

SciShops

ENHANCING THE RESPONSIBLE AND SUSTAINABLE EXPANSION OF THE SCIENCE SHOPS ECOSYSTEM IN EUROPE

D6.2

New Science Shops establishment report



Project

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| SYNYO CHELL (SYNYO) Austria |
| Handelshlatt Pesearch Institute CmbH. Germany |
| University of Hebenheim, Cormony |
| KPMG Limited Overus |
| The National Unions of Students in Europe, Belgium |
| Institute of Social Innovations Lithuania |
| University of Oxford United Kingdom |
| |
| Universidad Carlos III De Madrid, Spain |
| Universitatea Politehnica Din Bucuresti. Romania |
| Universitá Degli Studi Di Brescia. Italy |
| Universiteit Leiden. Netherlands |
| International Center for Numerical Methods in Engineering, Spain |
| Institute Jozef Stefan, Slovenia |
| Wuppertal Institute for Climate, Environment and Energy, Germany |
| |
| Vetenskap & Allmänhet, Sweden |
| Vetenskap & Allmänhet, Sweden Bay Zoltán Nonprofit Ltd. For Applied Research, Hungary |
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| Authors: | George Tziortzis, KPMG |
| | Antonis Bargilly, KPMG |
| | Petros Sorokkos, KPMG |
| | Elena Philippidou, KPMG |
| Contributors: | Carmen Munteanu, SYNYO |
| | Markus Kühlert, WI |
| | Franziska Stelzer, WI |
| | Maarten Schroyens, CRPD |
| | Elias Sanz, INEACU |
| | Giovanna Grossi UNIBS |
| | Pedro Russo, UL |
| | Branco Kontic, JSI |
| | Ralph Schroeder, OXF |
| | |
| | |
| | |

Review: Rodica Stanescu, UPB Cristina Sorana Ionescu, UPB

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Executive summary

This report aims at laying down the activities undertaken by the project partners for the establishment of the Science Shop. It builds on previous deliverables of the project to present a complete account of the newly established Science Shops. At the same time, it provides guidance (i.e. suggested twinning methodological approach) and tools (i.e. business plan) which assist in better managing the Science Shops.

The report adds methodological expert understanding and provides insight on enhancing the sustainability of the Science Shops. By building a business plan, and considering all facts and figures available, Science Shops gain insight on their capacities, their area of expertise, their geographical coverage and the existing competition and the cooperation opportunities. All of these factors, coupled with a precise financial assessment, allows for clear understanding of the actions that need to be undertaken to make science shops sustainable. Each Science Shop has very distinct traits which are relevant to the region it operates and hence it is up to its creators to shape it in such a way in order to be appealing to the community. These specificities should be reflected in a Science Shop business plan, which is also a tool to promote and keep the Science Shop up to date in the long run. Subsequently, each Science Shop creates connections with the local community as well as the relevant stakeholders.

The key objective when creating connections is to capitalise on the experience of the existing Science Shops and to use it to shape and build their own practice. The existence of experienced Science Shops within the consortium of this project is essential and beneficial. Not only do they constantly provide advice, but they also share knowledge through their experiences.

Each of the newly established Science Shops has created a track record of activities, throughout the project. In particular, they are engaged in collaborations, partnerships and twinnings with other organisations. Such activities are key to ensure that a Science Shop is equipped with the right skills and knowledge. The report elaborates on how each Science Shop serves the needs of the community within which it operates. Three topics are analysed per Science Shop, namely the reaching out to community to gather research questions, existing community needs the Science Shop may address, and the creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement.

Overall, the report is an assessment in relation to the record of each Science Shop (e.g. partnerships created and partnerships in the making) based on their decision to adjust their concept to fit the requirements and needs of the communities they are part of. Also, it serves as a guidance tool on how a newly established Science Shop may be injected with business aspects and be able to remain operational in the long run.



Acronyms

| CBPR | Community Based Participatory Research |
|-------|--|
| CSO | Civil Society Organisation |
| CSR | Corporate Social Responsibility |
| EU | European Union |
| FGD | Focus group discussion |
| ICT | Information Communication Technologies |
| КРІ | Key Performance Indicator |
| LE | Large Enterprise |
| MoU | Memorandum of Understanding |
| NGO | Non-Governmental Organisation |
| NPO | Not for Profit Organisation |
| R&D | Research and Development |
| SME | Small Medium Enterprise |
| STEAM | Science, Technology, Engineering, Arts and Mathematics |



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1 Introduction

SciShops.eu project is funded by the European Commission under Horizon 2020. It aims at expanding and further building on the capacity of the Science Shops ecosystem in Europe and beyond. During the SciShops.eu.eu project timeframe, at least ten new university- and non-university-based Science Shops are being established in Europe by project partners. The non-university ones are affiliated to different types of organizations, such as **SMEs, LEs, NGOs/NPOs and research institutes**

In the context of SciShops.eu project, ten new Science Shops are created. Each science shop has its own specificities and uniqueness and should be treated as a distinct case. As per the work plan, the Science Shops created are mentioned in the table below:

| Name of institution | Country | Science Shop Name | Type of Entity |
|---|---|--|------------------|
| SYNYO GMBH (SYNYO) | Austria | ScienceShop.at | SME |
| KPMG Limited (KPMG) | Cyprus | KPMG ScienceShop | Large Enterprise |
| OXFORD INTERNET INSTITUTE (OII) | UK | Oxford Science Shop | University |
| CENTRE FOR RESEARCH ON PEACE AND DEVELOPMENT (CRPD) | CENTRE FOR Belgium RESEARCH ON PEACE AND DEVELOPMENT (CRPD) | | University |
| RESEARCH INSTITUTE FOR HIGHER EDUCATION AND SCIENCE (INEACU) | Spain | INAECU Science Shop | University |
| UNIVERSITY OF BRESCIA (UNIBS) | Italy | WatShop | University |
| LEIDEN OBSERVATORY (UL) | Netherlands | Citizen Science Lab | University |
| INSTITUTE JOSEF STEFAN (JSI) | Slovenia | Centre of Participatory Research at the Institute Jožef Stefan – CPR-IJS | University |



| WUPPERTAL | Germany | WiLaWu - Wissenschaftsladen | Not for profit |
|--|---------|--------------------------------|----------------|
| CLIMATE, ENVIRONMENT AND ENERGY (WI) | | Wuppertal | |
| BAY ZOLTAN NONPROFIT LTD FOR APPLIED RESEARCH (BZN) | Hungary | Bay Zoltán Science Shop | Not for profit |

Science Shop per Partner

Entities include a small-medium enterprise (SME), a large enterprise (LE), universities/research institutes, and non-governmental organisations (NGOs) and non-profit organisations (NPOs). Each organisation should clearly define the steps they followed for the establishment of a science shop based on the community's needs and to emphasise the partnership contribution to this process so as to make twinning successful, ensuring a fruitful cooperation and exchange of views.

This deliverable presents the approach followed towards the establishment of the Science Shops in the context of SciShops.eu project. The deliverable analyses the methodological background which sets the rationale of the approach followed regarding establishment of the Science Shops. Moreover, the report pays particular attention to the twinnings, partnerships and synergies created with other organisations like experienced Science Shops, academic institutions, research centres etc.

The report concludes with the presentation of the business plans of the Science Shops which have concluded their business plans. The business plans were prepared by each Science Shop thus creating a monitoring tool which will assist them in performing good management practices.



2 Methodological Background

The SciShops.eu project develops incrementally, by building the knowledge base and providing ample evidence which elaborates on the current situation of the Science Shop environment. It states how a Science Shop is defined, how it is shaped and who are the main stakeholders. The project developed a strategy for community-based participatory research and knowledge transfer from Science Shops to the civil society. It is important at the same time to highlight that each Science Shop has very distinct characteristics relevant to it operates in and hence it is up to its promoters to shape it to serve the needs of the community. These specificities are best reflected in the Science Shops's business plan, which is also a tool to promote it and keep it up to date in the long run.

Subsequently, as the project states, each Science Shop creates connections with the local community as well as the relevant stakeholders. The key objective when creating connections is to capitalise on the experience of the existing Science Shops and to use it to shape and build their own practice. The existence of experienced Science Shops within the consortium of this project is essential and beneficial. Not only do they constantly provide advice, but they also share knowledge through their experiences. This chapter elaborates on the above two elements (i.e. the importance of a business plan and the importance of the creation of partnerships), that relate to the establishment of the Science Shops. The key objective of this chapter is to lay down the methodological framework to be follow during the establishment of the New Science Shops under SciShops.eu project

2.1 The purpose of building a business plan for the establishment of a Science Shop – The importance of a Business Plan for establishing any form of legal entity

According to KPMG Small Business¹, a good business plan is a concise yet comprehensive document that describes each entity's scope and market, while detailing its objectives and explaining the strategy for achieving them. Failing to plan doesn't necessarily mean planning to fail, and having a business plan won't guarantee success. But if the Science Shop is not established through a sound plan, it might never grow or achieve its full potential.

The goals can be ambitious or modest, but knowing what each Science Shop will tackle to achieve, enables for future planning – otherwise there is an inherent risk of drifting without clear direction. A business plan normally covers a period of up to three years. Producing a Science Shop business plan can help to crystallise thinking and prove the viability of the 'business idea.

One should consider the business plan to be a living document, not something prepared when starting up, only to never update or look at it again. A business plan is essential to attract funding or raise finance, of course, but the benefits don't end here. Writing a business plan can provide a much better understanding of the market and business, their strengths, weaknesses, opportunities and threats.

The plan can also provide a useful benchmark for evaluating performance and growth, while reminding its business goals when faced with important decisions. The business plan should be revised once a year, at least. The business plan's financial information is key. Experienced people will test numbers first, and if they don't add up, the business plan won't have any credibility.



¹ <u>https://kpmgsmallbusiness.co.uk/wp-content/uploads/2017/03/CRT077034_SBA-GUIDES_Create-a-business-plan.pdf</u>

It can be argued that Science Shops, are not business entities per se, since their main aim is not the generation of revenues and profits, but merely carrying out 'scientific research in a wide range of disciplines – usually free of charge and – on behalf of citizens and local civil society'². That said however, Science Shops are entities which serve a specific purpose and it is arguably imminent that they will have to engage in economic activity at some point in their life cycle. Business plans follow a traditional and logical path when they are to be structured. Below, the main components of a business plan are laid, which are derived by *KPMG Small Business*:

- *Executive summary*: As in all reports, this allows readers to see headline points quickly. Although it appears at the front of the plan, it's written last, when all facts are known. It must engage readers and inspire their confidence.
- Aims and strategy: Clear aim must be shown and in particular, where the Science Shop aims to be placed in the next one, two or three years. What is more, the plan on how these aims will be reached must be laid down. The goals should be SMART (i.e. specific, measurable, achievable, relevant and time-bound).
- Business description: Readers expect to find out much more about the Science Shop, including when it was set up, how and why, its services, core stakeholders, market position and Value Proposition (i.e. what makes you special).
- *Operations information:* The Science Shop should detail their location(s), premises, facilities, staff, suppliers, etc. to shed light on how they provide services and have the capacity to do so in the long run.
- Organisation and management: Readers (especially potential investors and funders) want to know who owns and runs the Science Shop and what skills and experience they bring to the role.
- *SWOT analysis*: Working out the Science Shop strengths can help identify opportunities, while knowing weaknesses can help guard against threats. Being honest, particularly about weaknesses, shows awareness and pragmatism.
- *Market description*: What are the opportunities which are to be exploited for the establishment of a Science Shop? Are there enough needs to fuel growth? What is the competition, what sector trends are evident?
- Marketing and sales strategies: The Science Shop should be in a position to explain how its services will be promoted. Business plans often include a condensed marketing plan that explains this, while describing target stakeholders, demand, potential pricing strategy (if applicable) should be included.
- *Financial information*: The financial figures are often a business plan's most important component. As well as previous sales, costs, cash flow and profit and loss figures, the business plan must include forecasts for the next 12 months or more. In particular, for a science shop to succeed, it is important to ensure a consistent source of funds. The challenge for science shops is the fact that their aim is not to make profit therefore alternative source of funds shall be considered (e.g. EU funds, private benefactors, sponsors etc.). The importance of transfer of knowledge and adaptation of best practices



² <u>https://www.livingknowledge.org/science-shops/about-science-shops/</u>

A good practice can be defined as a successful initiative that has consolidated itself over time. Good practices are outstanding contributions to improving a specific practice. They are defined by the United Nations³ as successful initiatives which:

- Have a demonstrable and tangible impact;
- Are the result of effective partnerships between the public, private and civic sectors of society;
- Are socially, culturally, economically and environmentally sustainable.

In the context of the SciShops.eu project, newly established Science Shops assume best practices through partnerships/twinnings with Universities, research institutes, experienced Science Shops etc. as analysed below.

2.2 The purpose of Twinning in project context and the overall methodology

The rationale behind the twinning activities in the context of SciShops.eu project is the development of capacities. Specifically:

- To develop the knowledge and competence of individuals and organizations,
- To develop the systems of organizations,
- To share problems, exchange views and understand different viewpoints on any issue where there is a shared interest or concern,⁴
- To take into consideration good practices and lessons learned so as to ensure the proper operation of the Science Shops that will be established,
- To promote, expand and further build on the capacity of the Science Shops ecosystem in Europe and beyond,
- To further expand the network of the Science Shops through collaborative instruments, activities and actions,
- To achieve long-term cooperation between the organisation that will continue after project completion by using various modes of activity to ensure sustainability,⁵
- To use various activities, such as staff exchange, short- and long-term placement of experts, advisory and consultant services, study tours and periodical visits, training events (formal or informal and on-the-job), and provision of specific services (e.g. technical aid).⁶

The following twinning methodology is proposed to be followed aiming at meeting the objectives set:



2.2.1 Understanding the current state

The Science Shop shall perform an analysis of the current ways of collaboration and interaction a with other relevant organisations. Under this task the procedures followed for the execution of relevant operations (e.g. capacity building trainings, on the job trainings etc.) will be reviewed aiming at forming a sound twinning plan.



