincente	ULEI	Review
0.5	08 November 2021	Mariam Suheli Chrouda & Alba Bellofiore	IH	Final Version

List of Acronyms

ACRONYM	DEFINITION
AE L	Ars Electronica Linz GMBH & CO KG
CCSTI	Centre Culturel Scientifique Et Technique Association
EC	European Commission
EU	European Union
FAB	Onl'Fait
IH	The Hub Sicilia Societa Cooperativa
MFCR	Município De Figueira De Castelo Rodrigo
MS	Member States
OSHub	Open Science Hub
OSHub.Network	Open Science Hub Network
SBC	Social Business Canvas
SCICO	Epistimi Epikoinonia
SCIN	Science In Cz Sro.
STE(A)M	Science, Technology, Engineering(,Art) and Mathematics
ULEI	Leiden University
TCD	The Provost, Fellows, Foundation Scholars & The Other Members Of Board Of The College Of The Holy & Undivided Trinity Of Queen Elizabeth Near Dublin
WP	Work Package

Executive Summary

This report documents the Business Models of the eight OSHubs that have been created in the context of the project by eight of the nine partners involved. It follows the path already started with D.7.1 Vision and Value Proposition and is a continuation of it.

What shows is the work that the hubs have done on the sections of the ***OSHub Social Business Canvas***. A tool that is helping them to build solid sustainable and feasible plans. What emerged generally is that the hubs are following the main mission of the OSHub.Network project which is the motivation of students' and citizens' agency in producing social and environmental change within their communities, by applying the open school approach and using the STEM curriculum to promote global citizenship.

Despite this common goal though, the approaches of the hubs are different and change depending on three main variables: the type of organization, the previous experiences and the local ecosystem.

This document shows that the OSHubs are living, breathing social entities, as also stressed in other deliverables, and therefore mutate and respond to the changes of the environment that surrounds them. In particular this deliverable focuses the attention on the Business Models that each Hub has built to assess and observe the levels of sustainability and feasibility after the end of the project.

From the analysis emerges that the eight hubs are already on a positive path towards the achievement of sustainability. Despite the challenges in structuring a solid financial plan, in part due to the delays of Covid-19, the Business models of the OSHubs appear to present strong value propositions and an overall coherence and clarity in the different levels of the Social Business Canvas used to shape the Business models. The Value Propositions is reflected in the results and activities, as well as the Impact desiderd. Actors, especially beneficiaries are coherent with the activities identified

and with the goals set by the hubs. The only grey area remains the section related to costs and flow of revenues. Partners analyzed costs and the flow of revenues but a more coherent analysis and strategies will be further developed in the following months.

Now that a first draft of the Business Models has been drawn, each OSHub has a map to follow in order to achieve social and financial sustainability. The next months will be focused on working to

improve the Business Models, update them and ensure a sustainability plan for all the Hubs. Particularly, the activities of WP7 will focus on two main directions: First, supporting each hub in working on their business models not only from a project-oriented point of view but also ensuring that they foresee what role the Hub will have after the end of the project. Secondly, helping the Open Science Hub Network (OSHub.Network) to build a sustainability plan as a whole to ensure it remains a living and working network with possibilities of expansion.

Table of Contents

1. Introduction

1.1 Background: about OSHub.Network

The Open Science Hub Network (OSHub.Network), a consortium of nine partners across Europe, engages schools and local stakeholders in research and innovation as a tool for sustainable community development.

More specifically, the OSHub.Network is establishing a European network of community hubs – OSHubs, in communities that traditionally do not engage with research and innovation due to various barriers, geographical location, socio-economic status, or ethnic minority group background. OSHubs inspire, empower and engage citizens – from school children to senior citizens – in STEAM (Science, Technology, Engineering, Arts and Mathematics) learning and research opportunities, grounded on collaboration with societal agents.

As such, local OSHubs work as mediators in their local communities, positioning schools as active agents for collaboration between civil society, enterprises, research institutes, and families. This is performed by promoting an open schooling approach grounded in community-based participatory research practices: throughout this process, schools and communities identify local relevant challenges, which are then be transformed into relevant research and innovation projects, led by students and teachers, in collaboration with local stakeholders.

The OSHub.Network is developing a common methodological framework, that allows each OSHub to identify and analyse local needs, issues, opportunities and relevant actors, in order to address socio-economic, geographical, gender equity issues, and untapped growth potential. Inspired by the "Mission-Oriented Research & Innovation in the European Union"[1] approach, developed by Mariana Mazzucato, OSHub.Network will define a set of Open Schooling Missions, aimed at addressing local relevant challenges linked to the Sustainable Development Goals. These Open Schooling Missions will then constitute the basis for the creation and development of the open schooling projects, enabling real collaboration across communities. Importantly, to ensure diversity, inclusion and sustainability, in each OSHub location, there will be a local management board with representatives from local stakeholder groups – schools (including students), families, research institutes and universities, enterprises, industry, media, local governments, civil society organizations and wider society – which will be involved in all key processes and decisions regarding local OSHub programmes and initiatives.

By supporting local schools and communities with the tools and network to tackle relevant challenges, OSHub.Network aims to create local impact while simultaneously promoting an active global

1 Mariana Mazzucato (2018), Mission-Oriented Research and Innovation in the European Union – A problem solving approach to fuel innovation-led growth', European Commission, Retrieved from: https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

citizenship attitude, thus contributing to community development, innovation and well-being. To encourage usage and maximise impact in Europe and beyond, all resources, products and solutions developed by OSHub.Network will be fully based on Open Standards, such as open education, open technology, open science, open hardware, open design and open architecture. Also, OSHub.Network will create an online platform to share OSHub expertise, resources, and best practices with all OSHubs, their partners and the communities they serve. To ensure the legacy and reach of the project, all OSHub.Network resources will also be shared on existing large online educational repositories, and relevant national networks and repositories.

Finally, OSHubs will develop a legacy and sustainability plan, and will work closely with local governments, to ensure that each local OSHub has the tools and resources to continue beyond the lifetime of the project, and that the Open Schooling approach is incorporated in the school vision and organizational structure.

By the end of the project, it is expected that the OSHub.Network will have impacted 25 000 students, 1 250 teachers and 4 000 members of the community, through involvement in more than 150 school-university-industry-civil society partnerships in open schooling projects and activities.

In the long-run, we envision OSHubs as education brokers in their local communities, supporting local school networks to incorporate Open Schooling in their vision and organizational structure, leading to sustainable quality of education. Most particularly, OSHubs will facilitate the bridge between the needs and realities of schools and their local context and resources, as well as brokering for implementing national/regional policies, passing along signals from schools when policies are failing and advocating for context-sensitive policies.

1.2 Purpose of this report

This report is dedicated to the presentation of the Social Business Models created by each Open Science Hub.

It is part of the broad legacy and sustainability plan aimed at ensuring that schools and partners involved have all the tools to sustain the open schooling approach beyond the lifetime of this project.

The scope of the Social Business model approach is to create the best foundations that, as the definition of open schooling underlines, allows to achieve the objectives that better respond to the needs of the community and produce impact.

The report explains the building process behind the social business models through the use of the OSHub Social Business Canvas as a co-design tool to build a sustainability model.

This is a living document as the tool used is itself a living tool and therefore will be reviewed and updated during the project's lifetime in order to reflect the evolution of each Open Science hub's strategy.

2. The Social Business Canvas

2.1 Introduction

The Social Business Canvas (Figure 1) starts from the traditional format of the business matrix, to progress further by adding the element of impact to the analysis. The prototype, initially tested through another project (ENISIE project, under the Interreg Italy Malta) and consequently developed and customized explicitly for the Open Science Hub project, merges two elements: The Business Model Canvas, by Alexander Osterwalder and the well-known Logical Framework Matrix adopted by the European Commission in 1992.

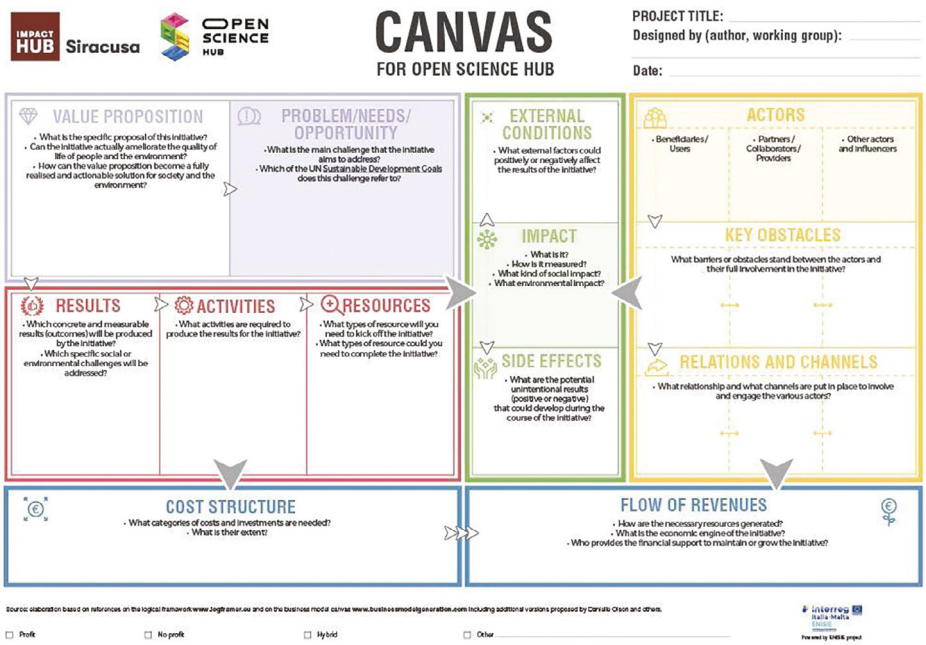

Figure 1: Social Business Canvas.

The Social Business Canvas is a living and talking tool that is powerful also because it can be modified and adapted anytime the reality and the will of the user changes.

