Interreg CENTRAL EUROPE
European Union
European Regional Development Fund
CITYCIRCLE

FINAL REVIEW OF PILOT: Dornbirn

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D.T3.4.2: Final review of pilot: Dornbirn

A.T3.1 Monitoring / Evaluation

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Contents

1. Introduction

1.1. Project context

The CITYCIRCLE project aims to bring innovation and sustainable economic growth to peripheral regions within the European Union. This is thanks to the implementation of circular economy practices. The partners of this project are 11, coming from different European countries (Austria, Croatia, Germany, Italy, Slovenia and Slovakia). The idea is to combine the efforts of the private sector and the public sector to generate a terrain suitable for the diffusion of circular economy practices. To achieve this it is necessary to involve stakeholders from different areas, in accordance with the principles of the quadruple helix, which plan to create collaborations between Public Authorities, Universities, companies and civil society. The aim of the project is therefore to create the best possible conditions for generating economic growth in the area, resulting from innovation and sustainable development.

In order to create, as mentioned, a favourable environment for sustainable development, the CITYCIRCLE project will focus on the following objectives:

1) **Implementation of pilot projects that will serve as an example for future initiatives**: This will happen thanks to the collaboration with the stakeholders and the identification of specific and promising projects.
2) **Promotion of the initiative and the concept of circular economy**: through events, web advertising campaigns, etc.
3) **Creation of a circular economy HUB in each of the regions identified by the project**: It will represent a facilitator office able to offer services to users and stakeholders in the transition to the circular economy.

The link between the hub and pilots strong – within the pilot actions, the collaboration of hub stakeholders is the cornerstone. The pilots therefore showcases the circular solutions being developed in joint regional manner and should activate the circular hubs in territories. The evaluation is therefore addressing the Level of collaboration and how the hub fosters the innovation activities in the respective areas – both essential areas of the current circular pilot actions but also any similar initiatives to come.

1.2. Evaluation tool for Circular Economy Hubs

The evaluation methodology of the CITYCIRCLE hubs addresses two dimensions of the circular economy hubs being in the development phase. Firstly, looking at the hub as regional **multiple stakeholder collaboration process** among stakeholders in the field of circular economy, and secondly, taking the perspective of the hub as an instrument for setting up **environment fostering circular innovations**. The evaluation methodology should help hub managers to understand the Level and trends in the **hub development** (maturity) and **its performance**, and in future could be used for planning and hub goals setting.

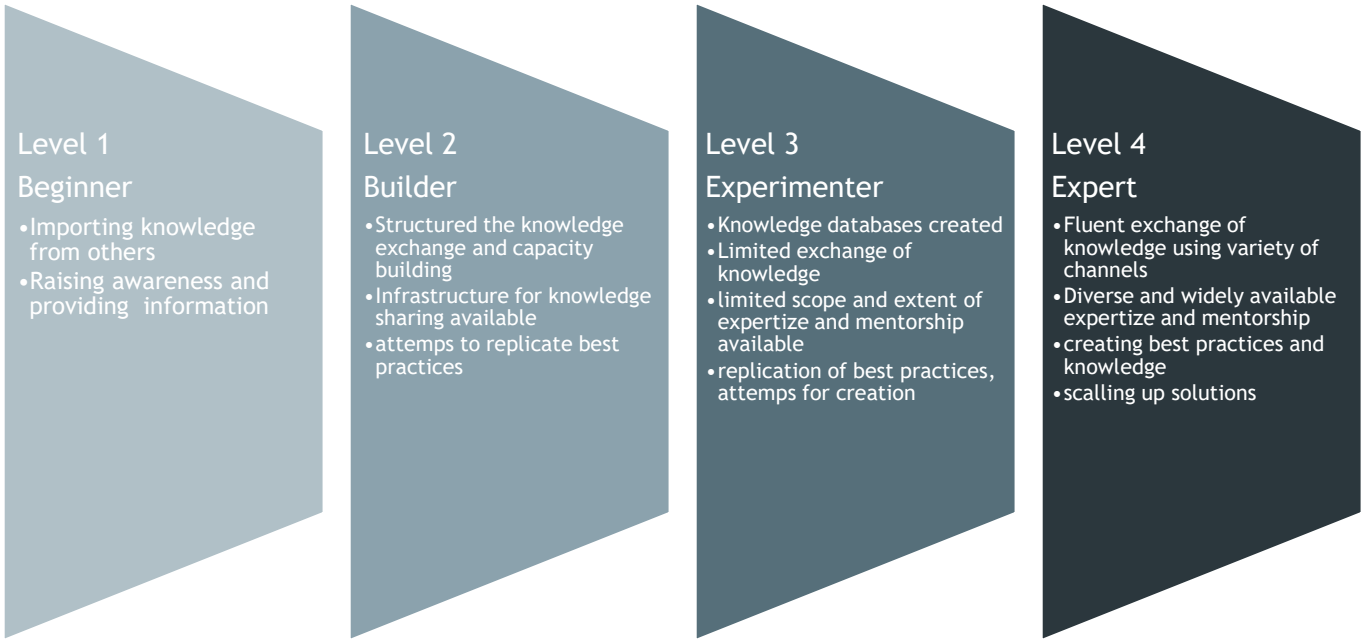
Based on the literature review and respecting the needs of CITYCIRCLE project scope, the analogy to the approaches of the *CREATORS* and *OECD Scoreboard on the Governance of the Circular Economy in Cities and Regions* (both introduced in previous chapters) will be developed, focusing on the knowledge (know-how) as innovation aspect, and the collaboration aspect. The main aim is to prepare the framework for measurement of the hub´s maturity, therefore what matters will not necessarily be a snapshot, but rather the trajectory created over time – in our case on annual basis.