³ <u>http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpan046742.pdf</u>

⁴ <u>https://ec.europa.eu/easme/sites/easme-site/files/Paper-Twinning-advanced-methodology.pdf</u>

⁵ Ouchi (2004)

⁶ Ibid.

2.2.2 Designing a twinning between two Science Shops successfully

The following steps shall be taken into consideration so as to succeed the twinning between the newly established Science Shops and existing Science Shops.

a. Assessment of the needs of the organization (e.g. methodology to derive a science shop topic, how to choose geographical location, etc.)

Each organisation aiming to establish a Science Shop needs to follow a methodical approach so as to define its vision and goals, identifying the key drivers of its organisation and understanding the extent of their alignment. The following steps need to be taken into consideration in order to achieve the desired objectives:

1. Plan

To establish vision and define goals

- Define vision, strategy and goals,
- Identify desired capabilities and cultural levers,
- Define critical success factors, design principles,
- Define thematic focus and areas of interest,
- Identify the geographical location and reach of your Science Shop,
- Language requirements.

2. Assess

To assess the current state and identify drivers

- Assess the current state of the organisation,
- Conduct gap analysis so as to identify any gaps between drivers and strategic objectives,
- Develop a roadmap of activities.

3. Design

To create detailed solution design

- Develop a high-level implementation plan,
- Set the timeframes,
- Define resources allocation.

4. Implement

To implement design

- Launch of the high-level implementation plan,
- Assess and monitor results.

5. Monitor

To implement ongoing monitoring

- Develop and facilitate a monitoring plan,
- Assess and monitor results,
- Identify ongoing improvement opportunities and readjust the model of the Science Shop as needed.
- b. Selection of the methods for building capacities in performing CBPR (e.g. proposal preparation, transforming the question received from the public into research questions etc.) and setting of key performance indicators (KPIs)

The following methods for building capacities are usually used in twinning arrangements so as to promote learning, as Jones and Blunt (1999) mentioned:



- Formal, off-job training courses. This type of activity will help the newly established Science Shops to implement the necessary managerial support to enable individuals to put classroom-based learning into action back on the job.
- In-house training courses. This type of activity can help in organizational level by the involvement of both organisations in the involvement of all aspects of the course that is to say learning needs analysis, planning, and selection of trainers, implementation, assessment and evaluation.
- On-the-job training. This type of activity can be considered as the most effective training method for skill improvement like preparing a project proposal, a funding proposal, or finalising a research question).
- Study visits. This type of activity offers the opportunity to the partner organisations to meet and become familiar with each other's environment and operations.⁷

The staff of the existing science shop can help the staff of the new Science Shop either individually or in groups. As described in Cooper (1984), the exchange of staff can take place in various forms:

- Long-term, as advisors,
- Long-term, in line positions, or to train,
- As visiting experts, going to the field periodically according to an agreed schedule,
- Key staff long-term, with short back-up visits of technical staff from headquarters as needed.⁸

Both organisations need to set the key performance indicators (KPIs). KPIs are quantifiable indicators used by organisations to measure the success of a process or activity in which it is engaged. Prior to setting the KPIs, each organisation has to create a Performance Monitoring Framework based on the organization's vision and strategy and the goals set.

The strategic priorities are translated into Performance Pillars, which represent the areas of strategic importance for the organisation. The number of Pillars is subject to the strategic priorities of each organisation.

The Pillars presented below are indicative Performance Pillars:

- Financial Sustainability
- Community Engagement
- Quality Excellence
- Learning and Development

Additional Pillars may be considered as per the strategy of the organisation.

Each Performance Pillar is associated with specific objectives to be achieved and observable measures which will enable the achievement of the Objectives.

For example, the *Financial Sustainability Performance Pillar* is presented, by defining indicative objectives and measures:

Indicative Objectives

- Optimize operational costs,
- Increase funding sources.

Measures

- Reduce administrative spending per staff member,
- Identify new funding sources.



⁷ Jones and Blunt (1999)

⁸ Cooper (1984)

Each Objective is associated with KPIs and related target values, frequency of monitoring and corrective measures.

KPIs should be:

- SMART (Specific, Measurable, Achievable, Result-oriented, Time-bound),
- Developed from different perspectives reflecting sources of data (top-down/bottom-up).

For example, the below table gives an example of the indicative KPIs and targets:

| Performance Pillar Objective | | Metric (KPI) | Target |
|------------------------------|----------------------------|--|--------|
| Financial Sustainability | Optimize operational costs | Administration spending (total cost) per staff member per year | [x] |
| | | Percentage of administration spending vs revenue generated | [x] |
| | | Percentage of operating expenses (of total expenditure) | [x] |
| | | Percentage of overdue balances | [x] |
| | Increase funding sources | Number of new funding sources per year | [x] |

Indicative KPI monitoring

Each KPI is monitored based on the defined frequency of monitoring. The below KPMG's template can be utilized to monitor the performance and compare the target and actual value of each KPI.

2.2.3 Implementation activities

Contacting the experienced Science Shop based on the above and forming and agreement Upon the assessment of the needs of the Science Shop to be established and the identification of the existing science Shop to twin with, the two Science Shops need to sign a type of agreement so as to ensure and secure their cooperation. Through the formation of an agreement such as a MoU or any other type of agreement, the two Science Shops define their relationship and state what they will offer to each other. More specifically, as the report *Integrating CSR by company twinning methodological approach* (2013) argues, there should exist a written engagement between the two parties since "the twinning involves commitments of resources (which may be huge), both in terms of staff and working time, as well as the sharing of business experiences". In addition, this report discusses the development of an Action Plan between the two parties so as to identify issues related to objectives, the principles ruling the partnership, outputs, methodology, activities and resources.

a. Implementing the agreement and engage in the activities agreed

The agreement will set forth the activities to undertake under twinning. For instance,

- To make periodical working programmes of co-operation. For instance, make a working programme based on building capacities in relation to completing successful funding proposals.
- To promote effective co-operation and exchange of ideas
- Exchange of information about the development of science communication, in line with what is desired and what is achievable;
- Exchange of knowledge in different areas, through the input of technical and social expertise
- Possibilities of identifying areas of need in the field of human resource development;
- Promotion of cultural exchanges and related matters;
- Enhancing the process of broadening the revenue base for the two Science Shops;
- Identifying a framework within which activities currently being carried out by both Science shops can be done in collaboration;
- Co-operation on other mutually agreed matters, etc.

At the same time, the timeline prepared during the design phase should be agreed between the two parties and should act as a twinning guide for both entities. The timeline should have clear activities based on the MoU, as well as clear implementation periods.

2.2.4 Evaluation of results

Upon completion of a milestone e.g. year-end or a project completion, the twinning process will be evaluated by testing the achievement of the KPIs set. This is mainly undertaken utilizing specialized methodologies. As such, the below methodology has been developed by KPMG and is proposed to be applied.







2.2.5 Completion of twinning and evolution to other forms of collaboration

When the agreement expires and the new Science Shop is in a position to be sustained by its own capacities, the twinning will be concluded and other forms of collaboration between the twinned science shop will be sought e.g. partnerships etc. Upon the conclusion of the twinning process, the new Science Shop should reassess and redefine its strategy and its vision based on the needs of their community.



3 Science Shop concept adaptation to fit the need of the community

Each of the newly established Science Shops has created a track record of activities, throughout the project. In particular, they are engaged in collaborations, partnerships and twinnings with other organisations. Such activities are key to ensure that a Science Shop is equipped with the right skills and knowledge. The report elaborates on how each Science Shop serves the needs of the community within which it operates. Three topics are analysed per Science Shop, namely the reaching out to community to gather research questions, existing community needs the Science Shop may address, and the creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement.

3.1 Austrian Science Shop (SYNYO)

Reaching out to community to gather research questions

The Austrian Science Shop, being an innovation and technology-focused Science Shop, utilises primarily online means to reach out to the community and gather research questions. Specifically, the organisation gathers research questions through the online platform on the one hand and through the science shop national website on the other hand, by collecting information with the use of a contact form which is available on the website. Furthermore, through the extensive partner network, SYNYO collects research questions from Austrian and European interest groups such as civil society organisations, cooperatives and public bodies.

Existing community needs the Science Shop may address

As aforementioned, SYNYO's target was the establishment of a Science Shop which would be a research, innovation and technology hub exploring novel technologies to tackle business and societal challenges and focusing mainly on big/open data research, digital futures, e-health, citizen inclusion, smart technologies, security and social media analytics. Therefore, considering the nature and focus areas of the organisation and based on the identified community needs, the Austrian Science Shop is interdisciplinary and addresses various topics such as:

- Safety and security in urban areas
- Energy cooperatives
- Sustainability and Sustainable Development Goals
- Cybersecurity
- Smart health and active and assisted living

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Austrian Science Shop is collaborating with the Austrian Citizen Science Network, providing expertise and resources (app, contacts, and outreach capacity). Additionally, the organisation cooperates and works towards establishing collaboration with Open Knowledge Maps, Open Knowledge Österreich, SPOTTERON, Doing it together Science (DITOs) and Wissenschaftsladen Wien (Science Shop Vienna).

3.2 Cypriot Science Shop (KPMG)

Reaching out to community to gather research questions

KPMG collects research questions through KPMG Academy and KPMG Start-ups, reaching out to a wide range of stakeholders and community groups.

KPMG Academy provides in-house seminars targeting business professionals from various disciplines of the local as well as international market. KPMG Academy aiming at providing training services to clients and other interested participants as well as organizing public events in areas such as Taxation, Tourism, Agriculture, ICT, Risk Management, Employment, Privatizations, Financial Modelling, Business Planning, Feasibility Studies, Corporate Governance, Anti-Money Laundering, Banking, Entrepreneurship, Start-ups welcoming a selection of world renowned speakers. The Academy collaborates with experts from the KPMG's network, professionals from other successful companies and academics from both Cyprus and abroad.

KPMG Start-ups serves as a hub that brings together aspiring professionals and businesses in an effort to support the start-up and entrepreneurial community of Cyprus. It supports and interacts with early stage and start-up companies in the development of new business ideas in Cyprus. The KPMG Startups team assists in early stage development such as establishing a new business or navigating through the complex legal, financial and operational issues, which may range from mentoring, providing support and advice on strategy, raising capital, feasibility studies or assistance in securing local and EU grants.

Moreover, KPMG participates in co-creation events and engages their existing collaborators (clients, CSOs, State Actors) from various parts of the community to present and share research questions.

Existing community needs the Science Shop may address

Establishing a science shop in Cyprus which is a small country, gives the opportunity to operate across the state and address societal needs identified at national level. As such, the Cypriot Science Shop focuses strategically at national level and utilises the existing knowledge in relation to societal needs for research. The priority areas identified through the national Smart Specialisation Strategy are: Energy, Tourism, the Structured Environment/ Construction Industry, Transport/ Marine, Agriculture/ Food Industry and the sector of Health. Furthermore, a number of horizontal priorities have also been identified (such as Information Technology, Environment and Human Resources). Hence, the Cypriot Science Shop will address the above focus areas in order to respond effectively to the needs of the local community.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

KPMG is in contact and close cooperation with the Cyprus Science and Research Centre (CSRC) team which comprise researchers from all universities in Cyprus. CSRC aims to create a Science and Research Centre for promoting innovative research of excellence in Science, Technology, Engineering, Arts and Mathematics (STEAM) Education and in Science Communication. It aims to enhance the community awareness of scientific and technological endeavours by becoming a unique landmark to be visited by students, educators, entrepreneurs, start-up founders, the wider public and tourists. KPMG and CSRC cooperate closely and have jointly identified ways of interaction, synergies and networks that can be established. This initiative supports the Cypriot Science Shop and vice versa in order to successfully pursue the common goals identified.



In addition, KPMG established and sustains contacts with the European University Cyprus, partner of the PERARES project. The European University Cyprus has already established its own Science Shop. The Science Shop has been established within the School of Business and has been integrated into the university structure. Its thematic focus is interdisciplinary, covering all the areas of the schools of the university. The aim of the Science Shop is to bridge the gap between the society (CSO's) and the academic world. KPMG learns and will learn from their experiences and will take into account their recommendations so as to successfully operate the Cypriot Science Shop.

3.3 British Science Shop (Oxford Internet Institute)

Reaching out to community to gather research questions

The British Science Shop aims to be considered as a means of gathering input and feedback from citizens and communicate issues and topics which are not well understood by the community, in order to produce valuable insights and suggestions to contribute to policy making. Based on this overarching goal of the Science Shop, the Oxford Internet Institute has liaised and is engaging in several discussions with local authorities and community organisations and initiatives, including the Oxfordshire County Council, the local Science Festival and various researchers and organisers across the world (e.g. United States) in order to gather research questions to address community needs.

Existing community needs the Science Shop may address

The British Science Shop will operate in the Oxfordshire community, mainly using online tools, as it focuses in the area of Social Research in the digital age and online participation. The Science Shop will address existing community needs relating to the social implications of big data, algorithms, machine learning, climate change and climate policy, and the implications of virtual reality, augmented reality and related technologies.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Oxford Internet Institute engaged in discussion and maintains contact with several actors, in order to engage them in the activities of the Science Shop in a way that research questions will be effectively answered, the community will actively engage and interact with the Science Shop and all participants will become part of the wider CBPR initiative. Precisely, the British Science Shop established relations with the following actors:

- Oxford Science Festival
- Research Funding Council, which engages in a broad range of activities to make social science accessible
- Ashmolean Museum of Art and Archaeology in Oxford, which holds events to engage the wide public with science
- Digital Education, which constitutes a group based at the university which promotes Virtual Reality and augmented reality events open to the public and aims at engaging the wide public with research
- Oxford Martin Programme on Misinformation, Science and Media, which is a programme targeting to better engage the public in relation to misinformation in the areas of climate change and public health vaccination



3.4 Belgian Science Shop (Leuven University)

Reaching out to community to gather research questions

The Belgian Science Shop handles questions related to the topics of integration, polarisation and radicalisation in the classroom focusing on the dynamics of radicalisation and preventative strategies that teachers, schools, communities and parents may undertake to prevent and/or counter radicalisation occurring among the adolescent youth. Through past research projects and the extensive networks of the team, the Science Shop has developed contacts with teachers and regional school network coordinators. Professionals in these networks have expressed a high level of interest in the scope of the Science Shop and are contributing to the identification of specific local society needs and questions. Moreover, the Belgian Science Shop is associated with the Flemish Science Shop network which has solid systems in place for communities and civil society organisations to ask questions and engage with the Science Shop.