Visually, it presents different boxes all logically connected with arrows, in order to verify the con-

sistency, efficacy and efficiency, as well as feasibility of the plan. A special feature is that each box is differentiated by a color to facilitate the logical reasoning of users. Even though the arrows indicate a path for filling in the matrix, their orientation can change, based on the level of knowledge of the user as well as the type of reasoning applied. Each section of each box is filled with questions that can help the user to understand the path to follow and the kind of information to collect in that specific section.

The canvas works with an input-output process through which the user organizes information and, in the end, obtains a sustainable, feasible and efficient plan. The timeline of this plan is really related to the needs of the user and the nature of the initiative/project to be put in practice.

2.2 The Value Proposition

The Value proposition's block in the canvas is identified in **violet**.

The value proposition is the heart of the social business model and recalls the value proposition already present in the traditional model by Osterwalder. It requires the user to identify the general objective (the meta-scope) set be him/herself or, most of the time, through a co-design process with the beneficiaries or target group involved. The approach used in this box can vary depending on the attitude of the user. It may be deductive or inductive and the nature of it then determines the entire experience of the Social Business canvas. In fact, it is not by chance that the section dedicated to the identification of the challenge to address in the value proposition is differentiated between: *Needs, problems, opportunities*. Even though there is not a clear-cut difference in terms of meaning, this differentiation can help the user to understand what kind of approach is needed to address the challenge.

Because the Social Business canvas is an engine specifically designed to support business ideas and initiatives that have a social purpose, the tool itself proposes to integrate the section about the main challenge with the SDGs or the Social development goals set up by the United Nation to be achieved by 2030. Similarly, in this case the aim is to facilitate the thinking process of the user in the identification of the challenge/s.

The section on the block dedicated to the value proposition presents some questions that help the user not only to identify the specific proposal of the initiative but also to identify the social and environmental purposes of the initiative, therefore highlighting the innovative and socially driven aim of the social business canvas compared to the traditional version.

2.3 Results, Activities, Resources

Following the natural direction of the arrows, the block that is strictly connected, and usually the second to be used, is the **red** one which asks the user to reflect on results, activities and results.

The reason why these three elements are part of the same box is threefold. Firstly, it is important that these three have a strict logical and coherent connection between each other. Specifically, results and activities need to be logically interrelated to obtain a feasible and efficient plan. In a sort of scale plan, if the value proposition represents the main goal/objective to realize, the results are

the more "practical" and specific goals to achieve. In fact, depending on the inductive or deductive approach of the user, they could decide to start the canvas from this box instead of the violet one and vice versa.

Both results and activities have to be measurable, and this characteristic is important to obtain the feasibility and also to later determine the costs.

The section dedicated to results there is a question which is very similar to the one discussed in the value proposition, about the social and environmental challenges. Following the scale scheme, also the results may share the main challenge or address "sub-challenges" that are related to the main one.

Finally, the resources have to be very clear and as more specific as possible in order to facilitate the identification of costs. Reasoning about costs help also to understand if the activities are well defined and clear. Because the more specific the activities are described, the easier will be to identify the human and material costs to carry out them.

In the end, the key words of this block are specificity and coherent connection. If we were to imagine the social business canvas as a building, this box would represent the pillars holding the roof.

2.4 Actors, key obstacles, relations and channels

In the building of the social business model, an important part is played by the identification of target/beneficiaries, and generally stakeholders, necessary to support the project idea or the initiative.

This block is divided into three parts which help the user to identify who are the people involved or to be involved, how they plan to do it and what kind of obstacles can interfere in the engagement process.

The first part asks the user to differentiate the direct beneficiaries of the project idea from those who are in one way or another useful to the implementation of the activities and the achievement of the goals (ie. providers, collaborators, partners and other influencers). . The second part of the section asks the user to write down what possible limits they may encounter in the process of involvement of these actors. This section forecasts one crucial element of the social business canvas which is the evaluation of risks and problems. To visualize possible issues helps the user to produce problem-solving strategies in advance.

The last section is dedicated to the explanation of the process of involvement of the actors.

This section is the pillar of the social business canvas because it focuses on the "workforce" necessary to carry out the project idea or initiative.

2.5 Impact

Visually at the center of the social business canvas, the block related to the impact, which is identified in **green**, is one of the innovative elements of the social business canvas. Because this model is

specifically designed for social business ideas, the role of the impact is one of the most important.

In this section the user is asked to reflect on what impact he/she wants to produce and how much. In fact, one of the first questions is to explain how this impact is going to be measured. This block is strictly connected to other ones that we described above. The measurability of the impact depends on the measurability of results and activities and on the identification of the identity and quantity of the actors involved. It is also related to the value proposition and specifically in what way it will impact the local and, in percentage, the global community.

The block is composed also by a section dedicated to external conditions and one related to side effects.

Sometimes these two can be confused with one another but they are actually referring to different aspects that the user needs to observe.

The first, external conditions refer to what "positive or negative" external factors, that is to say factors that are not produced by the initiative and cannot be controlled, may affect the project idea and its implementation.

On the other hand, the section of side effects really addresses the positive or negative effects that involuntarily the project or initiative can produce.

These three are all part of the same block because in different ways can interfere in the amount of impact produced.

2.6 Cost Structure and Flow of revenues

The last block is dedicated to numbers. Once all the blocks are filled. The last step is to draft a financial plan able to sustain the implementation of the project or initiative, on one side, and to imagine a sustainability plan on the other.

The first section is related, also visually, to the cost structure which is strictly connected to the red box and in particular to the resources and activities. The section asks the user to provide costs for all the voices that are needed to carry out the activities. It also asks the extent, so it inserts in the reasoning process also the variable of time. This part will help the user to organize the money and project revenues and expenses.

The second section is the flow of revenues and is particularly important especially when thinking about sustainability. To build a plan able to self-sustain itself is of strategic importance. This part identifies where the money comes from and from whom.

This block is a legacy from traditional business models but still contributes to measuring the type of impact that the initiative or project is able to produce and for how much time.

3. The OSHub Social Business Canvas: The road to the Social Business Models

In order to build an economic and social sustainability plan for the hubs of the OSHub.Network as foreseen, among other things by the WP7, IH has started a path that sees the partners engaged and supported in the creation of the vision and value propositions, as well as business plans (D7.1 Vision and Value proposition for 8 OSHubs M18; D7.2 Business Models and Feasibility plans, including financial sustainability plans for 8 OSHubs M25).

This chapter focuses on the methodology applied by IH in collaboration with all the WP leaders to socialize the tool and then to help the partners in the building of the Business Models.

3.1 The OSHub Roadmap

The OSHub.Network, in a process led by IH, has been developing a common methodological framework – the OSHub Roadmap – that supports the OSHub teams throughout the defined OSHub building blocks: school engagement, stakeholder engagement, community building, tackling local--to-global challenges; co-creation of open schooling projects; value proposition; and technical and financial feasibility plans.

For that, IH, together with ULEI and TCD, developed a self-assessment tool (Figure 2) that guides partners throughout the project journey, promoting cooperation and sharing of challenges and best practices, while at the same time helping the WP leaders to supervise achievements and monitor the state of the art evolution of the project.

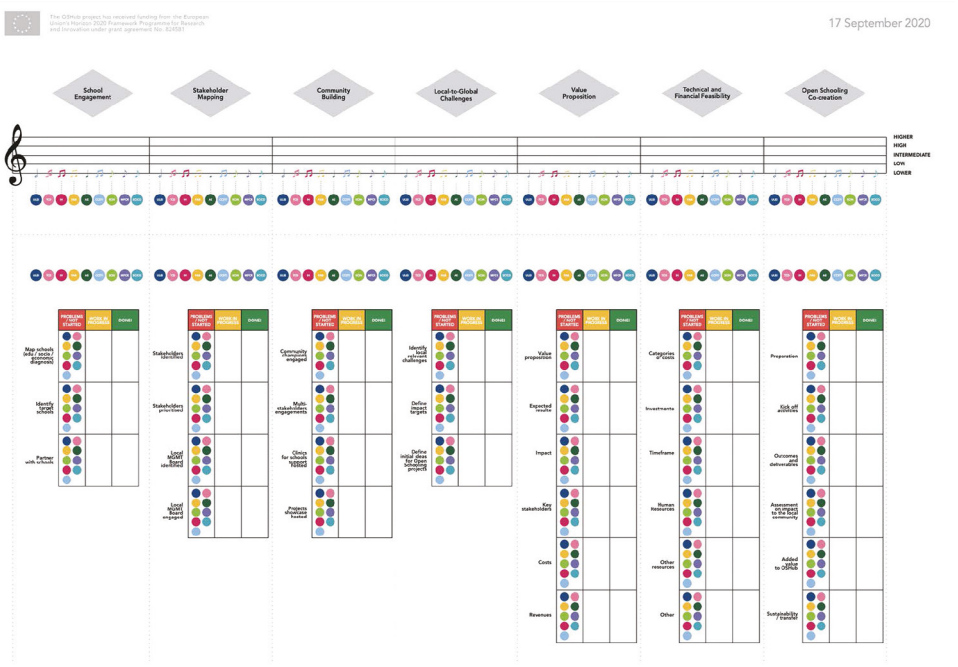

Figure 2: Self-assessment tool.

This is a self-assessment tool that each partner contributes to in order to track their progress and how confident they feel about each building block topic. Traffic light indicators are in place for each task under each building block to help partners indicate if they are having issues with the task/ not started it yet (red), if they are progressing in the task (orange) or if they have completed the task (green).

The use of the self-assessment tool helped IH to understand at which stage the partners were and therefore from which point to start inserting the inputs.

3.2 The OSHub Mentoring Programme – Methodology

To guide the OSHubs through the Social Business Canvas IH has developed and is implementing a mentoring program that includes:

1. A series of online workshops, each dedicated to a different box of the canvas;

2. Each workshop is followed by a report that partner's need to complete, where they com-

pile and analyse covered in the corresponding workshop;

3. Feedback sessions that use a peer-to-peer learning method to foster collaboration and exchange of skills and know-how between the partners.

Workshops and reports

The structure of the workshop includes a first part explaining the value and role of the box, followed by an exercise lasting approximately 10 minutes, and then feedback from the IH team that further helps the understanding of the single block.

Table 1: Workshops organized in the context of the OSHub Sustainability Mentoring Program.