2. Evaluation of Circular Economy Hubs - Knowledge and Innovation

First category of evaluation covers the Level of knowledge and innovation capacity of the hubs activities and two perspectives will be adopted – the development level as the maturity perspective, and the supporting performance indicators presenting the more tangible outlook of activities and results delivered.

2.1.1. Development level - methodology

Respecting the Level of development / the maturity level, 4 levels are distinguished – from less advanced hub at Beginner, through Builder and Experimenter, to most advanced at Expert. The characeristics of the Level of operations is described for each category.



2.1.2. Development level - self-assessment

Q1 - Knowledge and Innovation - Level of development / maturity

	Level 1 Beginner		Level 2 Builder		Level 3 Experimenter		Level 4 Expert
Please rate the current level of maturity	1	1 ½	2	2 ½	3	3 ½	4

Comments:
During the pilot implementation, specific goals of organized workshops and dissemination events targeted improvements in collaboration channels and knowledge transfer among regional players in circular transition, relative to the advanced manufacturing field. With this in line, the innovation maturity level is positively impacted through improvements in communication channels and increased visibility of the pilot implementation, ensured and strengthened by collaborative research outputs.
Opportunitites for improvement:
Additional studies and follow-up projects could further improve knowledge and innovation maturity, specifying the need to highlight and focus on areas defined in scientific publications delivered within the scope of the pilot. Encouraging the dialogue and collaboration with potential cross-sectoral partners and further inclusion of end-users and citizens could aid in the above mentioned process.
Lessons learnt:
- Provision of capacity building, training, and exchange of best practices for national and international actors - Industrial players should lead an active dialogue with the financial sector and contribute to the standardization of circularity metrics - Introducing citizen science projects could raise awareness and collective participation in the co-creation for circular transition and promote innovation culture within society

2.1.3. Performance indicators - methodology

Following table presents the set of indicators to be measured for the circular economy hub knowledge and innovation activities. Two types of indicators are indicated – qunatitative (where measurement units can be applied) and qualitative (where self-assessment will be adopted).

Nr.	Performance Indicators - Knowledge and Innovation	Type
1.	Variety and diversity of expertise available within the hub	Qualitative
2.	Adoption and use of digital technology for hubs services	Qualitative
3.	Number of links established by hub with experts during the monitored period	Quantitative
4.	Number of awareness raising campaigns implemented during the monitored period	Quantitative
5.	Number of persons reached by awareness raising campaigns implemented during the monitored period	Quantitative
6.	Number of trainings implemented during the monitored period	Quantitative
7.	Number of trained persons during the monitored period	Quantitative
8.	Number of consultations provided in the thematic fields of circular economy during the monitored period	Quantitative
9.	Number of consultations provided in the field of projects preparation and administration during the monitored period	Quantitative
10.	Number of ideation/co-design events organized or co-organized during the monitored period	Quantitative
11.	Number of mentoring relations conducted during the monitored period	Quantitative
12.	Number of technological and non-technological innovative solutions/services/products that reached TRL 1-2 - Basic research during the monitored period that were supported by the hub activities	Quantitative
13.	Number of technological and non-technological innovative solutions/services/products that reached TRL 3-4 - Lab Demonstration during the monitored period that were supported by the hub activities	Quantitative
14.	Number of technological and non-technological innovative solutions/services/products that reached TRL 5-6 - Field pilot during the monitored period that were supported by the hub activities	Quantitative
15.	Number of technological and non-technological innovative solutions/services/products that reached TRL 7-8 - Market introduction or TRL 9 - Scaling during the monitored period that were supported by the hub activities	Quantitative
16.	Number of businesses established based on achievements within the hub during the monitored period	Quantitative