Existing community needs the Science Shop may address

As aforementioned, the Belgian Science Shop addresses the needs of the local community in relation to the topics of integration, polarisation and radicalisation in the classroom among the adolescent youth, as it is established that there is a substantial need in this area. It is often argued that schools, and teachers in particular, have an important role to play in combating polarisation and radicalisation, however, substantial research on whether teachers are fully capable and willing to fulfil this role is insufficient. On the contrary, studies have indicated that teachers themselves can endorse stereotypical beliefs⁹. Moreover, teachers can even be agents of discriminatory behaviour by giving lower grades to minority students¹⁰, or disciplining them more severely¹¹. Therefore, it cannot be taken for granted that teachers are agents for tolerance, and capable of polarisation management. In addition, Flemish teachers are often insecure when tackling sensitive topics such as stereotypes, intolerance, terrorism and racism in the classroom.

Therefore, there is a clear need for teacher training and the development of new tools to handle this type of issues in the classroom.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Belgian Science Shop is in contact with the coordinator of the Flemish science shop network and the coordinators of the Green Office Living Lab at KU Leuven.

The Flemish Science Shop network coordinates the activities of the Science Shops located at the universities of Ghent, Antwerp and Brussels (VUB). Civil society organisations can submit research questions on the centralised website of the network (<u>www.wetenschapswinkel.be</u>) which allocates the research question to the Flemish science shop with the appropriate expertise. Therefore, this already established network and its existing tools can serve as an enabler for the Belgian Science Shop to engage directly with the community and receive research questions. It is noted that the coordinator of the network also coordinates the Science Shop at the Vrije Universiteit Brussel (VUB) and was



⁹ Agirdag, Loobuyck & Van Houtte, 2012

¹⁰ Jussim & Harber, 2005

¹¹ Dunkake & Schuchart, 2015

involved with several EU-funded projects (such as PERARES), hence she provides valuable insights as to the management of the Science Shop.

The Green Office Living Lab is an initiative at KU Leuven that operates as a science shop with a very specific focus area. The lab mainly offers master thesis subjects on the topic of making KU Leuven more sustainable and they work together with civil society organisations on related issues. Therefore, the Green Office Living lab possesses relevant expertise and knowhow on managing Science Shop projects in the area of Leuven and can provide valuable support to the Belgian Science Shop.

An important activity of the Belgian Science Shop is the implementation of a pilot project on the topic of how Flemish teachers deal with polarisation and cultural and religious diversity in the classroom. In light of this project, a number of in-depth interviews and focus group discussions were organised with stakeholders. Based on the input gained through these activities, the Belgian Science Shop designed a survey and has collected survey data of teachers and students from a representative sample of 45 Flemish schools. This activity provides the Belgian Science Shop with very valuable insights on its focus area which will be utilised to effectively address societal needs.

3.5 Spanish Science Shop (INAECU)

Reaching out to community to gather research questions

The Spanish Science Shop deals with gender issues, facts, information and figures, science, health and patients, open innovation, local business opportunities and sustainability issues. To identify research questions, the Science Shop held meetings with relevant stakeholders and identified 2 research questions in the area of sustainability and 1 research question in the area of gender. The results to be concluded through responding to these questions are expected to have an impact at a regional level (Universities of Madrid and Community of Madrid) but also at a national level through knowledge sharing with the different Ministries and the Sustainability Commission at the Spanish University Rectors' Conference (CRUE).

Existing community needs the Science Shop may address

The Spanish Science Shop focuses on addressing community needs relating to gender issues, science health and patients' issues, open innovation, local business opportunities and sustainability. To identify specific community needs in these areas, the Science Shop has engaged in various activities. In the framework of a research project on sustainability, the Science Shop has conducted interviews, surveys and discussion groups with relevant organisations and students. Moreover, the "Women in Science" seminar organised by the organisation, contributed to the identification of specific community needs relating to gender issues.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Spanish Science Shop has established contacts with experienced actors and has engaged in various activities since its establishment. The Science Shop has liaised with different stakeholders such as NGO's, students' associations, women's associations, policy makers, researchers on the topics, relevant University staff etc. Precisely, the Spanish Science Shop has established partnership with the following stakeholders:



- Policy makers:
 - Spanish University Rectors' Conference (CRUE)
 - Getafe City Hall (Environment Department)
 - Ministry of the Presidency, Relations with the Courts and Equality for the gender topic and the Ministry of Agriculture, Fisheries and Food for the sustainability topic
- Researchers of different fields
- Teachers:
 - At the university level, with the engineering department, social sciences and humanities fields
 - At the secondary school level, with teachers from STEAM disciplines
- NGOs and other organisations:
 - Institute of Gender at University Carlos III
 - o REDS (Sustainable Development Solutions Network)
 - MEDIALAB (Citizen Laboratory from the City Hall of Madrid for supporting citizen science activities)
- Civil society groups:
 - Gender Associations
 - o Students associations on gender and sustainability

The Spanish Science Shop has also established contacts with the INSPIRES research project and the Living Lab for Heath, a Barcelona based Science Shop as well as with a Science Shop of the UOC University in Spain, in order to share knowledge, good practices and methodological tools.

The Science Shop has engaged in various activities, including the following:

- Community activities and conferences:
 - o Researchers' Night 2018
 - Community activity focused on 'Gender, Science and Technology'
 - o Citizen Science activities participation at Medialab
 - Participation in Science Week
 - o Participation in Living Knowledge Conference in Budapest
- Workshops on different topics:
 - o Participatory research in the European Union: Some experiences
 - Women and Science: 15 years of European policies to favour the participation of women in science. Before and after the ETAN Report
- Personal interviews with researchers and teachers on the field of women and sustainability
- Group discussion with students' association, Gender Institute, teachers at secondary level etc.

The Science Shop proposed the implementation of joint activities (co-creation event or knowledge café) to different stakeholders and is now in the process of event preparation.

The organisation also engages in intensive dissemination activities utilising INAECU's website (inaecu.com), social networks (twitter), the University's newsletter, the University's press media, email account etc.



Reaching out to community to gather research questions

The Italian Science Shop focuses on sustainable water management and the control and consumption in changing climate. Therefore, the Science Shop has engaged, as part of their past and ongoing research activities, with local community organisations such as local authorities, water authorities, land reclamation consortia, non-profit associations and trade and business associations and with R&D consultancies, which act as link between the academic world and the local organisations. These stakeholders were informally interviewed and expressed their support to the Science Shop.

The Italian Science Shop will reach out to the community through a call for expression of interest to submit project ideas and suggestions through its new interactive website.

Existing community needs the Science Shop may address

As mentioned above, the Italian Science Shop focuses on sustainable water management and the control and consumption in changing climate. Therefore, it will address community needs and provide solutions relating to facing extreme events such as floods and droughts, but also to 'ordinary' management issues as well as to the provision of science knowledge dissemination.

The Science Shop team has been tutoring two master theses on CBPR and Science Shops, one of those addressing specifically the establishment of the Italian Science Shop within the framework of water resources management at the regional and local scale.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Italian Science Shop has established contacts with the Italian partner of the project INSPIRES, who is also the coordinator of the Italian Network of Science Cafés. Additionally, the Science Shop has engaged with Fondazione Bruno Kessler, a private foundation based in Trento (Italy), which is also going to establish a new science shop. The Italian Science Shop has reached an agreement with the two actors for ongoing cooperation and exchange of knowledge and expertise.

Moreover, members of UNIBS research team are also members of international and national associations such as EGU, IAHR, IAHS, Associazione Idrotecnica Italiana, Centro Studi Idraulica Urbana, dealing with the topics included in the focus areas of the Italian Science Shop and supporting journals with specific focus areas. Through participation in meetings, conferences and workshops organised by these associations, the Science Shop is intensifying its contacts and relations with experienced actors and the community.

3.7 Dutch Science Shop (Leiden University)

Reaching out to community to gather research questions

Given that the Science Shop will be a Citizen Science Lab operating as an incubator and central hub for citizen science efforts with a particular focus on astronomy, environmental science and Earth observations, community engagement mainly focuses on primary and secondary schools.

Existing community needs the Science Shop may address

The Citizen Science Lab will address the needs of the community based on public data (School performance, environmental studies, etc.)

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Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The creation of contacts will be mainly focused on Science Shops with experience in working with rural communities and communities typically not engaged with Science & Technology.

3.8 Slovenian Science Shop (Institute Josef Stefan)

Reaching out to community to gather research questions

The Slovenian Science Shop (Centre of Participatory Research at the Institute Jožef Stefan – CPR-IJS) focuses on service integration in cross-border social innovation and development, providing solutions on topics related to territorial planning, integrated ecosystem management, biodiversity protection and spatial planning of marine and coastal space. The Science Shop has reached out to the community to gather research questions utilising its existing collaborations and network and identified several issues which can be dealt with in the context of the Slovenian Science Shop.

Existing community needs the Science Shop may address

As aforementioned the Slovenian Science Shop deals with territorial planning, integrated ecosystem management, biodiversity protection and spatial planning of marine and coastal space at a national level. Therefore, it has identified specific societal needs to be addressed through the Science Shop such as the health impact of electromagnetic waves (transmission lines) on children. In regards to this subject, further research and optimisation is needed relating to spatial planning and siting of electric energy infrastructure. More specifically, this societal need relates to the planned transmission line Divača-Beričevo in the south-west part of Slovenia. The relevant corridor is planned to be developed close to, or directly through, certain establishments near schools and kindergartens, however the formal siting procedure of this transmission line does not effectively include public opinion. Hence it is expected that the civil and community activities to be developed through the Science Shop will have significant impact. Another important societal need relates to NGOs' expectations on stronger citizens engagement in environmental co-management, decision-making and preparing publications and consultations on resource management. Additionally, societal needs are expressed regarding activities focused on preparing and conducting mobility management plans (including associated research) for various communities.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Slovenian Science Shop has established partnerships with two civil initiatives, namely "North Corridor" and "Let's Protect Children against Radiation" relating to the transmission line corridor Beričevo-Divača. The collaboration with the aforementioned initiatives is expected to be fruitful, and several communication channels have been established with their representatives.

The Slovenian Science Shop in collaboration with these civil initiatives, has organised a public event to inform the wide public on the Science Shop and its activities. The event target audience was civil society organisations, including NGOs, representatives of municipality, journalists, researchers, representatives of national research agency etc. A general invitation for submitting proposals for participatory research was also published.

Reaching out to community to gather research questions

The Wuppertal Institute aims to establish a Science Shop with the purpose to accelerate innovation and transition processes toward a sustainable future in Wuppertal. This includes brokerage services and collaborating with regional/local stakeholders (e.g. citizens, public and private organizations) to identify real needs and to co-create sustainable innovation and design as means of decoupling quality of life and environmental and social damage. The Science Shop intends to build on the Wuppertal Institute's strong network of local institutions that are engaged in CBPR activities. The Science Shop, in the course of ongoing research and development projects, is in touch with several stakeholders from civil society, local administrations, businesses, NGOs, and citizens in order to reach out to the community. The Science Shop is also planning to utilise communication and social media channels as well as the SciShops.eu platform to reach specific target groups and identify research questions. The German Science Shop, however, emphasizes the direct interaction with the target groups (citizens, CSO/NGOs and companies) for the effective identification of societal needs and research questions, whereas in more complex cases, the interaction and involvement of their perspective and knowledge is needed to answer the questions and find solutions by using a transdisciplinary research approach.

Existing community needs the Science Shop may address

The scientific activities of Wuppertal are based on a transformative research approach that is characterised by actively involving stakeholders with different social and disciplinary backgrounds in the research process. In this regard, specific needs of local communities have been identified in a broad set of our research and development projects. The results are published in respective project reports. Selected examples of relevant projects in which specific needs for local communities are analysed and local communities are actively integrated in the research process are the following:

- "SusLabNWE" Creation of a Networked Infrastructure for Innovation on Sustainability in the Home Environment that Enables User-Centred Testing and Development in a Living Laboratories and Testing Houses at 5 Locations(https://wupperinst.org/en/p/wi/p/s/pd/381/)
- "INNOLAB Living Labs in the Green Economy: Real-World Innovation for User Integration and Sustainability" (https://wupperinst.org/en/p/wi/p/s/pd/518/)
- "KoSI-LAB Communal Laboratories for Social Innovation" (https://wupperinst.org/en/p/wi/p/s/pd/632/)
- "WTW Well-Being Transformation Wuppertal an Urban Transition Laboratory for Sustainable Economics" (https://wupperinst.org/en/p/wi/p/s/pd/553/)
- Project "GeoPortal des Guten Lebens" (German only) (http://www.transformationsstadt.de/geoportal/)

Furthermore, three specific research questions have been developed in co-creation with local stakeholder within the CBPR event, Climathon Wuppertal 2018 (for further Information, see Deliverable 6.1 Community specific research questions report).

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The German Science Shop has taken first steps to establish a broad network of collaborators and has engaged in several community engagement activities. The Science Shop has contributed to the first Climathon in Wuppertal. The event was organised and hosted by Neue Effizienz (local NPO), University of Wuppertal (Bergische Universität Wuppertal), Climate KIC (EU climate innovation initiative) and the

Wuppertal Institute. The Science Shop has also contributed to three follow up events of the first Climathon in Wuppertal. With regard to twinning activities, several initiatives have been undertaken. Precisely, the Science Shop achieved to liaise and connect with the Science Shop Bonn, Germany as one of the longest-running German Science Shops and, with more than 35 employees and one of the biggest Science Shops in the world.