CANVAS SECTION	WEBINAR DATE	REPORT DEADLINE
Red Box	December 3, 2020	January 15, 2021
Yellow Box	December 17,2020	January 29, 2021
Violet Box	February 12, 2021	February 26, 2021
Green Box	April 29, 2021	June 8, 2021
Blue Box	June 17, 2021	June 5, 2021

The reason why IH decided, together with the partners, to start from the Red box instead of the violet one is due to the result of the first self-assessment exercise with the Music Sheet. From that it emerged that the partners had already a number of information regarding the specific challenges that they wanted to address and the actors that most of them were already starting to work on community-building and had already identified some of the beneficiaries thanks to another tool, the stakeholder map.

Feedback Sessions

At the end of the first draft of the Business Models, the IH team organized as part of the mentoring programme applied, feedback sessions for each box of the OSHub SBC. The scope of these meetings has been to discuss the sustainability and feasibility of each section together and to promote a peer-to-peer learning approach in which partners could help each other by learning from shared experiences and common misunderstandings. In this context the IH team used as feedback tools tables summarizing dedicated comments for each partner and graphs to help partners adapt their approach and evaluate their level of sustainability.

The only exception has been for the Blue box feedback (cost structure and flow of revenues). In this

case it has been preferred to proceed with one-to-one feedback sessions to focus on the financial situation of each OSHub.

Table 2: Feedback sessions organized in the framework of the OSHub Sustainability Mentoring Program.

SOCIAL BUSINESS CANVAS SECTION	FEEDBACK SESSION
Red Box	March 18, 2021
Yellow Box	September 30, 2021
Violet Box	October 13, 2021
Green Box	October 21, 2021

As already anticipated, the graphics shared during the feedback sessions analysed the Business Models' levels of risk in terms of sustainability based on the inputs from the Social Business canvas filled by partners. The general criteria applied were five:

1. Low inputs (Unsustainable)
2. Strong weakness of input (High risk of non-sustainability)
3. Weak aspects to be reinforced (medium risk of non-sustainability)
4. Inputs are fair and sufficiently provided (low risk of non-sustainability)
5. Strong Inputs (no risk in terms of sustainability)

In addition to these, for the assessment of each section, other criteria related to it were considered. Down below the latest general graphics shared with the partner. The overall risk in terms of sustainability is really low because the Business models have been structured with strong inputs and depicted a clear picture of each OSHub.

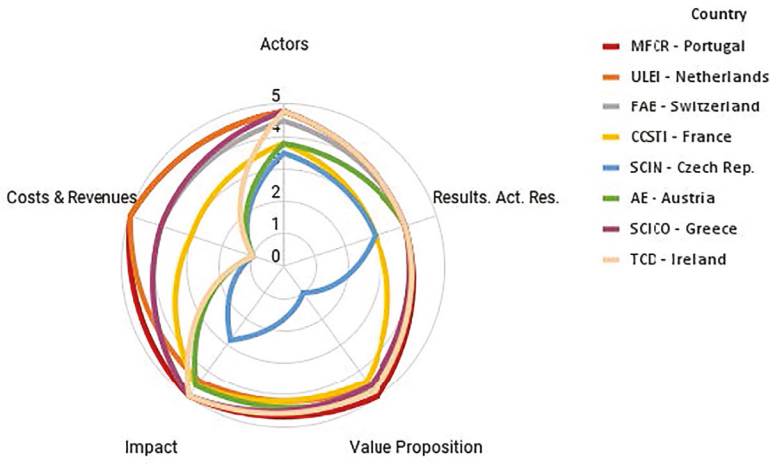

Figure 3: Risk assessment tool

4. Results – Activities – Resources: Reports

The workshop on the red box was carried out on December 3, 2020. After that, IH asked the partners to work on describing what kind of results, challenges, activities and resources they have identified or developed to realize the results. The results represent the specific objectives in which the value proposition, that is to say the main mission of the Hub, is broken up.

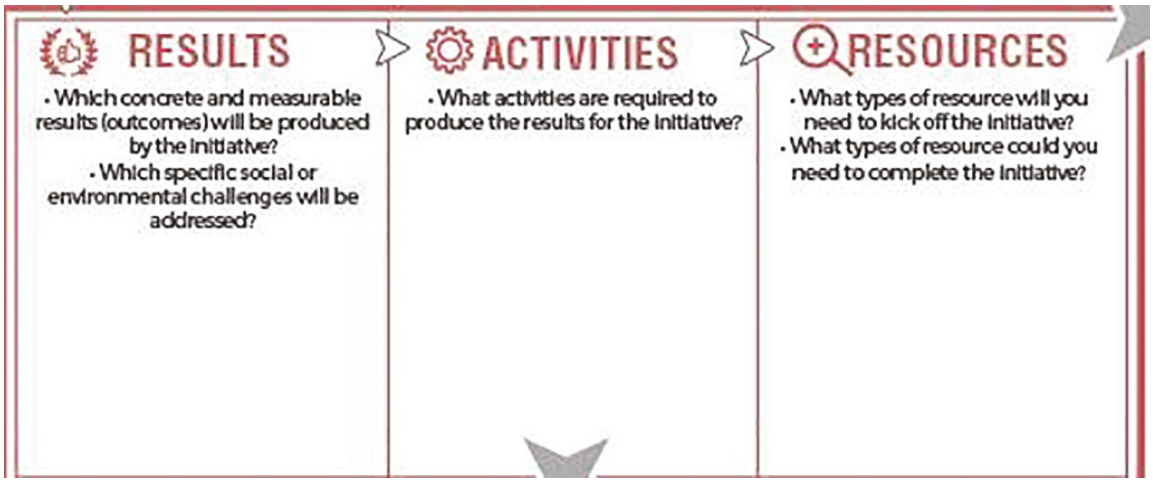

Figure 4: Red Box of the OSHub Social Business Canvas.

The synoptic table below shows the categories of actors that the Hubs decided to target and the process of engagement that they have followed.

More details are in the single reports of each of the eight OSHubs present in **Annex A** and at the following *link* with the living reports.

Table 3: Synoptic table on Results, Activities and Resources.

	RESULTS/CHALLENGES	ACTIVITIES	RESOURCES
AE L	1) Fostered digital literacy within school students in the Upper Austria region; 2) Fostered transdisciplinary thinking in young people between the age of 11-18; Challenges: lack of digital expertise; Technological literacy in non-urban regions of Austria	— Meeting with head teachers of an initial selection of 10 schools in the region to discuss whether they would be interested in implementing the program and within which curricula; — Approaching artists who have participated in the AE L festival that are working in subjects related to the desired curricula and requesting them to host a workshop; — Hosting a training session with each selected artist that is led by an AE L educator; — Hosting the selected artist led one-day workshops within the selected classes of the selected schools. Assessing the success of the workshops with a teacher survey and the selected Digital Literacy assessment tool for the participating students	**Human:** — Project manager — Artists to host the workshop **Material:** — Materials and tools required for each workshop (diverse and specific to each type of workshop)
CCSTI	1) Improved autonomy and willingness of using OSHub resources, number of OSHub driven projects; 2) OSHub Fab Lab designed, made with teachers, educators; 3) Promoted "the well-being together" with projects involving wide range of partners; Challenges: School failure; socio-economic local issues	— Develop the program with the local stakeholders and the management board: meet and exchange to develop active collaboration; — Teacher trainings provided by education partners; — Workshops to create kits and resources using the potential of the OSHub project; — Meetings with the locals to identify projects and brainstorm solutions; — Benchmark the opportunities of financing the projects : Foundations, french calls, etc.	**Human:** — Project leader — Fab facilitator La Casemate — La Machinerie experts **Material:** — Consumables — PC — DIY Furniture
FAB	1) Strong relationships between Onl'fait, 3-10 secondary schools in the Geneva region and 3-10 other community stakeholders; 2) Increased student awareness of the scientific and technical local issues that they will work on; 3) Increased scientific and technological literacy of the weakest students. 4) Strong relationship with the Département de l'Instruction Publique (DIP).	— Teacher and stakeholder consultations each year of the Open Science Hub programme. These activities take the form of co-creation sessions. — Design and develop working prototypes for increasing scientific and technological literacy. — Collect and analyze data for competency building with respect to societal and environmental issues to 3 to 10 schools. — Evaluation tools to help us, students and schools to evaluate the quality of the programme and its outcomes. — Disseminate the results of the school initiative and promote Open School at cantonal and national level.	**Human:** — Experts — Researchers — Policymakers — Fab: Coordinator, facilitator, electronic exp.

FAB	5) Furnish about 30 square metres of our Fab Lab Challenges: Local environmental and societal	— Development of relationships between vocational schools and relevant stakeholders. — Development of a formal educational program grounded on concrete research questions related to the territory.	Material: — Tools to build prototypes — Co-creation tools
MFCR	1) Promoted the use of OS approaches by teachers; 2) Fostered students' active citizenship; 3) Promoted the collaboration between partners and schools; 4) Increased the connectedness between students and R&I professionals / artists / entrepreneurs; 5) Increased student and teacher digital literacy and autonomy in using digital tools/platforms Challenges: Social and Environmental	— Capacitation of teachers and school heads on OS via: a certified continuous training program for local and regional schools, organization and facilitation of OS project follow-up sessions for teachers; — Development of a formal/non-formal educational program grounded on concrete research questions related to the territory, based on research and citizen-science practices, co-created with teachers from the school science club; — Development of a program aimed at increasing the connection between students and professionals from research and innovation / artists / entrepreneurs.	Human: — 1 program coordinator (1 FTE) and team members — 1 program coordinator from the school — 1 representative from a teacher training center Material: — a physical space/ room; — computers; — internet connection; — digitaltools/platforms
SCICO	1) Created tangible projects that address real issues in the community of Lemnos 2) Created a live network between school and local stakeholders; 3) Increased student and teacher engagement in STEM education; 4) Increase student awareness on SDGs and environmental issues in Lemnos. Challenges: Environmental, educational, social, technological (SDGs 4, 12, 13, 14, 15)	— Design an Educational curriculum (Arduino, App Inventor, 3DPrinting) which will give school necessary knowledge to create projects; — Run educational workshops on a weekly basis to teach curriculum — Co-creation activities twice a year to identify issues/related activities — Issue open call for potential project partners — Hold regular sessions/meetings to drive collaboration, design new ideas/projects, etc and common event to share results with everyone present — Run a workshop on the SDGs — Hold 1 or 2 training events for teachers involved	Human: — Project manager — STEM educators Material: — Platform for online meetings — 3D printer, Arduinos, sensors, etc
SCIN	1) 5 local OSHubs (three schools, two NGOs) established;	— Training for kids in use of technologies needed for production of TV series, while putting the kids in the role of actual team shooting a documentary on a popular topic(s).	Human: — Local coordinators — National coordinator — Technical staff — Trainers

SCIN	2) Established school-led form of education which is engaging students, teachers, parents and various local actors for knowledge-based community development 3) Tackled environmental, historical, cultural, socio-economic issues faced by local communities 4) Built relationships and networks among different levels of stakeholders concerned with sustainable development of local communities Challenges: Environmental	— App editor for OSHub's use (creation of geolocated iOS and Android mobile app, which can be used for connecting any physical location via online map with any historical/social/environmental online content). — Training for children focused on using the prepared App creator. — Educational program on air quality involving citizens — Shooting of educational series co-produced by Czech Television (channel for designated for kids) about engagement of kids in scientific exploratory activities	Material: — Physical premises for 5 OSHubs (use of already existing ones) — Posters, leaflets, etc. — IT equipment (two notebooks, go-pro, 3D printer, etc).
TCD	1) Built relationships between Science Gallery/ TCD,) schools and other community stakeholders; 2) Increased student awareness of their potential to effect change in society with respect to active global citizenship; 3) Motivated students who identify with local challenges with respect to the UNs Sustainable Development Goals. 4) Useful frameworks and facilitation guidance for schools to replicate and lead the Open Science Hub program Challenges: Climate change/ pollution, discrimination, coronavirus impacts, poverty	— Teacher consultations at the beginning of each year of the Open Science Hub programme. These activities take the form of co-creation and/or focus groups. — Development of a year-long Transition Year curriculum including competency building and student-led project builds. — Develop and deliver a set of workshop activities for competency building with respect to active global citizenship to three schools over two years. — Experimentation with tools and resources to create a well of activity types to suit students and teachers. Particular focus on tools that can work in a remote learning setting. — Prototyping of online, hands-on STEAM workshops with a youth audience (15-25s) — Development and dissemination of teacher packs that enable schools to facilitate the Open Science Hub programme, not bound to the Dublin area with less regular engagement with Science Gallery/ TCD. — Teacher training at the start of year 3 for the Open Science Hub curriculum, tools and stakeholder management.	Human: — Project leader — Fab facilitator La Casemate — La Machinerie experts Material: — Craft, handouts — Online materials (Mural, Mentimeter, Google classrooms etc)
ULEI	1) Reduced the workload of primary school teachers and students 2) Increased educational opportunities of primary school student	— Develop a programme that matches (2) university students to schools — Set up a training programme together with several partner from Leiden University and the primary schools to train uni students on basic didactic, pedagogical and professional knowledge and skills	Human: — Scientific experts — Uni Students — Project coordinator

ULEI	4) Increased number of societal experiences for uni students 5) Improved attitude of uni students towards a career in education 6) Improved in primary school students' test results, confidence and wellbeing Challenges: Social and Collaboration	— Set up research to visualize the effects of the project to understand the impact of the project and to build a case for future funding — Set up a sustainable plan for the future of the project, by looking for future financial opportunities and potential collaborations (for example campus The Hague, schoolboards)	Material: — Laptop, — Teams — Website — Catering

The synoptic table presents general information delivered by the partners in the reports about the red block. It is possible to read the detailed version of the reports in the annexes.

What emerges from the information is a general homogeneity among partners in the identification of results. All the partners' specific result is the improvement of students in scientific and technological subjects by engaging the teachers and updating curricula, as well as the willingness to promote the open schooling approach to build awareness among schools and communities on their power to address social and environmental challenges. All the reports then stress the willingness to increase and improve the cooperation between different stakeholders of the community of reference, thus pointing out the evident lack of connection and collaboration between the different sectors of the society.

The differences are mostly related to the nature of each partner's organization.

For instance, as a university organization, the results of ULEI highlight that attention is both paid to the well-being of the school students but also the interests of university students, an element that is present only in their report.

The same kind of reasoning appears also in the approach used by FAB and CCSTI. From their results emerges clearly their past experience as Fab labs and therefore the capitalization of the traditional services offered by these kinds of organizations. Two of the partners, TCD and MFCR focus their attention on the importance of global citizenship in raising students' awareness, while a specific attention is dedicated to the SDGs of the United Nations by many of the hubs due also to the suggestions made by the questions present in the Social Business canvas.

The challenges are mostly socially – environmentally driven and are mainly locally based, SCIN on the contrary has a wider territorial diffusion. Some partners underline in fact environmental problems in their regions or provinces (FAB, SCICO, SCIN) and socio-economic issues present in the most difficult neighborhoods (CCSTI). The only challenges that are different is the one identified by ULEI, which, apart from focusing on social issues, addresses the traditional lack of communication between crucial stakeholders in the region. The decision-making process with which these challenges have been identified is not always a bottom-up approach. Some hubs have in fact opted for a top-down approach to facilitate the engagement of actors that may lack time to dedicate to the project.

The activities as well as the results, present some common elements and some differences. As

common elements we find training programs for students carried out by experts, workshops and meetings with local stakeholders. The approach with which these activities are carried out recalls the open schooling promoted by the OSHub.Network project and co-design and co-creation sessions.

Some partners that really are engaged in the co-design approach have also envisioned consultations' sessions.

As for the results, also for the activities the differences among them depend on the curricula of the hubs and their previous experience.

FAB, SCICO and CCSTI focus their workshop on the building of prototypes and the use of laboratories, in some cases already present in their structures. TCD proposes a similar program, by promoting the use of experiments. While AE L proposes a peculiar combination of technology and art, by involving the artists that already incorporate tech in their exhibitions, thus combining the purpose of the OSHub project with the art festivals already carried out in the traditional programs of AE L.

A different program comes from SCIN which puts school students behind the camera by involving them in workshops aimed at gaining skills about the creation of documentaries thanks also to the relations that SCIN already has with local and national television. ULEI, as already mentioned, proposes a program that aims at encouraging the meeting between university students and school students so that they can both learn from each other respectively the interest in education and teaching for the Uni students, and the interest in science and technology for the school students.

MFRC is instead really focused on promoting global citizenship practices together with different important actors of the community. The idea behind the activities is to combine the previous skills acquired in this field to the concept of open schooling.

The resources are very similar from one another and there isn't a real difference as it appears clearly from the synoptic table. Most of them envisaged a management team composed of coordinators, experts and researchers. The material resources are strictly related to the realization of laboratories and prototypes.

In the conclusion remarks of each report, the main issue that emerged has been the impact of covid-19 that affected all the OSHubs.

The sudden shut down of schools, offices and the necessity to focus the attention on how to reorganize the work of the partners' organizations as well as to adapt every activity to distance learning, has switched the priorities of the actors involved. Hence, partners had to revise their results and activities, and are still in the process of doing that, based on the limitations caused by covid-19.

However, the reports delivered by the OSHubs show that despite the delays and obstacles produced by the pandemic, the partners have structured the foundations for their OSHubs by identifying clear and specific results, challenges as well as the activities through which they want to implement those results. The outbreak of Covid-19 will force them to revisit some of the results and it is possible that the pandemic consequences will be part of the challenges on which they will focus.

In this case, the reports as well as this document will be adapted accordingly.

5. Actors, Key Obstacles, Relations And Channels: Reports

The workshop on the actors' block of the OSHub Social Business canvas was delivered by IH December 17, 2020. The partners were then asked to deliver a report.

The report dedicated to the Yellow section focuses on the actors divided in: Beneficiaries, collaborators, providers, partners and influencers; the key obstacles that the OSHubs have already encountered and most probably will, encounter in the process of engaging the stakeholders; and the relations and channels put into place for engaging the mentioned actors.

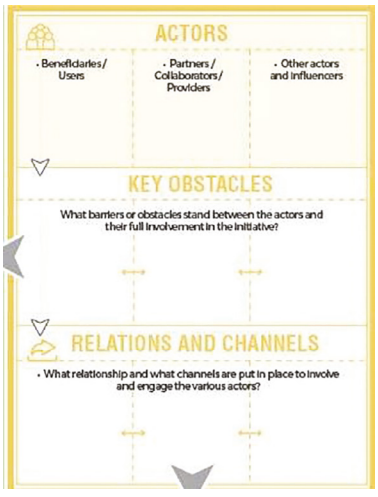

Figure 5: Yellow Box of the OSHub Social Business Canvas.

The synoptic table that follows shows the categories of actors that the OSHubs decided to target and the process of engagement that they have followed as well as the strategies used to catch the stakeholders. More details are in the single reports of the eight OSHubs present in Annex B and at the following *link* with the living reports.

Table 4: Synoptic table on Actors, Key Obstacles, Relations and Channels.