Through WI's projects the team is frequently in contact with participative and transdisciplinary research settings, innovation networks and sites in the field of sustainable energy and resource use and further relevant institutions within the LivingLab research infrastructure and other innovation networks. Moreover, the German Science Shop has identified and pursued communication and cooperation with the following actors:

| Key partner | Location | Short description | Joint activities |
|----------------------------|-----------|--|---|
| WILA Bonn | Bonn | Established in 1984 Bonn Science Shop (WILA Bonn) is one of the longest-running German science shops. It is dedicated to work on key social challenges. Such challenges can only be overcome when science takes them up, and citizens are able to understand even highly complex matters so well that they are able to act accordingly. This is the interface WILA Bonn is working on: https://www.wilabonn.de/en/ | Twinning activities (Q1/2018 & Q01/2019) |
| WILA Solingen | Solingen | The Science Shop Solingen will start in January 201 and is focusing its work on the field of production and processing of metallic materials. | Partnership/cooperation activities (Q1/2019) |
| Neue Effizienz (NPO) | Wuppertal | The "Neue Effizienz" promotes resource and energy efficiency in the Bergisch city triangle with research, consulting and networking in the key themes of industry, the city, mobility and education: https://www.neue- effizienz.de/neue_effizienz/neue_effizienz/ (German only) | Diverse research projects, recent joint activity "Climathon Wuppertal" (Q2/2018-Q4/2018 & Q1- Q4/2019) |
| University of Wuppertal | Wuppertal | The University of Wuppertal was founded in 197. It has a high international profile and cooperation but is also firmly rooted in the region. Recently it has established a new innovation lab, called "Freiraum" in the city of Wuppertal, where the first <i>Climathon</i> in Wuppertal has taken place in 2018. | Cooperation agreement since 2010, recent joint activity "Climathon Wuppertal" (Q2/2018- Q4/2018 & Q1/2019- Q4/2019) |
| TransZent | Wuppertal | Centre for Transformation Research and Sustainability founded by the University of Wuppertal and the Wuppertal Institut: http://www.transformationsstadt.de/geoportal/ (German only) | Diverse projects e.g. "GeoPortal des Guten Lebens" (Workshop further development & consolidation of the project in Q4/2018; cooperation activities Q1/2019) |
| Utopiastadt | Wuppertal | NPO in Wuppertal: with Expertise in CBPR: https://www.clownfisch.eu/forschung/coforschu ng/ (German only). | Diverse projects e.g. "Well- Being Transformation Wuppertal (WTW)"; Development of an "Utopia Campus", cooperation activities Q1/2019) |

Table 2. Key partners and joint activities



Reaching out to community to gather research questions

The Hungarian Science Shop focuses on active collaboration between relevant actors that establish the basic environment and works out the research and innovation concept to motivate and involve endusers into the early stage of the innovation process of products and technologies.

The Science Shop carried out internal discussions within the Knowledge Management Centre and initiated a brainstorming event with the participation of all thematic divisions (biotechnology, engineering, smart technologies). The aim of this event was to raise awareness of the concept within the researchers, to collect ideas about existing collaborations with civil society and decide on ways to reach out to the community.

Existing community needs the Science Shop may address

The Science Shop will address community and societal needs relating to areas such as bioeconomy, raw materials and circular economy and mobility, by enhancing interactive value production with the end-users by using the Living Lab, and overall, the open innovation approach.

Creation of contacts with experienced actors (Science Shops, academic institutions) and community engagement

The Hungarian Science Shop has established a partnership with ESSRG, an existing Hungarian Science Shop, and is working towards the establishment of close cooperation and exchange experiences and knowledge in regards to the Hungarian Science Shop ecosystem and the identification of country-specific issues. The Science Shop has also established a partnership with Corvinus Science Shop.

The Science Shop has engaged in several informal discussions and personal meetings including meetings with the ESSRG Science Shop and a brainstorming event with BZN. The planned event to be attended include a co-creation event in Budapest.



4 Establishment of Science Shops: A business approach

Science Shops perform CBPR, according to their specificities. As discussed earlier, the development of a business plan is important for a newly established organization. The new Science Shops have been urged to compile their own business plan based on a common template. This chapter presents for each Science Shop, an overview of business plan. The new Science Shop business plans are included in Annex. It must be noted that 2 main aspects of the business plans have not been developed in the context of this deliverable, and will be a matter of discussion over the upcoming summer school, namely the Financial Plan and the Marketing Plan. It must also be noted that business plans from 4 partners (designated below) are yet to be completed.

4.1 Austrian Science Shop (SYNYO)

ScienceShop.at – located in Vienna, Austria – serves to bring together science, technology and the civil society on pressing topics in the field of emerging technologies. It will act as an intermediary between civil society and researchers & experts in fields like Artificial Intelligence, Ambient Assisted Living & the Internet of Things.

The Science Shop will build on a strong network of partners and aims to improve understanding as well as provide solutions for societal challenges issues through ICT-related research. In the coming years ScienceShop.at will focus on a strengthened cooperation with citizens, civil society organisations and experts in the field of emerging technologies to tackle challenges on digital inclusion & hypo-connectivity.

4.2 Cypriot Science Shop (KPMG)

KPMG ScienceShop – will operate under the auspices of KPMG and will be managed by the Firm Advisory department and specifically by the Strategy, Customer and Operations (SCO) team. The team will have the overall responsibility of running the Science Shop by providing services amongst other related operational transformation, people and change management, digital innovation, data analytics etc. A website was created which is dedicated to the Science Shop and will appear at the main page of the KPMG website.

More than that, research questions related to topics which are not offered in-house by the Science Shop, will be gather with the assistance of local universities with whom KPMG has created partnerships.

4.3 British Science Shop (Oxford Internet Institute)

The Oxford Internet Institute will establish the British Science Shop within Oxford University. The Science Shop may have a variety of themes, including climate change, the role of algorithms, pollution sensing in Oxford, and more. An online science shop is considered. [Business Plan to be completed]

4.4 Belgian Science Shop (Leuven University)

The Centre for Research on Peace and Development started the *CRPD Science Shop*. CRPD is a multidisciplinary research centre within the faculty of social sciences of KU Leuven. In line with the expertise of the research centre, the science shop has a thematic focus on research topics related to intergroup relations, polarization, multiculturalism, and integration. Challenges related to migration and integration are extremely salient and contested in Belgium and the European Union as a whole. For example, the Belgian government recently lost its majority in December 2018 when the Flemish nationalist party left the ruling coalition because they refused to support the UN Migration agreement. This led to the resignation of the prime minister and the country is left with a so-called caretaker



government until the next national elections in May 2019. In addition, there are endless debates about banning veils (Hijab or Niqab) and the use of foreign languages in the public sphere and the school environment.

4.5 Spanish Science Shop (INAECU)

INAECU has established a university science shop within UC3M, focusing on sustainability and gender. Various activities were undertaken like the creation of a twitter account, e-mail account. Moreover, a dissemination plan (with a focus internal at the University and external) has been established. In addition, some technical issues have been discussed such as the location of the Science Shop, logo, etc.

Finally, the research team has linked with different stakeholders (NGO's, students association, women's association, women's Institute, policy makers (Getafe Town Hall and Spanish University Rectors' Conference (CRUE)), researchers on the topics, the staff of the University, etc.). [Business Plan to be completed]

4.6 Italian Science Shop (University of Brescia)

WatShop – The Science Shop for sustainable water management is a university-based Science Shop at the Department of Civil, Environmental, Architectural Engineering and Mathematics of University of Brescia.

WatShop aims to support research and active cooperation among civil society, public and private research institutes and companies, in order to build a smarter and more efficient system for the management of water. Moreover, it aims at showing the actual benefits of a community-based participatory research that sees in the collaboration among beneficiaries (citizens and local organizations), researchers and contractors the key starting point to reach more effective results.

Any member of the civil society can send to the research team an idea or a question to work on to create a concrete action on the "Sustainable water management, control and consumption in a changing climate" theme. Water, the most precious natural resource, today more than ever, needs to be managed, controlled and used in a sustainable way, with special attention on its socio-economic and environment effects. The challenge implies the research for innovative and smart solutions to balance offer and demand keeping into consideration water disposal (water management), water control (defending the territory and the eco-system in wealth or scarcity conditions) and coordinating water use.

4.7 Dutch Science Shop (Leiden University)

Leiden Observatory will establish a Science Shop within Leiden University. The Observatory's focus revolves around the discipline of astronomy. Its main expertise is the use of astronomy as an educational tool and the development and review of educational resources for primary and secondary schools. [Business Plan to be completed]

4.8 Slovenian Science Shop (Institute Josef Stefan)

A Science Shop at the Institute Jožef Stefan was established. Its formal name is Centre of Participatory Research at the Institute Jožef Stefan – CPR-IJS and is located at the Department of Environmental Sciences. . [Business Plan to be completed]

4.9 German Science Shop (Wuppertal Institute)

The Wuppertal Institute (WI) aims to establish a Science Shop in Wuppertal related to sustainable design and innovation as means of decoupling quality of life and environmental damage caused by



consumption and production. The Science Shop intents to build on the WI's strong network of local institutions that are engaged in community based participatory research (CBPR) activities. Following the principles of transdisciplinary and transformative research, the WI is planning to establish a Science Shop that does not only integrate various organisations, resources and disciplines but promotes the engagement with citizens of Wuppertal, local initiatives and industries and the city's administration in an open dialogue at eye level.

4.10 Hungarian Science Shop (Bay Zoltan)

Bay Zoltán Science Shop is hosted by Bay Zoltán Nonprofit Ltd. for Applied Research in Hungary. As the organisation is located in three towns of Hungary, the Science Shop aims to support of the local communities of these towns. Research questions accepted should be in the disciplines of our mother organisation: engineering, biotechnology and smart systems. Being an applied research organisation, it is foreseen that solutions offered by them will be ready-to-use.

The mission of the Bay Zoltan Science Shop is to bring the research and the community closer. It aims to support local communities and civil society to find solution for their problems. Bringing different actors in the same platform could be beneficial for all of them. Bay Zoltan Science Shop aims to



5 References

Agirdag, O., Loobuyck, P., & Van Houtte, M. (2012). Determinants of Attitudes Toward Muslim Students Among Flemish Teachers: A Research Note. *Journal for the Scientific Study of Religion*, *51*(2), 368-376.

Cooper L. (1984), "The Twinning of Institutions: Its Use as a Technical Assistance Delivery System." World Bank Technical Paper Number 23. World Bank.

Dunkake, I., & Schuchart, C. (2015). Stereotypes and teacher characteristics as an explanation for the class-specific disciplinary practices of pre-service teachers. *Teaching and Teacher Education, 50*, 56.

Israel B., Schulz A., Parker E., Becker A., (1998), "Review of Community-based Research: Assessing Partnership Approaches to Improve Public Health." Annual Review of Public Health, 19:173–202.

Jones L. M. and Blunt P. (1999), "'Twinning' as a method of sustainable institutional capacity building." Public Administration and Development, Vol. 19, 381-402, John Wiley & Sons. Ltd

Jussim, L., & Harber, K. (2005). Teacher Expectations and Self-Fulfilling Prophecies: Knowns and Unknowns, Resolved and Unresolved Controversies. *Personality and Social Psychology Review*, *9*(2), 131-155.

LOIEs - Lessons and Options for an Integrated European approach to CSR (2013), Handbook, Integrating CSR by company twinning methodological approach, co-financed by European Commission – DG Employment, Social Affairs and Inclusion,

http://www.centroestero.org/formazione/repository/03_12_2015_17_34_integrating-csr-bycompany-twinning-methodological-approach.pdf, retrieved on 14.08.2018

Ouchi F. (2004), Twinning as a method for institutional development: a desk review. WBI evaluation studies; no. EF04-85. Washington, DC: World Bank

WHO, World Health Organization (2001) Guidelines for city twinning. In: Guideline. WHO Regional office for Europe; 2001. <u>http://apps.who.int/iris/bitstream/10665/107370/1/E74547.pdf</u>., retrieved on 14.08.2018



ANNEX I – ELABORATED BUSINESS PLANS BY SCISHOPS PARTNERS

AUSTRIAN SCIENCE SHOP (SYNYO)

Service and Value Proposition

Emerging technologies are contrasted with incremental innovation processes and are seen as unpredictable, disruptive and complex. In this context, the World Economic Forum sees the threat to digital rights through networked technologies as one of the most fundamental challenges of the coming years. Digital risks will be associated with greater physical consequences and deepen existing inequality and discrimination in a way that would be difficult to discern or understand in human terms.

The use of emerging technologies (e.g. Artificial Intelligence, Ambient & Assisted Living and the Internet of Things) within society is on the rise, however, societal values, needs and desires are oftentimes not taken into account in the development of these technologies. The desire to develop not only better technologies but also better societies is summarized under the term "Responsible Research and Innovation" (RRI). ScienceShop.at pursues to discuss an RRI approach explicitly involving the civil society perspective to promote responsible, more acceptable and ethical use of emerging technologies.

The science shop aims to provide an opportunity for civil society to develop a vision and influence the development and deployment of emerging technologies in the market, to ensure that these are harnessed for social good. Among the main challenges our civil society is facing and which ScienceShop.at aims to tackle, are:

- Digital Divide & Social Inclusion: The use of the internet and emerging technologies differs greatly according to different environments and communities. Tendencies for inclusion / exclusion are comparably scarcely discussed in the context of emerging technologies. However, especially for poorly educated, long-term unemployed, disabled and disadvantaged people a series of questions arise in this context;¹²
- **Hyperconnectivity:** Use of means of communication such as instant messaging, phones, Web 2.0, Web 3.0, etc. have fundamentally changed the way we interact and organize ourselves as a society. They bear risks and challenges, but also offer opportunities for new ways of civil society engagement.