	ACTORS	KEY OBSTACLES	RELATIONS & CHANNELS
AE L	**Beneficiaries:** school students aged 14-18, artists who are support in developing educational workshops, Teachers **Other:** Individual teachers, Schools, industries	— Lockdown and travel restrictions	— Ars Electronica festival — Regular teacher co-creation and feedback sessions — Consulting calls with artists
CCSTI	**Beneficiaries:** Teachers, Students, Inhabitants **Other:** La Machinerie, school directors and inspectors, education trainers, Grenoble Alpes University	— Mental clousure of beneficiaries (teachers mostly) to understand the potential of the project and of a collaboration with a FabLab. — Lack of time from teachers, and a lot of difficulties affects students caused by social problems within the families, Also, violence is — Increasing a lot in the area, so the kids are stressed by this bad atmosphere. — Covid-19	— Meetings at the new — OSHub (La Machinerie) — Opend days
FAB	**Beneficiaries:** Secondary schools in Geneva, The Canton (regional government), La Maison de la Rivière, FAB **Other:** Post Tenebras Lab, Musée d'Histoire Naturelle de Genève, Syndicat des jeunes, Office Cantonal de l'eau	— **Teachers:** The impossibility of in-person meetings make them not fully engage in the project. Organizational issues with their school is also an obstacle. — **Students:** Little engagement due to non-physical gatherings. — **DIP:** No participation because of the COVID crisis even though they are very interested. — **Local community:** The impossibility of in-person meetings makes it hard to fully engage in the project. — Covid-19	— Contact the stakeholder via email or telephone — Send a dossier to stakeholder — Organise a meeting or call — Follow-up to keep the relationship solid
MFCR	**Beneficiaries:** School-heads and teachers, high school students **Other:** Municipality, University, Parents' and Students Associations, Teacher training Center, firefighters, professionals from R&I / artists / entrepreneurs.	— **Teachers:** Lack of knowledge on IT/digital platforms can make them not engage in the training course. Due to a lack of an holistic approach to education in general, teachers find it very hard to implement OS projects and use OS approach/methods/tools. Time constraints. Implementing Open Schooling projects with primary students has been a challenge as it requires the use of tools that fit this age interval. — **Students:** Lack of knowledge on the use of IT equipment and digital platforms. Lack of motivation for students to participate in school activities and is very hard to engage them outside the school period in activities — **Local community:** Low participation due to the lack of interest from the local community to engage in active citizenship projects that address local challenges. — Covid-19	— Direct access to members of school boards and different stakeholders and beneficiaries — Zoom meetings, phone, email, face-to-face contact — Social media (e.g. Facebook, Instagram)

SCICO	**Beneficiaries:** Secondary students, teachers **Other:** Dep. of Food Science and Nutrition of the University of The Aegean, municipality of Lemnos, parents association, local businesses and enterprises, local NGO	— **The municipality:** Lack of time and dedication — **Teachers:** Lose their motivation as the project offer doesn't give them tangible incentives and is based on their own willingness and motivation to spend extra time out of school — **Students:** Can't easily stay longer hours after school because there is no later bus to take them home a lack of trust between stakeholders — Covid-19	— Meetings — Press Conf. — Viber group
SCIN	**Beneficiaries:** Teachers, students, parents **Other:** Local policy makers, activists, scientists, artists	— **School:** Separation of formal and informal education, which poses the biggest barrier between actors — **Budget:** Schools do not operate with sufficient budgets to boost more open--schooling-focused activities, while the OSHubs do not carry sufficient budgets to overcome this barrier — Covid-19	— Direct access to actors and stakeholders
TCD	**Beneficiaries:** Schools (Students and teachers), Local communities **Other:** Academia, industry, charities, NGOs, artists, local councillors	— **Schools and local communities:** Schedule meetings and motivate students with limited hands-on opportunities and digital settings. Also our approach to the Open Science Hub programme is a year-long engagement and it can be challenging to communicate to students that results or outputs will not come quickly and what they are doing across the months is interlinked and contributes to their final project outcomes. — **All actors:** Management of time, Resource management, Sustained long term commitment — Covid-19	— Meetings — Weekly phone check--ins with teachers — Quarterly teacher review — Student mentimeter surveys — Student zine reviews — Ideation session — E-newsletter
ULEI	**Beneficiaries:** Primary schools, with their teachers, students and school heads, University/Applied science school students **Other:** Policy makers, experts	— **Hierarchy.** Regarding the influencers, it is quite time intensive to meet with them. — **Trust.** There is this invisible barrier of mistrust between Leiden University and The Hague. It might be due to the lack of knowledge about the other organisations and what they do. — **Sensitive procedure.** Especially by embedding this project in the different councils in the Hague is time consuming — Funding, there are some conflicting interests between the partners. — Covid-19	— Students meeting and training session — Interviews — Meetings — Policy paper — Action plan

From the reports of the yellow block emerges a homogeneity in the identification of the actors already involved or who are planned to be involved. The reports in this case are very specific due also to the use of the stakeholder mapping tool. The partners were asked to differentiate the beneficiaries from other types of actors, that for the purpose of the synoptic table have been divided between beneficiaries and other partners. The category of "other" in this case includes: collaborators, providers, partners and influencers. To have a more specific understanding of the identity of the single actor it is advised to have a look at each report in the Annex section of this document, as well as, the stakeholder maps that the partners have filled.

The beneficiaries are mainly school teachers and students from different grades. ULEI, in line with the activities and results described, also identifies the university students as both beneficiaries and in a way, providers.

As for the category of other actors, there are a variety of stakeholders involved depending on the peculiarities of each OSHub. In general, it is possible to observe that there are some recurrent kinds of actors in all the reports: Universities/researchers and local policymakers/municipalities. For the rest, the tendency is to oscillate towards a more socio-cultural environment (artists, local NGOs, activists, museums) on one side, and towards local businesses and enterprises on the other side. It is very common for the partners to try and involve both sectors of society.

The key obstacles identified, although very similar, present some differences that are mainly related to the local environment.

The difficulties encountered with the teachers have two main variables: time and lack of knowledge and therefore lack of motivation.

Specifically, CCSTI, MFCR and SCIN all expressed a difficulty from the teachers either to understand the potential of the project or to fully understand the advantages of an Open Schooling approach. SCIN underlines the difficulty for teachers to adapt to a "non-formal/non-traditional" kind of education.

All the partners stress the issue of time.

To all these obstacles is added the effect of the COVID-19 pandemic, that has forced teachers to adapt to distance learning, which has revealed to be both time-consuming and difficult to organize, thus leaving little space for extracurricular activities.

The difficulties encountered with students also travel along two main lines: distance learning and lack of time/motivation.

The outbreak of the pandemic demonstrated a clear deficiency in the knowledge on IT devices (MFCR, TCD) or in some cases, as CCSTI underlines, even the lack of IT devices due to socio-economic problems within the families. SCICO and MFCR have also underlined the students' lack of time or motivation after school, either for the lack of bus services that doesn't allow them to remain after the school hours or for a general lack of motivation that does not push students to stay longer at school, nor connected online.

Finally, some partners identified obstacles related to beneficiaries' lack of funding/budget and in turn resources (SCIN/SCICO) or obstacles caused by a conflict of interest between organizations involved in the activities of the hub (ULEI), contributing to the lack of motivation in teachers and creating organizational issues.

The difficulties encountered with other actors (collaborators, partners, providers, influencers) are

the same for all the OSHubs. Lack of time, lack of engagement and lack of interest are the main issues. It seems that it is very difficult to engage policy makers and municipalities because of the traditional lack of time these actors have and a general lack of interest in these kinds of projects, thus underlining a tendency in local authorities to show little interest in non-traditional social and education-based initiatives.

SCICO and ULEI emphasised two key obstacles when trying to engage different kinds of actors: Trust and Hierarchy. As a matter of fact, there appears to be a resistance from some actors to trust other actors in one case and very rigid hierarchies that slow the engagement process on the other.

The last section of the report is devoted to the approaches and tools used to build and maintain channels and relationships with the different actors identified.

In this case the strategies elaborated by the OSHubs differ even though all have in common the organization of meetings as a crucial tool to both meeting the single actors involved with one-to-one sessions or by organizing community meetings to build connections and cooperation among the actors involved.

CCSTI's strategy revolves around physical space. They organized meetings and open days to let the community know the laboratory, the services and the potential opportunities to develop new projects.

Other OSHubs such as SCICO, MFCR and SCIN also capitalize relationships already established with previous experiences with some of the actors involved, using that direct access to them. ULEI and FAB use not only the traditional tools and strategy of communication but also the dissemination and sharing of policy papers and dossiers as means to start the conversation and attract the attention of possible actors to involve. In the report of TCD emerges the different ways in which they are engaging and nurturing the relationship with students and teachers by using tools as surveys, zines and ideation sessions to really stress the co-design and co-creation approach of the OSHhub. network project. As a means to share the information with the larger community there is also the use of the newsletter.

All the hubs in various ways use zoom calls, phone calls, emails and chat groups, especially since the Covid-19 pandemic.

As already anticipated, even in this case the OSHubs have suffered the consequences of the pandemic. Building relations and involving actors has revealed to be a really difficult task in a world in which all meetings are forbidden and distancing is advised. Nevertheless, all the OSHubs, thanks also to their expertise in the use of IT devices have tried their best to adapt to the "new normal", trying to transfer all the meetings and activities on-line. All of them have engaged in the use of tools such as Mural, Mentimeter, Slido, Zoom to facilitate as much as possible the communication and the direct engagement of beneficiaries, collaborators and providers.

Finally, while they succeeded in creating a Management board as a support body for the hub, they now struggle to keep some representatives from the management board as involved in the hub's activities and planning as others. This comes mainly from the fact that it is difficult to keep high the level of involvement of actors such as municipalities or regional public institutions. Another challenge related to the actors section comes from the struggle to identify channels and strategies to involve the private sector. For partners it is not easy to identify a "selling point" in the education programs that they developed, therefore limiting the landscape of actors that directly or indirectly could contribute to the flow of revenues. These issues emerged are being dealt with by peer-to-peer learning moments: inspirations sessions, workshops and cooperation that are helping partners to find common solutions.

6. The Value Proposition: Reports

The workshop on the Violet box of the OSHub Social Business canvas wasn delivered by IH February 12, 2021. The partners were then asked to deliver a report for each OSHub (see Annexes).

As already suggested above, the Value proposition is the beating heart of the Social Business Canvas because it represents the main objective behind any social business or business in general that allows the project idea to live and breathe. Identifying the value proposition is also important because it is the beginning of the logical process to regulate the Social business canvas. In the end every box needs to be coherent and logically related to the Value proposition, because every block is the piece of the puzzle that composes the big picture, which is in fact the value proposition.