SYNYO has built expertise and established a vast network of partners in various fields of emerging technologies such as Ambient Assisted Living, Artificial Intelligence and the Internet of Things in the last years. As a research, innovation and technology hub that explores and implements novel technologies and current societal challenges, SYNYO aims to support existing self-organised communities in peer-to-peer activities as well as in the achievement of their collaborative consumption. Interested communities will be supported through: (i) the impact analysis of the emerging technologies from an interdisciplinary perspective and a multi-angled view, (ii) the consultation work for community organisations on digital divide, data ethics & accessibility via a CBPR approach and (iii) the help provided to identify relevant concepts to reach out to specific communities. Potential beneficiaries will be:

• The Open Data Community by connecting community to experts



¹² https://arbeitplus.at/blog/2018/11/18/digitale-inklusion-muss-integrales-ziel-der-sozialwirtschaft-sein/

- The Open Science Community by enhancing communication between science & technology
- The Research Community by increasing the impact of research outputs through effective dissemination of the outputs to the general public, the media and other stakeholders

Competition and ecosystem

ScienceShop.at will be embedded in an ecosystem of various national organisations most prominently with focus on Community Based Participatory Research (CBPR), Open Knowledge, Open Data & Emerging Technologies. SYNYO aims to work closely together with those organisations as well as to together reach out to communities and stakeholders within the civil society.

| Key partner | Type / Location | Short description | Joint activities |
|--|---|--|--|
| <u>Citizen Science</u> <u>Network Austria</u> | Type: Network Location: Vienna | The Citizen Science Network Austria was founded in 2017, which is coordinated by the University of Natural Resources and Life Sciences (BOKU Wien). The network focuses on further developing Citizen Science in Austria. | Network, twinning & consultation partner Main Contact: Andrea Sieber |
| <u>Open Knowledge</u> <u>Maps</u> | Type: Association Location: Vienna | Open Knowledge Maps aims to revolutionize the discovery of scientific knowledge via building a visual interface to increase visibility of research findings for science and society. | Partner for events / workshops Main Contact: Peter Kraker |
| <u>Open Knowledge</u> <u>Österreich</u> | Type: Association Location: Vienna | Open Knowledge Austria creates, uses and disseminates open knowledge and imparts the necessary skills to others. Furthermore, the non-profit association shapes the framework conditions in Austria and at European level. It is part of an international network and works together with actors from civil society, science, industry and administration. | Network partner / community outreach Main Contact: Stefan Kasberger |
| SPOTTERON | Type: Platform Location: Vienna | SPOTTERON is a fully customizable and affordable system for Citizen Science, Environmental Protection and Voluntary Monitoring applications. With SPOTTERON, Citizen Science projects are safe and stable, and are being maintained and updated throughout their lifetime. | Platform / technical expertise Main Contact: Philipp Hummer |
| Doing it together Science (DITOs) | Туре: | Doing It Together Science (DITOs), co- ordinated by ExCiteS at UCL, is organizing | Research partner |

33 _____



| | H2020 Project Location: Vienna | many innovative events across Europe focusing on the active involvement of citizens in Citizen Science. In Doing It Together Science universities and research institutions work together with science galleries, museums and art institutions to engage people with citizen science. | Main Contact: Erich Prem |
|--|--|---|--|
| <u>Wissenschaftsladen</u> <u>Wien (Science Shop</u> <u>Vienna)</u> | Type: Science Shop Location: Vienna | Founded in 1991, the Wissenschaftsladen Wien is an independent research institute that sees itself as a research and advisory body for non-profit organizations such as social initiatives, environmental organizations, local authorities, non-profit service organizations and human rights organizations. | Learn CBPR Best Practices form the oldest Science Shop in Austria Main Contact: Michael Strähle |

Table 1: Key partner organisations

Organization

ScienceShop.at will be a **non-university-based**, **funding-oriented** Science Shop acting as an **intermediary** within its strong network of partner organisations. It will build capacity for community-university partnerships and provide a **digital-participation oriented platform** for jointly work in innovative and strategic ways.

SYNYO as a company is focusing on **ICT-related research**, **innovation and technology** in various domains tackling societal, political ecological and economical challenges. The overall vision we are aiming to reach within our activities will be to bring technology closer to society. The science shop will therefore build on the expertise and partnerships established within various national & international projects at the transition of technology and society:

- SciChallenge (H2020): Novel concepts to actively integrate young boys and girls in science education using a contest-based approach to self-produced digital education materials from young people for young people.
- Follow Me (AAL Europe): Aiming to satisfy people's desire mainly family members and doctors of monitoring the position of elderly people with different forms of dementia and Alzheimer, in order to prevent dangerous situations.
- AALVISION (BENEFIT): Develop a visionary strategy for the area of AAL in Austria, embedded in a pan-European context. For this, the study is based on comprehensive research and analysis of previous national and international studies and projects, roadmaps about quality of life, usage of technology, emerging technologies and societal value.
- ECRAFT2LEARN (H2020): The eCraft2Learn project is researching, designing, piloting and validating an ecosystem that is based on digital fabrication and making technologies for creating computer-supported artefacts by children.
- **IoThink (netidee):** IoThink recognizes the need for increased awareness and empowerment in dealing with Internet-of-Things devices. An information and knowledge platform will be developed, which is explicitly aimed at children and adolescents.



The **team** consists of employees specialized in various scientific and technical fields like Social Sciences, Safety & Security, Energy & Sustainability, Urban Future, Smart Technologies, Smart Health, or Digital Systems. ScienceShop.at will act as an intermediary (we will not be answering research questions ourselves) and therefore **work closely together with the AAL**, **Open Data and Open Knowledge community as well as with researchers focusing on emerging technologies**.

Various twinning and cooperation activities will build **mutually beneficial partnerships** as well as foster a **citizen-centred knowledge transfer** and exchange among interest and specialist groups. Lowthreshold access to research and development will help citizens to place their concerns and questions on emerging technologies, as well as to answer their current questions from research. On the other hand, research will benefit from being more citizen-oriented and having the opportunity to use examples to test their findings.

Planning

Establishment of ScienceShop.at will be structured alongside 5 major milestones:

- 1. **Planning, Formalities and Project management**: Including the development of a Business plan, stakeholder collection as well as legal restrictions and detailed planning
- 2. **Preparing establishment of the Science Shop**: Outreach to various stakeholders as well as identifying funding opportunities and communicating about the planned science shop.
- 3. **Generating research requests**: Analysing the demand from communities within civil society, development of tools for collecting questions & promotion of the Science Shop through local communication channels
- 4. **Implementation of a Pilot Project**: Conceptualization, organisation and implementation of a pilot project as well as communicating about its outcomes.
- 5. Exploitation strategy: Ensuring longevity & sustainability of the Science Shop

The Science Shop Business Model will be refined, drawing upon the lessons learned from the first pilot project(s).

| | SYNYO SCIENCE SHOP (TBD) | Monat | Monat | Monat | Monat | Monat | Monat | Monat | Monat | Monat | Monat | Monat | Monat |
|------|--|-------|--------|---------|--------|---------|---------|--------|--------|--------|---------|--------|---------|
| | 、 <i>,</i> | | Feb.19 | Mar. 19 | Apr.19 | May. 19 | Jun. 19 | Jul.19 | Aug.19 | Sep.19 | Oct. 19 | Nov.19 | Dec. 19 |
| WP1 | PLANNING, FORMALITIES & PROJECTMANAGEMENT | | M1 | | | | | | | | | | M5 |
| T1.1 | Projectmanagement | | | | | | | | | | | | |
| T1.2 | Legal restrictions & detailed planning | | T12 | | | | | | | | | | |
| WP2 | PREPARING ESTABLISHMENT OF THE SCIENCE SHOP | | | | M2 | | | | | | | | |
| T2.1 | Survey the territory & identify relevant funding schemes | | T2.1 | | | | | | | | | | |
| T2.2 | Build relationships, alliances & analyse relevant stakeholders | | | T2.2 | | | | | | | | | |
| T2.3 | Inform & communicate about Science Shop | | | | T2.3 | | | | | | | | |
| WP3 | GENERATE RESEARCH REQUESTS | | | | | | M3 | | | | | | |
| T3.1 | Analyse demand from civil society organisations & perform need analysis | | T3.1 | | | | | | | | | | |
| T3.2 | Develop tools for collecting questions & prepare research question databases | | | | | | T3.2 | | | | | | |
| T3.3 | Promote the Science Shop through local communication channels | | | | | | | | | | | | T3.3 |
| WP4 | IMPLEMANTATION OF PILOT PROJECT | | | | | | | | | | | M4 | |
| T4.1 | Identify project implementation staff | | | | | | | | | T4.1 | | | |
| T4.2 | Implement and review first project | | | | | | | | | | T4.2 | | |
| T4.3 | Communicate about project & results | | | | | | | | | | | T4.3 | |
| | | | | | | | | | | | | | |



CYPRIOT SCIENCE SHOP (KPMG)

Service and Value Proposition

The services that will be offered under the Science Shop are the following:

Customer Experience

- Digital Innovation;
- Data Analytics;
- Blockchain;
- Pricing.

In addition, with the involvement of the local academic institutions, the KPMG Science Shop will accommodate research questions outside in-house expertise

Competition and ecosystem

The Cypriot Science Shop does not have direct competition since the concept is relatively new. Through the PERARES project, a university Science Shop was established in Cyprus. The KPMG Science Shop, is unique in its kind since it provides a blend of business thinking combined with research results. Various research centres exist but which are mainly located within or ran by Universities. The KPMG Science Shop is connecting with them to seek collaborations.

Organisation

The Cypriot Science Shop will be operated by KPMG Limited. It will have an advisory board comprising senior KPMG officials and academics from Cyprus Universities. The KPMG ScienceShop will be funded by the Firm and will utilise the premises, equipment, tools and resources of the Firm to operate. The management of the company prioritise the engagement in research activities, the creation of partnerships with academic institutions local and international and gradual accumulation of research results under the KPMG Cyprus name.

The staff of the Science Shop will comprise KPMG personnel. The personnel is made of the Director, three Managers and three Advisors. The coordination staff includes the Director and the implementation staff includes the advisors. Additional personnel will be dedicated upon needs. The following table includes the roles and responsibilities of each member that will handle the overall coordination and running of the Science Shop.

| Member of Staff | Roles and Responsibilities | | | | | | | |
|-----------------|--|--|--|--|--|--|--|--|
| Director | Science Shop Supervisor | | | | | | | |
| | The Director will have the overall supervision of the Science Shop ensuring that coordination, administration, management and running of the Science Shop is implemented in an efficient way. | | | | | | | |



| Managers | Management |
|----------|---|
| | The Management will be responsible for managing the operation of the Science Shop by ensuring the existence of financial resources. In addition, upon the collection of the research questions and requests will select which research questions and requests are going to be answered through the Science Shop or will be outsourced to the universities. Moreover, the management will have the responsibility of networking activities, and thus maintaining the relationships with the stakeholders, interested parties and the targeted audience. Finally, they will have the responsibility for the funding initiatives that will occur, as well as the maintenance of agreements with stakeholders and interested parties. |
| Advisors | Advisors/ Researchers |
| | Advisors/ Researchers will be responsible for the day to day running of the Science Shop and the performance of administrative tasks. They will handle the collection of the research questions and requests and will take part to the research design and the collection of data. The number and the type of the projects that will be handled by the Science Shop will be decided in cooperation with the management What is more, advisors will perform communication and promotion actions including the dissemination of information in relation to the activities of the Science Shop, the communication of results to the audiences so as to ensure the visibility and sustainability of the project. |

Staffing plan of KPMG ScienceShop

The target audience of the Science Shop can be divided into two categories. More specifically, one category includes the people that will take advantage of the services that will be offered under the Science Shop and the other category includes the people to whom the establishment of the Science Shop will be communicated. The first category includes the existing clients of KPMG. His second category includes the wider public, e.g., researchers, universities/research institutes, governmental bodies, CSOs, NGOs, SMEs, start-ups and companies.

Communication of the establishment of the Science Shop can be done through different channels and touchpoints, such as:



- KPMG's website,
- SciShops.eu' website,
- KPMG's social media channels (Facebook, Twitter, LinkedIn etc.),
- KPMG's newsletter,
- E-mail distribution to existing clientele,
- Press releases
- Leaflets and brochures,
- Event, announcing the launching of the science shop.

Planning

| KRMG Science Shop | | | | | | 2019 | | | | | | |
|-------------------------------------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|
| Krivio Science Shop | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Dissemination | | | | | | | | | | | | |
| Launch Website | | | | | | | | | | | | |
| Continuous dissemination activities | | | | | | | | | | | | |
| promoting the Science Shop | | | | | | | | | | | | |
| Networking | | | | | | | | | | | | |
| Finalise partnerships | | | | | | | | | | | | |
| Stakeholder engagement | | | | | | | | | | | | |
| Implementation | | | | | | | | | | | | |
| Research | | | | | | | | | | | | |
| Delivery of results | | | | | | | | | | | | |
| Further dissemination | | | | | | | | | | | | |

Dissemination:

Launch Website: A website is prepared which will be hosted by KPMG. It is part of the main website of KPMG. It acts as the main dissemination tool. At the same time, the Science Shop utilises the social media of KPMG.

Continuous dissemination activities: Utilisation of the social media platforms of KPMG.

Networking:

Finalise partnerships: Agree with local academic institutions on the scope of each in the activities of the Science Shop

Stakeholder engagement: Meetings/ co-creation events with the business community and the civil society

Implementation:

Research: Conduct of research, based on the research questions gathered, through stakeholder engagement

Delivery of results: Presentation of results to stakeholders and further development.

Further dissemination: Promote results.



BELGIAN SCIENCE SHOP (CRPD)

Service and Value Proposition

In the framework of the SciShops.eu.eu project, the centre for Research on Peace and Development started the CRPD Science Shop. CRPD is a multidisciplinary research centre within the faculty of social sciences of KU Leuven. In line with the expertise of the research centre, the Science Shop has a thematic focus on research topics related to intergroup relations, polarization, multiculturalism, and integration. Challenges related to migration and integration are extremely salient and contested in Belgium and the European Union as a whole. For example, the Belgian government recently lost its majority in December 2018 when the Flemish nationalist party left the ruling coalition because they refused to support the UN Migration agreement. This led to the resignation of the prime minister and the country is left with a so-called caretaker government until the next national elections in May 2019. In addition, there are endless debates about banning veils (Hijab or Niqab) and the use of foreign languages in the public sphere and the school environment.