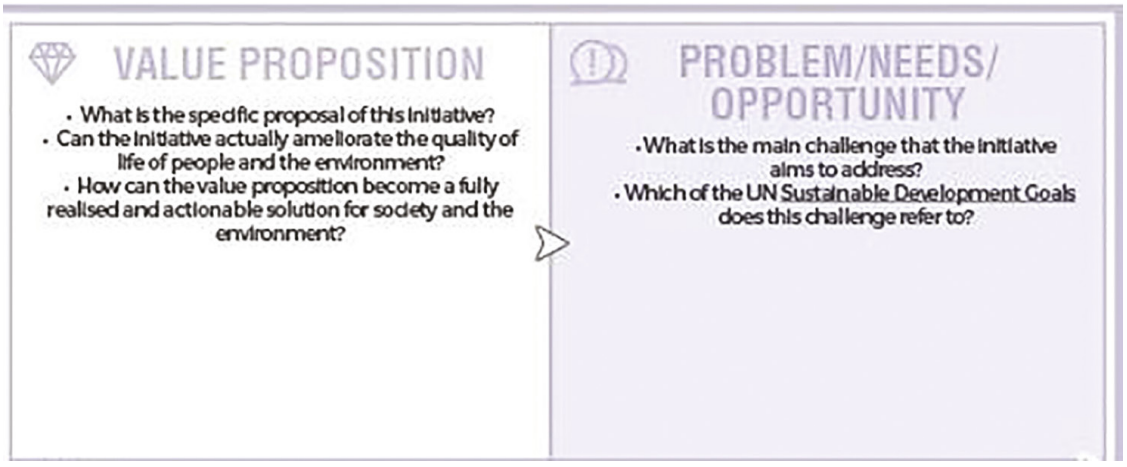

Figure 6: Violet Box of the OSHub Social Business Canvas.

The synoptic table that follows shows, in a summarized way, the eight value propositions of the eight OSHubs. It is possible to read the more detailed version of the reports in the Annex C and at the following *link* with the living reports.

Table 5: Synoptic table on Value Proposition.

	VALUE PROPOSITION	PROBLEM/NEEDS/OPPORTUNITY
AE L	To increase digital skills and promote critical and creative thinking in young people aged 11-18 by inviting artists working with technology to lead workshops in schools. By introducing artists and their methods of thinking when working with technologies we can promote critical understanding of technology in young people. This can lead to a human-centred digital society that can critically reflect will ameliorate the quality of life of people and their environment. **How:** The establishment of Ars Electronica as an ongoing facilitator that can offer not only this service but continue to nurture a sustainable network of schools and teachers is how this could be realized.	Problems/Needs: — Equipped artists with skills in knowledge-transfer to develop workshops based on their practices. — Connecting and communicating with individual teachers — Establishing a sustainable funding model so that the program can avoid a stop-start SDG 4, SDG 9 Opportunity: — In facing the challenge of uncertainty of COVID we have seen the problem of hosting workshops on-site in school as an opportunity to develop new skills in hosting workshops online. This has become an opportunity in increasing reach and accessibility of the initiative.
CCSTI	Support and help teachers to develop new projects using the OSHub ressources and increase the number of projects making tangible objects. Projects will help students to develop their knowledge, their feeling of being an active part in the community. **How:** Capacitate teachers and stakeholders with fabrication skills that will allow them to prototype in the Fab Lab. We will also promote connections and collaborations between local partners and schools.	Problems/Needs: — Social and economic difficulties increased by the pandemic. — Surge of violence SDG 4, SDG 10 Opportunity: — Teachers are willing to continue doing projects with the students, and they see OSHub as a good opportunity to be helped. Plus, the government has labeled the area "Cité Educative" and this will bring funding for education projects.
FAB	Offering a methodology and practical tools to place schools at the center of community projects about sustainability, science and technologies by providing support to teachers and students. Scientific and technology literacy, community engagement, collecting data about the environment are key factors to ameliorate the life of people and the relationship with the community and the environment. **How:** The physical Open Science Hub located at the Fab Lab will become a pole for knowledge exchange, teacher training and schools' programs that will make the project sustainable over the following years.	Problems/Needs: — Creating a platform easy enough to be used by all actors — Students who are less motivated and interested in science and technology. — Overcome Covid limits SDG 4, SDG 6, SDG 11, SDG 14 Opportunity: — Learning to use tools like Mural to facilitate sessions and alternate remote and live sessions.
MFCR	OSHub-PT/Plat. de Escola Aberta supports and works together with schools in the co-creation and integration of relevant and sustainable strategies that promote the development of active citizens in addressing local challenges, through research and innovation projects in collaboration with relevant actors.	Problems/Needs: — Lack of autonomy and confidence of teachers in handling with OS approaches and integrating them in their curricular practice — Lack of active citizenship and low collaboration between partners and school — Lack of connectedness between students and research & innovation — Low digital literacy of students and teachers

MFCR	OSHub-PT wants students to feel that they are and want to be agents of change, and that they have the tools to take informed decisions and actions. Additionally, students are hubs and drivers for collaboration in their communities, via their families, friends and social networks, and as such have a great potential to achieve a wide impact, with repercussions in the quality of life of individuals and the community, as well as in the environment. **How:** Capacitating students / teachers / stakeholders with skills that will allow them to address local challenges and use the scientific methods autonomously; promoting a strong connection and collaboration between partners	SDG 4, SDG 5, SDG 6, SDG 10, SDG 11, SDG 12, SDG13, SDG 15, SDG 17 Opportunity: — Close professional relationship with teachers at an intermediate decision-making level, allowing for co-creation/co-development (in formal and non-formal contexts). Improve the distance learning, through capacitation of teachers/students in digital platforms/tools integrated with curricular needs. Drinkable Rivers existing project and their kits (for monitoring water pollution)
SCICO	SciCo Maker Lab aims at supporting and working together with the educational community (schools, educators, students) in order to enhance STEM education and hands-on learning. By turning to more inclusive and hands-on teaching approaches, students are more motivated and show agency through having a voice, a choice and ownership of their actions in the local community. **How:** A necessary step is to go from a pilot project to a larger scale, including more schools, teachers and stakeholders. Through a train-the-trainer model, the knowledge and skills acquired remain in the community and can be transferred to the next school years and generations by the students. The co-creation methodology and the active involvement of multiple stakeholders will keep the focus on real and relevant challenges which will need actionable solutions and have an inner drive.	Problems/Needs: — Drive student and teacher motivation and digital literacy — Move to a more student-centered educational approach through hands-on learning — Equip teachers and schools with necessary resources — Connect school subjects and learning to the real world — Drive transdisciplinary learning and collaboration — Connect the school with local stakeholders and the broader community SDG 4, SDG 12, SDG 13, SDG 14, SDG 15
SCIN		
TCD	Promoting trans-disciplinarity and active global citizenship with Transition Year (TY) students through a TY module that can be sustainably delivered in secondary schools year on year. Additionally, providing or pooling networks of stakeholders that can help build student action out into local communities and vice-versa. **How:** Transforming learning (Alternative / Contemporary learning approaches) Pilot > Forum > Training wheels off > Review	SDG 4
ULEI	By matching University students to primary schools, we are opening up schools to different members in the community and by this help them overcome academic, emotional and creative lag and challenges. Offering meaningful and relevant societal and educational experiences to the actors in the project and by this, improving career opportunities and decreasing loneliness and anxiety for university students.	Problems/Needs: — Social/economic disadvantaged neighbourhoods in The Hague are facing severe problems due to corona. — Increased workload due to Teacher shortage and pupils are falling behind in their academic, creative and emotional development.

ULEI

How: By recruiting, training and matching University students to schools, to offer tailored support tuned to the specific needs and challenges of each school. By offering the university students a side job and relevant training in primary school education, to give them a valuable societal experience. On top of that, by carefully assessing where the support of students is most needed and by providing extra support to the children who need it the most, pressure is released on the teacher workload, leaving teachers with more time to carry out their regular duties.

— Quality education for all primary school children in The Hague and extra support for teachers.

SDG 4

Opportunity:

— University students have time and energy to help the schools, Governmental financial support (social economic recovery plan) and Schools are more eager to open up to external support.

The value propositions of the eight OSHubs present some common features despite proposing very different project ideas.

In addressing the problems/needs section, partners focus mainly on the lack of students' motivation and knowledge about technology and science. This appears to be the main issue together with socio-economic difficulties as stressed by ULEI and CCSTI. The thread of motivation goes hand in hand with the identification of local stakeholders (mainly municipalities and governors) lack of commitment and cooperation.

In the Social Business Canvas there is a specific question dedicated to the SDGs that the OSHubs want to tackle with their value proposition. All eight OSHubs have chosen SDG 4: quality education, together with other goals on climate change, sustainable communities and cities, preservation of sea and forest as well as peace and justice.

However, if the problems and needs reflect in part the challenges identified both in the yellow and red blocks, the value propositions blocks seem to present a very innovative and positive output. Many of the OSHubs have in fact recognized the Covid-19 pandemic as an opportunity, a blessing in disguise.

Despite the outbreak of the virus has limited and delayed most of the steps that they were doing, it has also pushed them to adapt to the new reality and try to transform the negativity into opportunity.

So, many of the reports highlight the fact that covid helped them to develop new skills in the use of digital tools to communicate with the beneficiaries and collaborators, as well as innovative digital tools (Mural, slido, Mentimeter) to facilitate and carry out co-design and co-creation sessions from distance.

Some of them also included the willingness to focus on the exacerbation that Covid is producing on social issues that otherwise would have been left untreated.

As explained above, to identify the problems and issues to address, as well as to exploit the opportunities is crucial to develop a clear and coherent value proposition. The value proposition presented in fact reflects and responds to the issues listed in this section.

As already emerged from the actors' section in the yellow block, they all seem to target the same categories of beneficiaries (Students and teachers). However, the value propositions pictured, show very different approaches with which the OSHubs decided to address needs and problems by identifying objectives and goals to achieve.

Some of the partners (AE L, FAB, CCSTI) underline straightaway the importance of the physical space, that is provided in this project for OSHubs, as a means to reach out and let the beneficiaries (students and teachers) experiment and prototype new project and scientific and technological experiences.

In general, then, it is possible to divide the value propositions in two variables. On one side OSHubs such as AE L and CCSTI attention is devoted to increasing and improving the knowledge of digital skills/digital literacy by promoting STEM curricula and, in the case of AE L, by stimulating the interest towards technology and science through art. On the other side the value propositions stress the importance of students' agency in relations to the local challenges and to the local community. FAB for instance underlines that scientific and technological literacy are key factors in stimulating the students' engagement in addressing local challenges.

MFCR stresses the importance to boost active citizenship in students by implementing research and Innovations projects using co-creation approaches. A similar importance to the students' agency comes from the value propositions of SCICO and TCD that both, with different instruments aim at increasing students' action into the local communities, also by encouraging collaboration and co-operation between different stakeholders within the local community.

Peculiar is the case of ULEI, as it is the only one to consider university students as beneficiaries, poses them together with school students and teachers at the center of the value proposition. In particular it is their well-being to be the aim of ULEI OSHub. Overcoming anxiety, loneliness and excessive workload on one side and allowing both young school students and university students to discover new possible career paths.

Altogether, it is possible to observe how in these value propositions converge the information gathered in the red and yellow boxes, therefore showing the mechanism of the OSHub Social Business Canvas.

From the central role of art in the AE L's case, to the involvement of university students in the ULEI's case. These value propositions are in the blossoming phase and, as for the other blocks, will be subject to adaptations and changes due to the Covid pandemic and this document will adapt accordingly.

7. Impact: Reports

The workshop on the Green Box of the OSHub Social Business canvas has been delivered by IH April 29, 2021. The partners were then asked to deliver a report for each OSHub (see Annexes).

As already mentioned above, the section about Impact is one of the most significant elements of the OSHub Social Business Canvas. It comes from the traditional logical framework used in the project cycle management and asks the partners to reflect on the kind of impact they aim to produce. As for the logical framework, in this section impact is not only divided in local, social and environmental but, most importantly, is related to the identification of measurable indicators to assess the level of impact produced. Furthermore, partners are led to think about what side effects and external conditions can influence and "impact" positively or negatively the OSHub.

Figure 7: Green Box of the OSHub Social Business Canvas.

The synoptic table that follows shows, in a summarized way, what the eight OSHubs consider as impact and what kind of external conditions, side effects and indicators they perceive as important. It is possible to read the more detailed version of the reports in the Annex D and at the following *link* with the living reports.

Table 6: Synoptic table on Impact.

	EXTERNAL CONDITIONS	IMPACT (LOCAL, SOCIAL AND ENVIRONMENTAL)	INDICATORS	SIDE EFFECTS
AE L	Restrictions from Covid-19 have prevented the originally designed OSHub program made up of hands-on DIY workshops from being undertaken within schools. On the other side, the pandemic also led to redesign of the original OSHub program that is now focused on online workshop activities. This has increased skills and resources of the OSHub and Ars Electronica in delivering digital education programs, also expanding the reach of the program to beyond the immediate local region.	— Inspired experts of art society and technology at the early-stage of their career to translate their expertise into non-formal educational formats; — Increased digital literacy in students and promoted creative and critical thinking — Increased awareness of Digital Humanism perspective — Reshaped the use of digital technology as human-centric and conscious of the negative effects that digital technology can have on society, democracy.	— N. of workshops co-developed with experts that have been implemented within a school and have been successfully evaluated by teachers — Evaluation from teachers in non-structured feedback sessions — Value of audience reach – panel audience, workshop participants, page views, publication sales, social-media engagement	Unintended side-effects from the initiative is that teachers and schools reduce their own resources from activities focused on creative and critical thinking and digital literacy due to the contribution towards these activities within the school from the OSHub.
CCSTI	The several covid-19 lockdowns have slowed the project: physically installing the project as well as the projects with schools.	— Developed new skills for students, teachers participating to the OSHub activities — Less school failure — New projects about local production of vegetables for examples	— Surveys for participants: teachers, students, workshop participants — Number of projects in progress that are led by local stakeholders	Opportunities for future partnership with the university
FAB	— Funding to public education. This would limit or boost the impact of OSHUB Switzerland because schools and the DIP (Département de l'Instruction Publique) could invest differently in innovation programs — Another pandemic that put schools under stress and limit face to face exchanges and ultimately exchanges tout court — Educational priorities set by the Canton and the Confederation. At the moment sustainability and technologies are big themes but political decisions could put the focus on other aspects of education.	— Increased student awareness of the scientific and technical local issues that they will work on. — Increased scientific and technological literacy of the weakest students. Working prototypes of devices will prove their capacities and achievements — Increased the role of the Fab Lab among the actors of science and technology education in the Geneva region — Created monitoring stations for water and CO_2 that can be used by schools and citizens in Switzerland. Collaboration between org. like the Cluster eau (FR) and La Maison de la Rivière (CH) that work on the same ecological topics.	— 1 distribution list of about 30 schools that know OSHub personally expected to answer when solicited — 1 distribution list of about 15 stakeholders that know us personally expected to answer when solicited — N. Participation in local, national and international conferences. — N. Invitations to present the Open Schooling as a successful methodology — 1-3 prototypes that will become schools kits with a proper documentation published on GitHub and other channels	The development and construction of educational kits to be distributed in the German speaking part of Switzerland. This is an opportunity that we are working on stemmed from the collaboration with la Maison de la Rivière.

MFCR	Change of teachers in the next school year because of the annual teacher turnover, could make the integration of the Open Schooling strategy in the school's structure and processes harder. At the same time, this also creates an opportunity of having OS ambassadors in other schools and to create a regional/national network. If the pandemic situation gets worse and requires another lockdown, several activities will be impacted as has happened last year. Other factors that could eventually affect the work (positively or negatively) are the results of local elections in the Fall of 2021.	— To fully embed OS practices in the discipline of Citizenship and Development in the school group of FCR — To embed OS practices (activities / methods / tools) in the daily life and culture of the school group of FCR — Promoted active citizens-students (they are and want to be agents of change, and that they have the tools to take informed decisions and actions) — Promoted connections between students and research and innovation professionals, artists, entrepreneurs, and foster digital literacy and communication skills	— Number of students involved in OS projects — Number of teachers involved in OS projects — Number of OS projects — Number of partners involved per school year in OS projects — Application of the OS approach in schools other than the school group of FCR — Institutional changes on OS at school level	Plataforma de Ciência Aberta was recently invited to become part of the Ciência Viva Centres Network. This implies that a teacher from the public system will integrate our team during the school year of 2021/2022 on a full-time regime.
SCICO	Covid-19 and the distancing: inability to meet in person, closed schools, restricted to digital learning. Another negative factor could be the change of teachers at the school, due to local necessities and shifts in positions. This would mean that the know-how would leave the school, but on the other hand, it could be transferred to a different one and to new/more students. On the positive side, either a donation/grant or specific publicity of the Hub could give it a boost, secure its sustainability and take it to the next level. Furthermore, according to the projects identified, a potential new stakeholder could offer special assistance and again take it to another level.	— The school becomes "open" and builds a network with the community and local stakeholders. — The university of the island gains visibility and builds a connection with high school students. Students and teachers become more active within and outside school community — Students gain new skills: digital and scientific literacy, collaboration, creativity, problem solving, etc. — The main SDG the challenges identified refer to is 4 as it drives inclusive and quality education. At a second level the projects identified and developed by the Hub aim to protect the environment and care for its species, so refer to SDGs, 12, 13, 14 and 15	— N. of students and teachers involved (15 and 2, which is acceptable given the size of the school and the pilot year) — N. of stakeholders involved. — N. of projects (4 from the first year, despite the Covid threat). — Level of satisfaction — New skills acquired	The ongoing and fruitful collaboration with the Aegean university resulted in its participation in the European Researchers night for the first time and has "spread" to the other islands the university has faculties in. Additionally, we are setting up a Science Festival for the first time which is outside the initial scope of the project but derives from the networking and positive collaboration with all stakeholders.
SCIN	COVID pandemic – both negative as well as positive impact: limited possibilities of workshops and events in person, but OSHubs CZ		— N. of people that are directly or indirectly affected, questionnaires and structured interviews, reactions on social networks. Impact of TV series, the data will be collected by	

SCIN	could develop TV series that will have huge impact through national broadcast.		Czech TV within their standard process of impact evaluation, so we will have the numbers of people affected as well as their reactions on the topics presented quite exactly	
TCD	Restrictions due to covid-19 may still be in place in schools depending on the rate of vaccinations. This could potentially affect the style of facilitation in workshops, and students ability to complete project work. The motivation and buy-in of schools and/ or individual teachers can affect the scale and scope of project work and collaboration with other stakeholders. Motivation and buy-in of key collaborators (researchers/ industry/ community leaders) can affect the usability of the results beyond the school.	— Increased understanding of active global citizenship amongst transition year students in Irish secondary schools. — Increased awareness of societal actors in the community — Provided teachers with contemporary teaching methodologies, consisting of a curriculum, materials, workshop and facilitation guides with strong emphasis on transdisciplinarity. — Provided a prominent platform for showcasing student work and student voices in the region and country (i.e. Science Gallery Dublin social channels, website and exhibition spaces). — Environmental impacts will be dependent on student and teacher decisions each year and the varying local circumstances of each school.	— STEAM identity questionnaires — N. of stakeholders involved — Students and teachers will be asked to provide knowledge — Stakeholder involvement will be classified within the SISCODE categories: Inclusive/ Punctual/ — Consultative and relationships that will continue beyond a school year will be logged. — Success of the teacher CPD day will be evaluated with a quantitative survey — Page views, social media engagements, footfall versus QR code scanning (where relevant).	A change in teacher-student dynamic during the OSHub sessions or the current way of doing things in schools may result in the content delivery being changed to suit the normal school dynamic. Stakeholders who are mapped as co-managers or producers may wish to have a stronger leading role in relevant challenge projects resulting in a different sense of ownership.
ULEI	Political support has had a positive affect on the project. With support of the councillor, we were able to start this project with a pilot and expand the project from that point. Also, funding has also proven to have a positive effect on the project. However, we see that the personal agendas and the policies of various groups may have a negative effect on the project. It slows down the project and makes it potentially difficult to embed the project sustainably in the local community.	— The project has an impact on primary school teachers: with the project we are reducing the workload of primary school teachers. — The support has a desired positive impact on the mental wellbeing teachers and their time available for curriculum. — Also, we hope the project has a positive impact on the primary students' educational opportunities; with the extra support, we hope to have a positive impact on the development of 21st century skills and school performance.	— Which ways does the program enhance students' educational opportunities? — In which ways does the program contribute to relieving the workload of teachers? — Does the program give students a positive professional image? — The indicators we look at are: how teachers perceive the support and whether students' disadvantages are decreasing.	We have already seen that some schools, who have been in the project longer, want to get more out of the expertise of the university students. They are already asking if students want to develop additional resources. A potentially positive development would be for students to contribute ideas from their expertise on how the curriculum can be enriched, for example using

ULEI

Apart from that, we see that the extent to which teachers want to participate in the project can also have a negative effect.