Currently, the science shop is running a pilot project in the academic year 2018-2019. The project investigates the role of teachers in creating a positive and inclusive school climate. More specifically, the study looks at how teachers in Flanders deal with controversial topics and challenges related to religious and cultural diversity in the classroom (integration, racism, polarization, etc.). For example, teachers are expected to identify signs of extremism and radicalisation among students and are offered trainings to counter the 'us versus them' narratives in the classroom.¹³ Moreover, teachers can call a hotline to report worrisome cases to a network of specialists. However, similar initiatives have been criticized for potentially stigmatizing particular groups and undermining the student-teacher relationship.¹⁴

Several stakeholders have been identified and are actively involved in the pilot project. Focus group discussion were held with policy makers, experts, school representatives, and representatives from VVSG and 'Bijzonder Comité voor Herinneringseducatie' (BCH) in September 2018. VVSG is a civil society organization representing local governments in Flanders. BCH is a committee that focuses on how teachers should deal with sensitive, controversial, and historical topics in the classroom. These FGDs were organised to collect inputs for the design of a survey instrument for teachers and students that was consequently piloted in several schools. Data collection started in October 2018 and was finalised in January 2019. A representative sample of 47 Flemish schools participated in the project. Results will be disseminated to the participating schools and stakeholders during spring of 2019. Moreover, an event will be organized to discuss the findings and formulate clear policy recommendations in collaboration with experts and policy makers.



 ¹³ http://www.flanderstoday.eu/education/new-programme-helps-teachers-address-religious-radicalisation
 ¹⁴ https://www.bbc.com/news/education-40456794

Competition and ecosystem

The CRPD Science Shop operates in Flanders, a relatively small geographical area that hosts several Science Shops. The universities of Ghent, Brussels and Antwerp have their own Science Shops. In addition, KU Leuven hosts the green office living lab which is also an organisation that stimulates students to contribute to society through their master thesis research (mostly on topics related to the environment and sustainable living). These organisations collaborate through the Flemish Network of Science Shops, a coordinating network that collects research questions and assigns them to the appropriate Science Shop/university with the required expertise.

Currently the CRPD Science Shop is not a part of this network, due to the financial contribution that is required to sustain and update the operations of this network. The CRPD Science Shop does have cordial relations with the members of this network, and the coordinator of the Flemish Science Shop Network (Josefien De Marrée) acts as its advisor (see twinning). Whereas this network can currently be viewed as "competition" given that potential clients are more likely to submit research questions to this network rather than to CRPD directly, CRPD aims to become part of this network in the future in case sustainable funding is secured. The CRPD Science Shop can provide a unique contribution to the Science Shop ecosystem in Flanders (and the network of Science Shops) due to the particular thematic specialization of the centre.

Organization

The CRPD Science Shop is a university-based Science Shop that is hosted by the Centre for Research on Peace and Development (CRPD) at the Faculty of Social Sciences at Leuven University (KU Leuven).¹⁵ CRPD is a multidisciplinary research centre that conducts conceptual, empirical and applied research with the aim of improving our understanding of how to resolve violent conflicts and foster more peaceful relations within and between communities, societies and countries. CRPD is an experienced research centre that has numerous ongoing research projects and previous experience with Horizon 2020 projects.¹⁶ CRPD brings together researchers from within the Faculty of Social Sciences with different disciplinary backgrounds, including political scientists, public management experts, anthropologists, sociologists and communication experts.

The Science Shop is currently in the piloting phase and funded by the SciShops.eu project. Future funding will depend in part on the success of the pilot project and the possibilities for funding by the university. The Science Shop is coordinated by a staff member of CRPD. Projects are implemented by a joint team of experienced researchers and master students. For now, the Science Shop does not have a dedicated space of its own at the university, being managed from the offices of the staff members who are involved. Given the expertise of the staff and the available infrastructure, CRPD Science Shop will be mainly focusing its activities on research projects. However, events can be organised for stakeholder involvement, discussion, and dissemination of results.

The CRPD Science Shop aims to contribute to the debate and policies regarding ethnic and cultural diversity in Flanders. CRPD provides a point of entry for civil society organisations with questions regarding these issues and provides access to high quality research free of charge or at a minimal cost. Moreover, the science shop provides students with an interesting opportunity to gain hands on research experience and contribute to society with their master's thesis.



¹⁵ www.crpd.eu

¹⁶ https://soc.kuleuven.be/crpd/projects

Planning

| Planning pilot project: Social Cohesion in my classroom | | | | | | | | | | | | |
|--|--------|-----------|---------|----------|----------|---------|----------|-------|-------|-----|------|--|
| | | 2018 | | | | | 2019 | | | | | |
| Activities | August | September | October | November | December | January | February | March | April | May | June | |
| Design survey instrument | | | | | | | | | | | | |
| Organise focus group discussions with stakeholders | | | | | | | | | | | | |
| Contact schools in random sample | | | | | | | | | | | | |
| Visitschools (data collection) | | | | | | | | | | | | |
| Processing survey data/preparing reports | | | | | | | | | | | | |
| Send customized summary reports to participating schools | | | | | | | | | | | | |
| Organise dissemination event | | | | | | | | | | | | |

| КРІ | Explanation | # completed (January 2019) |
|------------------------------|--|---|
| 2 FGDs | Two focus group discussions will be organised with stakeholders in preparation of the project. | 2 FGDs organised in September 2018 |
| +40 participating schools | Data should will be collected from a representative sample of Flemish schools. At least 40 schools should participate in the project. | 47 schools participate in the project |
| +600 participating teachers | Within the sampled schools we want a sufficient number of teachers to participate in the survey (minimum 600) | +800 completed surveys so far (ongoing) |
| +1600 participating students | A minimum of two classes are sampled within each participating school. With an average class size of 20 students, this should yield about 1600 completed surveys | 2266 students completed the survey so far (ongoing) |
| 1 dissemination event | Organise dissemination event for stakeholders (minimum 1) | 0 |
| 1 public report | Write one public report with summary of findings and policy recommendations | 0 |
| 2 publications | Publish two academic articles with findings from survey. | 0 |

Service and Value Proposition

WatShop is aiming at serving local communities by developing research and education projects or taking concrete actions to improve the society resilience with respect to "Sustainable water management, control and consumption in a changing climate" theme. Water, the most precious natural resource, today more than ever, needs to be managed, controlled and used in a sustainable way, with special attention on its socio-economic and environmental effects. The challenge implies the research for innovative and smart solutions to balance offer and demand keeping into consideration water disposal (water management), water control (defending the territory and the ecosystem in wealth or scarcity conditions) and coordinating water use. The whole society without exceptions is nowadays affected by this large category of issues and is expected to be even more impacted in the future due to the predicted change in the climate.

Recent EU directives (2000/60 Water Framework Directive and 2007/60 Flood Risk Management directive) pushed the national (Italian) government and the regional (Regione Lombardia) administration to take actions towards sustainable water management, control and consumption. Also, The EU Adaptation Strategy for Climate Change (COM (2013) 216) suggested the development of national and regional adaptation plans.

Since many years, Lombardy is the leading Italian region in the field of agriculture: it produces 37% of the Italian milk, 42% of Italian rice, 40% of Italian pig products and 69% of its land uses goes to agriculture. Brescia is the first Italian agricultural province as regards GDP, but due to the climate change it is facing a reduction in corn crop yields and extra costs for the operation of irrigation wells.

A recently approved regional law provides a new regulation for the mitigation of drought effects in agriculture, for the hydrogeological risk protection and for the land restoration ("Nuove norme per la mitigazione degli effetti delle crisi idriche nel settore agricolo, per la difesa idrogeologica e per la riqualificazione territoriale, BURL n. 50, suppl. Del 15 Dicembre 2017)"

In this respect, both the regional administration and the municipality of Brescia are interested in any progress in the scientific knowledge, as well as in raising the society awareness and interest in the potential opportunities to tackle climate change water interconnected issues. WatShop is addressing local communities (mainly based in the province of Brescia but not limited to them) and several stakeholders target groups, e.g. farmers, residents, municipalities, water and land conservation offices, water management authorities, schools, local and regional NGOs, etc.

Competition and ecosystem

Watshop will mainly operate in the area of the Province of Brescia, which is the largest in the Lombardia region (Northern Italy) and has a population of some 1,264,105 (as of January 2016). Its capital is the city of Brescia (about 200000 inhabitants). The province stretches between Lake Iseo in the west, Lake Garda in the east, the Southern Rhaetian Alps in the north and the Lombardian plains in the south. The main rivers of the province are named Oglio, Mella and Chiese. The whole territory belongs to the Po river basin. The province of Brescia boasts three main lakes, Lake Garda, Lake Iseo and Lake Idro, plus several other smaller lakes, three valleys, Val Camonica, Val Trompia and Valle Sabbia, as well as a wide flat area South of the city, known as the Bassa Bresciana, and several hilly areas surrounding the city landscape and extending Eastwards towards Veneto and West to Franciacorta (very famous area for wine production). Due to the altitude and morphological variety and the presence of large lakes, the province includes all kinds of biomes in Europe: from something



similar to the maquis shrubland up to the perennial snow of Adamello (with the largest glacier in the Italian Alps).

Water management, control and consumption is regulated through national and regional laws, as well as through water management plans acting at several levels: from the Po river basin authority (acting on several regions of Northern Italy including Lombardia) to the municipality building regulations.

The environment of the Science Shop therefore consists of the following organizations:

- University of Brescia
- Municipality of Brescia
- Province of Brescia
- Lombardia Region
- Po river basin Authority
- AIB- Brescia Industry Association
- Brescia Corp of Engineers
- Brescia Corp of Architects
- Communities of mountain municipalities

Another university is located in Brescia: Università Cattolica del Sacro Cuore. It is a private university currently cooperating with UNIBS for a course in teaching innovation. The research activity of this university is also dealing with environmental issues and is a competitor in the search for research funding. Nevertheless, we are planning to cooperate with them in some focused proposals.

Several associations of volunteers are also operating in Brescia and in its surroundings and support initiatives on environmental issues. Some of them have already expressed their interest in cooperating with the Science Shop and hosting some knowledge cafés or co-creation events (e.g. AMBIENTE PARCO, URBAN CENTER). Many of them are actually also competitors in the search for funding but with some of them we also planned to submit joint applications to develop specific projects.

Watshop will cooperate and interact with the stakeholders and will involve University of Brescia's students in the research carried out in solving the questions received from interested parts.

Organization

Watshop is part of the Department of Civil and Environmental Engineering, Architecture and Mathematics (DICATAM) of University of Brescia (UNIBS), a medium-size state university (about 15000 students) providing degree, master and PhD programs in 4 areas: medicine, engineering, economics and law.

The Coordinator is Giovanna Grossi, associate professor in hydraulic structures at DICATAM- UNIBS, member of the steering committee of the National Research Centre for Urban Hydraulics, member of the Italian Glaciological Committee as well as of several national and international scientific associations dealing with water, hydrology and hydraulics.

The manager, Francesca Barisani, has quite a long experience in monitoring and managing projects funded by international donors (Italian Ministry of Foreign Affairs, Interreg, LIFE, 7th Framework Programme, Horizon 2020, ECHO, Fondazione Cariplo, MIUR) in the fields of international cooperation, R&D and support to SMEs. She is now PhD student at DICATAM.

The team of researchers and supervisors of master students consists of Francesca Berteni (getting in a few months her PhD in Civil and Environmental Engineering, International Cooperation and Mathematics, Stefano Barontini (Assistant Professor in Hydraulic Structures) and Roberto Ranzi (Full Professor in Hydraulic Structure). The three of them can be supervisors of master students involved in



Science Shop projects. Potential further members of the implementation staff have already expressed their interest in joining the team and might be initially involved for specific projects and research tasks concerning also topics not included in the expertise of the team (e.g. experts in law, marketing, economics, professional engineers, ...).

Partnerships are being established with some organizations:

- Intermediu Bucharest (twinned Science Shop based at University Politehnica of Bucharest);
- Municipality of Brescia;
- Associazione Comuni Virtuosi (an Italian association of smart municipalities);
- Po River Basin Authority.

Others are expected to be activated in the near future.

As a vision, WatShop aims at showing the actual benefits of a transformative community-based participatory research focusing on "*Sustainable water management, control and consumption in a changing climate*" and in response to the concerns experienced by civil society. This means implementing projects on behalf and with CSOs that inspire and enable changes or result in new perspectives on the issues under investigation.

Accordingly, the mission of WatShop, focusing on the theme described above, relies on the following goals:

- to provide civil society with knowledge and skills through research and education;
- to develop, maintain and manage its activities in an adaptable, efficient and sustainable manner;
- to ensure the co-creation, integration and spread of knowledge in civil society;
- to encourage cooperation between private, public, profit and non-profit bodies both to boost societal awareness about specific topics and to implement evidence-based actions;
- to enhance understanding among policymakers and education and research institutions about the research and education needs of the civil society.

Planning

The pilot project is dealing with the efficiency of the management of integrated water services, mainly including water supply, urban drainage and water treatment. The topic was suggested almost a year ago by the national association of smart communities (Associazione Comuni Virtuosi), interested in verifying the limits and opportunities of different management solutions, according to the national and regional regulations and policies.

The research project actually started at the end of 2018 and the first event is planned for the first week of February 2019. Half a day event will take place in the city centre, will be open to the public, will shortly present the Science Shop and the pilot project and then focus on the price of water and stimulate discussion among the participants.



GERMAN SCIENCE SHOP (WI)

Service and Value Proposition

The city of Wuppertal, as many cities in the North Rhine-Westphalia region, is struggling with deep structural challenges (e.g. high unemployment rate, housing vacancies, energy system transformation), and at the same with the challenges of adapting to climate change impacts (e.g. extreme weather events). But how can the transition towards a more sustainable future be fostered in the city of Wuppertal with regard to decoupling well-being and quality of life from environmental degradation caused by consumption and production?

Following the principles of transdisciplinary and transformative research, the Wuppertal Institute (WI) aims to establish a Science Shop with the purpose of accelerating innovation and transition processes toward a sustainable future in Wuppertal. This includes brokerage services and collaborating with regional/local stakeholders (e.g. citizens, public and private organizations) to identify real needs and to co-create sustainable innovation and design as means of decoupling quality of life from the environmental and social damage. Table 1 illustrates potential services, which could be offered at the Science Shop in Wuppertal.

| Service type | Service segment | Description |
|-------------------------------|--|---|
| | Showroom | Support to collect user feedbacks for prototypes in showrooms. |
| | User studies | Support to analyse with quantitative and qualitative research methods target user groups. |
| Customer-oriented services | Business model development | Support to generate and develop business models, e.g. within a workshop setting (business model ideation). |
| | Stakeholder networking and brokerage | Support to connect and engage with relevant stakeholder. |
| | Co-design | Support to co-design innovative product <i>concepts</i> with relevant stakeholder and potential user (e.g. participatory design). |
| User-integrating | Co-prototype | Support to co-design <i>prototypes</i> with relevant stakeholder and potential user. |
| services | Testing and evaluation | Support to co-design, test and evaluate the usability and user experience of <i>products and services</i> . |
| | Motivational design | Support to co-design innovative product concepts, which consider intended user behaviour and the motivation of users (e.g. by gamification principles). |
| Sustainabilit | Sustainability assessment | Support to analyse sustainability potentials of innovative product and service concepts based on life-cycle assessments. |
| y services | evaluation Site for co-creation with the civic society | Taking up citizen requests to sustainability-relevant topics and issues and starting a co-creation process with relevant stakeholders |

Table 1. Potential services for Science Shop Wuppertal (adapted from Geibler et al. 2018, p. 259)

In this regard, transformative research generates "socially robust" knowledge needed for sustainability transitions. It also serves to generate systems knowledge (e.g. technological or resource-oriented systems analysis) and target knowledge (visions and guiding principles) as well as transformation knowledge in concrete local settings. The Science Shop Wuppertal follows this approach and intends to use stakeholder concerns as the starting point of action for coping with today and future social-ecological challenges.



As a first pilot project, the Science Shop Wuppertal was involved in the CBPR event, called Climathon Wuppertal (for detailed information, see chapters "4. Planning" and "7. Appendix"). It has contributed to conceptualizing the event and to engaging the local community. The event was funded by Jackstädtzentrum für Unternehmertums- und Innovationsforschung, Energie Agentur. NRW, AWG Abfallwirtschaftsgesellschaft mbH Wuppertal, city of Wuppertal, and has been implemented within the framework of eCircular, Greentec, and SciShops.eu.eu projects.

During the Climathon Wuppertal a first draft of a Heavy Rain Kit was developed within one team of participants (in total seven teams have each developed one concept). The necessity of such a concept was based on the massive damage a heavy rain caused at the 29th of May 2018 in Wuppertal - the roof of a university building collapsed, streets were flooded, and basements ran aground. As a consequence of climate change, heavy rain and floods become more frequent in many places of the world. These effects are associated with different risks, e.g., buildings are flooded, goods are damaged, infrastructures are destroyed and most importantly - the life of the population is endangered, since many people do not know how to face an unperdictable natural disaster. This is of special relevance in the city of Wuppertal and its citizens. Even after the heavy rain in 2018 most people seem to be unaware of the importance to prevent the damages caused by heavy rain events. Interviews that have been conducted during the Climathon 2018 with citizens of Wuppertal, indicated that people were reluctant to draw conclusions from this negative experience. Based on these findings, the project team aims at creating a positive learning experience by connecting physical-perceived impressions with easily accessible information about heavy rain. Through this combined approach the team intends to empower citizens to engage in climate adaption and prevention actions (see appendix for a draft version of the Heavy Rain Kit).

Competition and ecosystem

The Science Shop Wuppertal would be embedded in an ecosystem that encompass especially the following institutions, that are seen as potential key partners in the process of establishing a Science Shop in the city of Wuppertal (see table 2). Recent activities, such as the *Climathon Wuppertal* and meetings with the WILA Bonn and the WILA Solingen, showed the high potential of the cooperation structures (for further information, see chapter "3. Organization").

Our goal is to bundle and efficiently use the joint resources of the key partners (i.a. complementing expertise, manpower and facilities e.g. Freiraum – innovation lab of the University of Wuppertal, Utopia Campus of the Utopiastadt, WiLA Solingen spaces) for working on requests of local citizens, industries and initiatives.

| Key partner | Location | Short description | Joint activities |
|----------------------------|-----------|--|---|
| WILA Bonn | Bonn | Established in 1984 Bonn Science Shop (WILA Bonn) is one of the longest-running German science shops. It is dedicated to work on key social challenges. Such challenges can only be overcome when science takes them up, and citizens are able to understand even highly complex matters so well that they are able to act accordingly. This is the interface WILA Bonn is working on: https://www.wilabonn.de/en/ | Twinning activities (Q1/2018 & Q01/2019) |
| WILA Solingen | Solingen | The Science Shop Solingen will start in January 201 and is focusing its work on the field of production and processing of metallic materials. | Partnership/cooperation activies (Q1/2019) |
| Neue Effizienz (NPO) | Wuppertal | The "Neue Effizienz" promotes resource and energy efficiency in the Bergisch city triangle with research, consulting and networking in the key themes of industry, the city, mobility and education: <u>https://www.neue-</u> <u>effizienz.de/neue_effizienz/neue_effizienz/</u> (German only) | Diverse research projects, recent joint activity "Climathon Wuppertal" (Q2/2018-Q4/2018 & Q1- Q4/2019) |
| University of Wuppertal | Wuppertal | The University of Wuppertal was founded in 197. It has a high international profile and cooperation but is also firmly rooted in the region. Recently it has established a new innovation lab, called "Freiraum" in the city of Wuppertal, where the first <i>Climathon</i> in Wuppertal has taken place in 2018. | Cooperation agreement since 2010, recent joint activity "Climathon Wuppertal" (Q2/2018- Q4/2018 & Q1/2019- Q4/2019) |
| TransZent | Wuppertal | Centre for Transformation Research and Sustainability founded by the University of Wuppertal and the Wuppertal Institut: <u>http://www.transformationsstadt.de/geoportal/</u> (German only) | Diverse projects e.g. "GeoPortal des Guten Lebens" (Workshop further development & consolidation of the project in Q4/2018; cooperation activities Q1/2019) |
| Utopiastadt | Wuppertal | NPO in Wuppertal: with Expertise in CBPR: https://www.clownfisch.eu/forschung/coforschu ng/ (German only). | Diverse projects e.g. "Well- Being Transformation Wuppertal (WTW)"; Development of an "Utopia Campus", cooperation activities Q1/2019) |

| Table 2. Key | / partners an | d joint activities |
|--------------|---------------|--------------------|
|--------------|---------------|--------------------|

Organisation

Our Vision: Co-create a sustainable, low resource economy and society in the Wuppertal region. Enable well-being and a high quality of life with environmentally friendly and fair product-service systems with particular regard to social innovation. The social and economic transformation shall be triggered by requests from citizens and other stakeholders and solved in co-creation.

Our Mission: Accelerating a socially accepted and sustainable transformation in Wuppertal, based on a transformative research approach. This includes brokerage services and collaboration with regional/local stakeholders (e.g. citizens, public and private organizations) to identify real needs and to co-create sustainable innovation and design as means of decoupling quality of life from environmental as well as social damage. Taking stakeholder concerns consisting of city citizens, NGOs,



Organizational structure: The Science Shop Wuppertal is currently planned as a virtual network (see chapter 2). This involves key partners of the local ecosystem to jointly and efficiently utilize resources: complementing expertise, manpower and infrastructure e.g. Freiraum, Utopia Campus, and WiLA Solingen. We see our role in this process as an initiator of the (virtual) Science Shop Wuppertal, which is then intended to be led by a board of representatives from each partner institution, to reach a democratic, trustful and open cooperation. The legal structure and key aspects would be determined by the board members. In the beginning, the staff members of the Science Shop Wuppertal would consist of the current team of the SciShops.eu project at the Wuppertal Institute (Markus Kühlert and Dr. Franziska Stelzer) advised by the division head (Prof. Dr. Christa Liedtke) and the research unit heads (Dr. Carolin Baedeker and Dr. Justus von Geibler). Next steps would be the expansion of the team after consolidation of the virtual Science Shop.

Further important steps were the twinning activities carried out with the WILA Bonn (Science Shop Bonn) and cooperation activities with the WILA Solingen (Science Shop Solingen). Recent meetings and discussions in March 2018 and January 2019 clearly showed the benefit of such an experience exchange. With its extensive and long-standing experience, the WILA Bonn can critically accompany the further business model development of the Science Shop Wuppertal.

Revenue streams and funding opportunities: Besides bundling the resources for supporting a socially accepted sustainable transformation in the city of Wuppertal - triggered by the request of citizens and other stakeholders and solved in co-creation as described above – the key partners of the Science Shop Wuppertal could apply jointly for third party funds (co-creation of project proposals). Those joint activities could serve as a pillar to produce revenue streams in the Science Shop Wuppertal and for developing a common identity.

Associated costs: Salary for project management and workshop facilitation, costs for marketing, costs for infrastructure such as workshop space, technical equipment etc.

Key strategies and success factors:

- Specific topics or focus e.g. mobility or living;
- Specific methods or tools e.g. from design or innovation discipline
- Strategies to engage citizens, companies, public organizations, NGOs

Planning

As described above, the Wuppertal Institute is planning to initiate a virtual Science Shop in Wuppertal in cooperation with the existing close network of partner institutions. Next steps for initiating the process are shown in figure 1. The first step would be contacting the partner network regarding the establishment of a joint (virtual) Science Shop in Wuppertal to build up local support for the idea. Furthermore, a joint workshop with the interested partners is essential, to create a shared understanding and to develop a joint mission and vision for the Science Shop. Then the assignment of the Science Shop board members, consisting of members of the partner network would follow, as well as pilot co-creation events and/or workshops within the Science Shop (e.g. the Climathon Wuppertal in 2019 in cooperation with the Neue Effizienz and the University of Wuppertal). The official launch of the Science Shop is currently planned for the beginning of 2020.



| Year | 2019 | | | | 2020 | | | | |
|--|------|---|---|---|------|---|---|---|--|
| Quarterly perdiod | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Initiating Science Shop Wuppertal | | | | | | | | | |
| Partner network & local support | | | | | | | | | |
| Further development of vision and strategy | | _ | | | | | | | |
| Assigning board | | | | | | | | | |
| Co-creation event with key partners | | | | | | | | | |
| Launch of Science Shop Wuppertal | | | | | | | | | |
| Establishing long-term support for the Science Shop* | | | | | | | | | |

*activity after project duration

Figure 1. Draft planning for the Science Shop Wuppertal for the period 2019-2020

The quality of transformative research must be measured on the basis of its own aspiration to catalyse societal change for sustainability. Therefore, we suggest the following aspects for assessing the impact of the Science Shop Wuppertal (adapted from SciShop.eu project deliverable 2.5, Annex 1):

- Development of continuing relations between academics and civil society
- Generating new and relevant scientific knowledge that supports a social and economic transformation in and around the city of Wuppertal
- Raised stakeholder's awareness on the topics of the virtual Science Shop Wuppertal
- Created (likely) long-term benefits for the local community of Wuppertal
- Development of long-term collaborations with local stakeholders

The foreseen Science Shop-Board could conduct the impact assessment as self-evaluation with the focus on learning about the outreach and functioning of the Science Shop in Wuppertal.

As a pilot project the Science Wuppertal has contributed to the first Climathon in Wuppertal that has taken place on October 26th 2018 (see appendix for Agenda of the Climathon). The event was organized and hosted by Neue Effizienz (local NPO), University of Wuppertal (Bergische Universität Wuppertal), Climate KIC (EU climate innovation initiative) and the Wuppertal Institute. Climathon is a global movement dedicated to solving city climate challenges. Originally conceptualised as a 24- hour hackathon by Climate-KIC, Climathon has since taken off as a global movement, engaging citizens on climate action and providing cities with continued support on the unique challenges they face. The Science Shop at the Wuppertal Institute also organised three follow up events of the *Climathon Wuppertal* on November 15th 2018, on January 8th 2019, and on January 16th 2019. Figure 2 summarizes the completed and ongoing activities within the pilot project.



Figure 2. Activities within the pilot project

The pilot project *Climathon Wuppertal* and the *HEAVY RAIN KIT*, developed during this event, intends to be more than a guideline with measures for heavy rain events; it addresses the issue of dealing with the environmental impact generated by individual lifestyles. The kit includes a link to an



individual ecological rucksack (material footprint) calculator of the Wuppertal Institute (https://www.ressourcen-rechner.de/?lang=en). This also encourages the sustainable consumption, as users start seeing their own opportunities in reducing their negative environmental impact. The kit can be distributed through interactive events taking place in the city. In summary, the *HEAVY RAIN KIT* helps people to lose their fear of heavy rain and floods by building awareness and indicate prevention and adaptation measures (for further information, see appendix).