— Third: we hope the project has a positive impact on meaningful societal experiences of University students, giving them the opportunity to gain experience in the field of education.

STEAM topics. In addition, we have already seen that some university students decide, after their work in our project, to pursue an educational career. They have had discussions with experts within the school and in some cases they were even allowed to stay for an internship or a job.

As for the other boxes of the OSHub Social Business Canvas, what emerges from this one about Impact is that the thread of common elements and differences continues. Starting from the section about external conditions.

Evaluating what external conditions, meaning events that are not directly produced by the actions of the OSHub nor are they controlled by it, is important in order to build adaptation strategies and therefore guaranteeing the sustainability of the OSHubs.

Covid-19 is, of course, mentioned by all the partners as the main external condition that has in fact influenced the programs and actions envisioned by them. However, despite the difficulties to adapt the programs and activities to restrictions and social distancing, almost all the partners recognize in the pandemic also an opportunity to experiment and foster new knowledge, competences and strategies in the OSHubs teams. Two other elements identified as external conditions regard the school system, especially the teachers' turn-over and the political system. Both can limit the impact of the projects developed by the OSHubs and/or boost it.

Changing constantly the teachers with whom you cooperate can bring you back to step one each time, influencing the possibility to progress. At the same time, those teachers once transferred can use their know-how to spread approaches and methodologies and actually help the OSHubs' cause. Same goes for the political system. Many partners have identified the access to funding as an important external condition that can define the boundaries of the impact produced. Funding is related to public support and therefore to the sensitization of the political system towards OSHubs' causes. If the group in power changes, because of elections or shifting in their agenda, it could jeopardize the work carried out by the hubs or, if the turn-over proves on their side, boost the work done until then.

The picture of impact presented by the Business Models of the eight OSHubs is homogeneous and tends to rotate around two main elements: the development of digital literacy among students and the role of students and teachers as active citizens in their communities. these reflect the objectives already identified in the value propositions and therefore are coherent with the overall structure of the social business models. In this first attempt at building models, we focused our attention on the local level of impact together with the social and environmental one. Some partners stressed the fact that they did not set a specific goal for the environmental impact as they consider it to be tangential. The social one on the other side is strictly related to the local features of the communities in which the hubs are installed.

The indicators connected to the impact identified are mainly related to the numbers of participants beneficiaries, so students and teachers. Some partners have also specified the use of tools (surveys...) and the number of workshops or projects developed within the OSHub programs. A second step now is to extend the concepts of impact and indicators from project approach to a business-like approach that considers the OSHub not just based on the project from which it was born but as a living entity that needs to be sustainable and produce impact as a whole.

Finally, the side effects emerged are interesting as they show the first results and impact produced by the activities carried out by the OSHubs. For instance, FAB is working on construction of educational kits to be distributed in the German speaking part of Switzerland, an opportunity born from the collaboration promoted by the project; Plataforma de Ciência Aberta was recently invited to become part of the Ciência Viva Centres Network, for SCICO the collaboration with the university led to the participation in the University European Researchers night for the first time and the setting up of a Science Festival for the first time which is outside the initial scope of the project. At ULEI they have seen that some university students decide, after their work in the project, to pursue an educational career. They have had discussions with experts within the school and, in some case, they were even allowed to stay for an internship or a job.

8. Costs And Flow Of Revenues: Reports

The partners worked on the blue box considering costs of activities/resources and the flow of revenues for the year 2021, 2022, 2023. The section of the OSHub Social Business Canvas has been translated in a template that is summarized by the table below in which partners are invited to reflect on source of revenues and how the costs are split. This report will share a first draft in the annexes but these templates will be further updated in the D7.3 monitoring reports, together with the overall business models presented in this document.

A) Turnover	2021	2022
Sales of goods and services	- €	- €
Grants	- €	- €
Other income	- €	- €
Total A	- €	- €
B) Production costs		
Purchases of raw materials, consumables, consumables and goods	- €	- €
Services:		
Utilities and facilities	- €	- €
Transports	- €	- €
Rents	- €	- €
Consultancies	- €	- €
Marketing	- €	- €
Training	- €	- €
HR	- €	- €
Travels and events	- €	- €
Tangible assets depreciation	- €	- €
Intagible assets depreciation	- €	- €
Overhead costs	- €	- €
Total B	- €	- €
Operating activity (A-B)	- €	- €
C) Financial management		
Cost of interest	- €	- €
Other financial costs	- €	- €
Totale C	- €	- €
Earnings before taxes	- €	- €
Direct taxes	- €	- €
Net profit	- €	- €

Figure 8: Template used to build costs and the flow revenues.

The blue box can be considered the *"Litmus test"* of the Social Business Canvas because, from it possible issues that in other sections may remain hidden usually emerge .

As a matter of fact, this is what this section has proven. It has proven to be the most problematic of the OSHub Social Business Canvas, unravelling one of the real challenges of the Hubs' sustainability.

It is possible to identify three main categories of problems noticed from the work on costs and revenues.

Firstly, the programs originally built by the hubs have been affected by Covid-19 consequences and therefore it has not been easy for them to forecast costs of activities and resources needed for the years to come, as they were already engaged in trying to adapt 2020-2021 costs to the new normal.

Secondly, in the cases in which the OSHub is supported by more structured organizations as Universities or public institutions, when considering different variables for the financial future of the OSHubs they need to consider the directions and strategies of the main institutions and in some cases this discussion has yet to begin. Considering the reorganization after the end of the project, in this case, is still a work in progress and so it has been difficult for some partners to build solid strategies for the future. On the other hand, organizations that are not supported by structured organizations struggle from a less structured financial management.

Thirdly, but maybe the most important challenge, is the friction that the partners experience when confronted with the possibility of selling their programs and projects as services and goods. Thinking of a monetary value for education while most of the partners consider open schooling activities and education generally, to be as accessible as possible has proven a tough exercise. Hence, it co-

mes with no surprise the fact that, as emerges from the section, almost all the partners are heavily reliant on funds from the national and European level rather than from revenues coming from selling a "product" being it a program for schools, kits for students and teachers or courses.

This main issue surely echoes also in the difficulty, explained in the yellow box section, expressed many times in involving traditional actors from the private sector such as companies and industries.

All these three issues have contributed to a less complete version of this section of the Social Business Canvas that will be therefore updated progressively. It is possible to read the more detailed version of the reports in the following *link*.

9. Business Models: Overview And Future Steps

This report analyses all the sections that together compose the OSHub Social business Canvas, the tool used to build, block by block, feasible and sustainable Business Models for the OSHubs of the Open Science Hub Network (OSHub.Network). The analysis started by reviewing the information already presented in the *D 7.1 Vision and Value Proposition* that have been updated according to the latest changes by the partners and continued by analysing the remaining sections of the canvas: impact and costs/flow of revenues.

Zooming out from the synoptic tables and paragraphs that build this report, it is possible to have a complete yet not finished picture of the eight business models. It is important to underline the fact that these models are not finished versions because of two main reasons: as already stressed before, a social business model is a living and breathing document that changes and grows together with the entity for which it is used. Secondly, because these business models will be further updated during the last year of the project, in order to deliver the latest versions that could help assess the sustainability level of the Hubs.

With this in consideration, it is possible to draw some remarks that will be also helpful for the next steps to take as single hubs and as a network.

In general terms, from this report emerges the positive impact that the OSHub Social Business Canvas had in building the OSHubs. By focusing on each section of the model, partners had the possibility to develop their value propositions and activities by coherently connecting them within a logical framework that can guarantee feasibility and sustainability in the long run. The scope of the WP7 was to help partners project their hubs outside the time-limited borders of the project and structure them to live after the project will come to end. Despite the challenges faced, that have been thoroughly analysed, the road that the OSHubs have undertaken is going towards the direction outlined by the WP7.

From the Social Business models designed by partners the true nature of the hubs came into light, showing not only the peculiarities of each, but also the common features upon which a network is established and can grow. Another indicator of the impact produced by the work on the Social business models has been the "collision" of two worlds. As already mentioned in the blue section, for actors coming from the education field, to think in terms of business and revenues has not been an easy task. However, the "social" element of the Social Business Canvas eased the way towards this contamination.

Now that the Business Models have been drawn, each OSHub has a map to work with in order to build social and financial sustainability after the end of the project.

The next steps will follow three main trajectories:

1) Working to improve the Business plans of the eight OSHubs by updating and going more in depth in order to evaluate the different levels and dimensions of sustainability and switching slowly but steadily from a project approach to a social business approach. The methodology in this case will alternate group moments to assess updates and share experiences and one to one sessions with each hub to support their path and focus on their peculiarities.
2) A special focus will be dedicated to the financial plans of the eight OSHub to understand together what different solutions could be implemented and how to dissolve, when necessary, the resistances of partners on the idea of looking with innovative lens to the hubs as social businesses.
3) A next step of growth will be represented by the passage from the local level to the network level. Different ways of developing the network of OSHubs will be explored in order to understand, together, what the network can do for the hubs after the end of the project and how they can contribute to the growth of the network.

The reports from the hubs are available in two formats. The Annexes and through this link where it is possible to get access to the versions of the reports that will be constantly updated.

Annexes

Annexes can be found in the link present in footnote[2].

2 Annexes of OSHub.Network_D7.2BusinessModels_20211108: https://drive.google.com/drive/folders/1TWJ_fxgE-YiGxSTT2VXMJE0t3UC6jX1A?usp=sharing

OPEN SCIENCE HUB

EMPOWERING CITIZENS THROUGH STEAM EDUCATION WITH OPEN SCHOOLING

DELIVERABLE 7.2

Business Models