Agenda "Climathon Wuppertal" 2018

| | | Climathon Wuppertal 2018 October 26th - 27th 9 am - 1 pm | | | |
|-------|------------|--|----------|--|-----------------------|
| | | riogram | | | |
| Time | Duration | Program point | Block | | |
| 08:30 | 1 h | Registration | | | |
| 09:30 | 30 min | Opening | Intro | | |
| 10:10 | 50 min | Introducing the challenges | | | |
| 11:00 | 20 min | Start Climathon | | | |
| 11:00 | ao min | Transferibles | Pre-Work | | |
| 11:30 | 30 min | Teambuilding | | | |
| 12:00 | 15 min | Input: Defining/Understanding problems | Input | | |
| 12:15 | 30 min | Free work | Work | | Concept |
| 13:00 | 45 min | Lunch | Break | Phase 1: Understanding and defining a problem | ldea I Broblem |
| 13:45 | 15 min | Break-express BUW | | Result: Problem definition | I |
| 14:00 | 15 min | Input: feedback-/ interview-techniques | Input | | Feedback I Idea |
| 14:15 | 1 h | Getting feedback | Work | | Feedback |
| 15:15 | 15 min | Input: Brainstorming | Input | | Solution |
| 15:30 | 2 h 30 min | Free work | Work | Phase 2: Brainstorming/Finding ideas Ergebnis: Phrasing ideas | |
| 18:00 | 1 h | Dinner | Break | | |
| 19:00 | 15 min | Energizer | | | |
| 19:15 | 15 min | Input: Business Model Canvas | Input | Phase 2: Brainstorming // | |
| 19:30 | 1 h 30 min | Free work | Work | Phase 3: Testing / Creating a prototype | |
| 21:00 | 15 min | Conference Call with Lund | Call | | |
| 21:15 | 1 h 45 min | Free work | Work | Phase 3: Testing / Creating a prototype | |
| 23:00 | 1 h | World Café | Break | Feedback round | |
| 00:00 | 15 min | Energizer | | | |
| 00:15 | 2 h 30 min | Free work | Work | Phase 3: Testing / Creating a prototype Result: first concretizations of the idea | |
| 92.90 | 10 1111 | La nargazar | urean. | | |
| 03:00 | 4 h | Free work | Work | Phase 3: Testing / Creating a protocology Result: first concretizations of the idea | |
| 07:00 | 30 min | Energizer | - | | |
| 07:30 | 1 h | Breakfast | Break | | |
| 08:30 | 15 min | Input: Pitch | Input | | |
| 08:45 | 2 h 15 min | Free work | Work | Phase 4: Presentation Result: Presentation of | |
| 11:00 | | End Climathon | | the results | |
| 11:00 | 1 h | Jury Pitch | | | |
| 10.00 | 20 min | Presel | Finale | | |
| 12:30 | ao min | Dreak | | | |
| 13:00 | 30 min | Award ceremony End | - | | |



Exemplary results of the pilot project - the Heavy Rain Kit

The idea of the Heavy Rain Kit has been developed within the *Climathon Wuppertal* in 2018, based on the following research challenge proposed by the Wupperverband (local NPO).

Topic of the challenge: Climate change adaptation and water management

Citizens had to face torrential rains, extreme rains of long duration, emergency situations in many cities in Germany – also in Wuppertal. It is time to prepare for the effects of climate change and for this, citizens and traders have an important role to play.

In May 2019, Wuppertal and many other cities in Germany have been hit by heavy rain. Roads were flooded, in many homes and shops the water was many inches high, the roof of a university building and a gas station collapsed. The costs caused by the storm are considerable.

The prevention of flooding and heavy rainfall events and the resulting consequences are communal tasks, serving to protect potentially affected areas such as people, buildings, traffic, the economy, etc. and to avoid costly damages. Municipalities, water management associations and fire departments are also increasingly under pressure, as well as responsible, just like the private sector and local citizens.

Main research question: How can Wuppertal motivate its citizens and traders to protect themselves from future flooding and heavy rain events?

Further activities of the Science Shop Wuppertal after the Climathon Wuppertal 2018

The concept *Heavy Rain Kit* has been developed by a volunteer team (citizens of Wuppertal) that has been accompanied by the Science Shop Wuppertal. The team has been formed during the *Climathon Wuppertal 2018* and is characterized by a diverse background with regard to age and domain expertise (i.e. civil engineers, industrial design, economic and business science, psychology science, sustainability science). The team is highly motivated to develop and implement prevention and adaptation measures in order to reduce climate change impacts in Wuppertal. As a first result, the project team has developed a *Heavy Rain Kit* that has been submitted to the "POWER Idea Contest for Sustainable Communities" (https://leicester.power-h2020.eu/?location=challenge&loadP=1160).

The Science Shop Wuppertal has contributed with:

- Process coaching (i.e. moderation of two co-creation workshops, coordination of work packages)
- Introduction of scientific tools, such as the ecological rucksack calculator of the Wuppertal Institute (<u>https://www.ressourcen-rechner.de/?lang=en</u>)
- Co-designing the Heavy Rain Kit
- Providing facility for two co-creation workshops.



HEAVY RAIN KIT

As a consequence of climate change, heavy rain and floods become more frequent in many places of the world. This contains different risks for the townspeople, especially in Leicester City and Wuppertal: buildings are flooded, goods are damaged, infrastructure is disturbed and most importantly - the life of the population is endangered, since many people do not know how to face this unknown natural disaster.

This is our challenge: Although there is a lot of information about how to prevent damages of heavy rain and floods, most people are unaware of the importance and the potential of specific options to prevent heavy rain damages. This became clear in interviews with citizens of Wuppertal after a heavy rain event. They were reluctant to draw conclusions from this negative experience. Therefore, we want to create a positive experience by connecting haptic impressions with easily accessible information. We want to help people to feel responsible and empower them to engage in climate adaption and prevention action. This is how the idea for the HEAVY RAIN KIT rose initially from a civic engagement that has been scientifically accompanied. Having its roots in Wuppertal, Germany, it can be easily applied to similar problems in Leicester, England and break the mental barrier of dealing with the subject of heavy rain adaption and climate prevention. It can be adjusted with other gadgets and important links and information of any area.

Our HEAVY RAIN KIT will create a change of mindset by making personal engagement in heavy rain scenarios easier and more attractive. The HEAVY RAIN KIT is a package full of useful gadgets. It includes, e.g.:

- an emergency check list instructions on what to do
- in the event of flooding as well as important phone numbers • a prevention check list: instructions on essential and
- effective ways to prevent flood damage as well as links to further information
- small games, which make important information more memorable and available, e.g. a memory game for successful climate adaption







- a rain cape printed with a QR-Code to further information
- a flash light
- Cardboard VR goggles to watch videos about exemplary walkthroughs in heavy rain and flood scenarios, QR-Code for the phone included

Everything is collected in a water-resistant bag and a logo will be printed on all these gadgets to keep the topic present in everyday life.

The HEAVY RAIN KIT is more than a guideline with measures for heavy rain events: It also addresses to deal with the environmental impact that one's own individual lifestyle has. The kit includes a link to an ecological rucksack (material footprint) calculator. Another link to a calculator showing the individual CO2-profile and pointing out possible savings is http://www. uba.co2-rechner.cle. This also promotes to deal with sustainable consumption, as people start seeing their own opportunities in reducing their negative environmental impact.

The kit can be distributed through interactive events taking place in the city. In summary, the HEAVY RAIN KIT helps people to lose their fear of heavy rain and floods by building awareness and indicate

prevention and adaption measures.

per





HUNGARIAN SCIENCE SHOP (BZN)

Service and Value Proposition

Bay Zoltán Science Shop is hosted by Bay Zoltán Nonprofit Ltd. for Applied Research in Hungary. It deals with research questions related to the disciplines of our divisions: biotechnology, engineering and smart systems. Any questions arriving to our Science Shop need to be evaluated by the Core Group (see Chapter 3). Additionally, Bay Zoltán Nonprofit Ltd. (BZN) is located in 3 Hungarian towns (Budapest, Szeged, Miskolc), and its Science Shop aims to serve the needs of the local communities within these towns. If the need (= community) and the solution (= researchers) are in the same region, the Science Shop will find the way to contribute to the implementation of a successful Science Shop project.

In our first Science Shop project we will focus on community gardens. Many town residents have the need to connect to nature and produce their own food. Kids growing in towns should be taught how the food is produced. Community gardens become more and more popular nowadays: these self-organised communities utilize some unused areas to grow vegetables and herbs. Today there are 30+ community gardens only in Budapest.

The small plots are suitable to grow only small quantities of vegetables. Although using fertilizers could increase the yield of these plots, application of any synthetic fertilisers in community gardens are usually not welcomed, as gardeners prefer organic vegetables. Offering solutions for increasing yields, while keeping the organic approach is desirable. Researchers of the Biotechnology Division of BZN can contribute to reach the desired aim. Local community gardeners' groups will benefit from the research results implementation. In the first stage we aim to collaborate with community gardeners in Budapest, but we are open for collaboration with the same communities in Szeged and Miskolc as well.

Competition and ecosystem

Bay Zoltán Science Shop aims to collaborate with local actors; however, the term "local" is difficult to interpret when the mother organisation is situated in three different locations. The three locations of our organisation mean that BZN is embedded in three local environments. Our researchers collaborated with local actors in their previous project, and this is the network we would like to utilize to identify local needs.

Local environment is constituted by the local authorities, local communities and civil society organisations. Appropriate stakeholders should be identified based on the subject of the Science Shop project. In case of the pilot project (community gardens), the "environment" is mainly represented by the group of people running community gardens. They form loose groups, which are organised by an organisation. The most important channel to reach them is the social media and their informal meetings.

When talking about competition in the case of Science Shops in Hungary, it has to be stated that competition is very low, collaboration is more common. There is only a couple of Science Shops working in Hungary, and they all operate in different fields. Different Science Shops serve different needs of the customers: Corvinus Science Shop works on economical approach, ESSRG Science Shop concentrates on environmental issues, while Bay Zoltán Science Shop focuses on engineering, smart systems and biotechnology. Competition for clients is low. Competition for students or volunteers could be a bit higher, however all science shops have their own network or collaborations with higher education organisations to find volunteers or students. Competition for funding is the only one needs to be mentioned, however local /national funding is very low.



Organization

Bay Zoltán Science Shop is hosted by Bay Zoltán Nonprofit Ltd. for Applied Research (BZN). BZN is a non-profit research organisation, focusing on ready-to-use solutions in the field of engineering, biotechnology and smart systems. BZN is located in Hungary, in Budapest, Miskolc and Szeged. It has three research divisions (ENG – engineering, BIO – biotechnology and SMART – smart technologies) and one horizontal division (TMK – Knowledge Management Centre).

The overall aim of Bay Zoltan Science Shop is to open our organisation for the community problems and to carry out research for the benefit of the local communities. Science communication is part of our activities for a while, but involving people in the research process or initiating strong collaboration with local communities is not a day-to-day practice. Social responsibility should be more and more addressed in relation to our activities.

The mission of the Bay Zoltan Science Shop is to bring the research and the community closer. We aim to support local communities and civil society to find solutions for their problems. Bringing different actors under the same platform could be beneficial for all of them; Bay Zoltán Science Shop aims to be the catalyser of this process.

Bay Zoltán Science Shop is operated by BZN staff. Initially, we do not plan to involve external staff or external board. The Science Shop is run by a "Science Shop Team", which is constituted as follows:

- for operational issues, there is a fixed Core Group. The core group is led by TMK, as horizontal approach is inevitable. At least one representative of each research division will be also involved in the Core Group.
- for research questions, the experts will be changed according to the topic. Experts from the research divisions will be invited.

The two groups will operate together.



Picture 1: organisational graph of Bay Zoltán Science Shop

Bay Zoltán Science Shop is led by the Science Shop Manager, who is a TMK staff member (currently the project manager involved in SciShop.eu project).

The basis of the Science Shop operation is the annual Workplan. The Workplan (similar to a business plan) will be set by Core Group, and it will be part of the business plan of the mother organisation. Annual Workplans will detail the ongoing and planned activities of the Science Shop at the beginning of each year, including research, engagement, communication and promotional activities. Financial planning for the given year will also be part of the document.

Being an internal part of the mother organisation ensures the secure operation of the Science Shop. Science Shop projects are internal projects of the organisation. Annually, at least one internal science shop project will be implemented.

The overall management of the Science Shop is the responsibility of the Science Shop manager. Researchers are responsible for implementing the Science Shop projects. Every project will have its own scientific leader, who will supervise the research process and will be responsible for the execution of the project. Bay Zoltán Science Shop will build strong collaboration with the BZN working groups (bioeconomy, circular economy, etc.). Results of the Science Shop will be reported regularly to the BZN management.

BZN staff will work in the Bay Zoltán Science Shop, however in certain cases external experts will be hired, when necessary. As the Science Shop will be project based, the different topics will require different expertise and staff to be involved.

Science Shop Team aims to establish contacts with universities and use the existing collaborations with them. Based on the annual Workplans, students will be involved in research activities. If necessary or possible, volunteers will be involved in the research or dissemination activities. As it is not a usual practice within our organisation, its framework should be worked out.

We also plan to initiate collaboration with the other Science Shops in Hungary. Taking part in each other's event could lead to more research questions and greater visibility for all of us. Regular meetings will be organised with them.

Planning

As mentioned earlier, our first project will focus on community gardens. It aims to support community gardeners to increase their yields by using organic solutions.

First, community gardeners' groups will be contacted and a co-creation event will be held in Budapest to discuss what is the need of the consumers (=gardeners), what are the available solutions and the possible research directions. Participants in the event will be community gardeners, organisations supporting community gardeners and researchers of Bay Zoltán Science Shop.

Next, researchers will prepare a plan for the further research directions. In the meanwhile, volunteer gardeners will be able to test the existing solutions. Volunteers will be trained; the feedback mechanism will be worked out. Online feedback mechanism will be developed, however the opportunity to contact the researchers will be provided. Further discussion tables will be organised if there is a need from the volunteers. At the end of the vegetation period a final discussion table will be held, feedbacks will be presented, results will be discussed. All results will be available on the website of Bay Zoltán Science Shop (which will be hosted by BZN). Results will be communicated to community gardeners' organisations in all Hungary.

The most challenging part of the planning is that activities have to be in line with the vegetation periods. The first event will be before the start of the vegetation period (February/ March 2019).



| | 0217 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
|---|------|----|----|----|----|----|----|----|----|----|----|
| Contacts established with the relevant community gardeners' group in Budapest | | | | | | | | | | | |
| First co-creation event held in Budapest | | | | | | | | | | | |
| Research plan is set | | | | | | | | | | | |
| Volunteers are chosen | | | | | | | | | | | |
| Feedback mechanism is set | | | | | | | | | | | |
| Vegetation period, research and testing in ongoing | | | | | | | | | | | |
| Discussion tables are organised (if needed) | | | | | | | | | | | |
| Final discussion table is organised | | | | | | | | | | | |
| Results are available | | | | | | | | | | | |
| Discussion about the possible continuation in the next vegetation period | | | | | | | | | | | |
| | | | | | | | | | | | |

Table 1: Gantt chart of the pilot project of Bay Zoltán Science Shop



¹⁷ Numbers reflect for the months of 2019 (i.e. 02 means February 2019)





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