17.	Number of public green or innovation policies (strategies and tools) influenced by the hub activities during the monitored period	Quantitative
18.	Number of strategies, roadmaps, impact studies, scenarios, analytical studies, monitoring studies or data models developed by the hub members during the monitored period	Quantitative

2.1.4. Performance indicators - self-assessment

Q1.1 Variety and diversity of expertise available within the hub

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

Circular Economy Hub Vorarlberg has extended the reach to external stakeholder networks through principal hub members and ensured greater visibility and interest in open circular models for advanced manufacturing both in national and international terms. This was the result of extensive promotional activities and workshops conducted in the scope of the defined pilot activities.

Q1.2 Adoption and use of digital technology for hubs services

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

The set of services provided by hub members have been implemented within the scope of circular economy strategy defined and implemented through participatory labs and workshops, in the regional context. Considering the participating stakeholder groups, and internal practices implemented by stakeholders, digital technologies are often added and embedded to traditional products to meet the changing customer needs, while service provided by hub aided in tackling business model innovation perspectives to further aid in adoption of circular technologies. Further uptake of digital technologies could be ensured by tackling the new perspective in the future time - dimensions of skills and data. To fully leverage on digital technologies, both hard and soft aspects should be targeted.

Q1.3 Number of links established by hub with experts during the monitored period

	Answer (number)
Please count and answer	8

During the mentoring period the Hub has established 23 links with experts so far. Public sector, research institutes, industry (textile, energy, transport) and consumer networks have add up to these metrics.

Q1.4 Number of awareness raising campaigns implemented during the monitored period

	Answer (number)
Please count and answer	7
In total, seven awareness raising campaigns have been conducted, including the scientific conference participation and promotion of the circular economy solutions and opportunities in Central European context (RUN EU Conference 2021, Smart Service Summit 2021, Melinda Conference 2021), national dissemination events and participatory labs implemented in the scope of the project.	

Q1.5 Number of persons reached by awareness raising campaigns implemented during the monitored period

	Answer (number)
Please count and answer	200
In total, 200 persons have been reached by awareness raising campaigns. The reference links to the following events: RUN EU Conference 2021, Smart Service Summit 2021, Innovation Days 2021, Melinda Conference 2021 etc.	

Q1.6 Number of trainings implemented during the monitored period

	Answer (number)
Please count and answer	4
During the monitoring period 4 additional trainings have been implemented, including the following stakeholder groups – industry and students representatives, public institutions.	

Q1.7 Number of trained persons during the monitored period

	Answer (number)
Please count and answer	12
Implementation of the training entailed stakeholders from industrial sectors, research institutes (targeting students), as well as public sector.	

Q1.8 Number of consultations provided in the thematic fields of circular economy during the monitored period

	Answer (number)
Please count and answer	3
Comments:	

Consultations were conducted in the field of circular economy-based advanced manufacturing potentials in line with CE workshop`s follow-up activities - referring to sectors of SMEs and industry (wood, textile, built ind.)

Q1.9 Number of consultations provided in the field of projects preparation and administration during the monitored period

	Answer (number)
Please count and answer	3
Consultations have been performed in the context of the European Commission funded projects.	

Q1.10 Number of ideation/co-design events organized or co-organized during the monitored period

	Answer (number)
Please count and answer	2
Innovation Games Workshop 2021, Student projects implemented in close collaboration with industrial representatives	

Q1.11 Number of mentoring relations conducted during the monitored period

	Answer (number)
Please count and answer	N/A
N/A	

Q1.12 Number of technological and non-technological innovative solutions/services/products that reached TRL 1-2 - Basic research during the monitored period that were supported by the hub activities

	Answer (number)
Please count and answer	5
Based on the outputs of executed workshops and participatory events, new solutions have been identified reaching the TRL 1,2,3, and 4. Identification of basic principles and basic technology research entail the thematic scope of circular economy modelling in advanced manufacturing related to the following fields: Additive manufacturing, business process optimization, energy efficiency, resource use efficiency, green chips, etc. Research to prove feasibility, the technology development concept involved the process and innovative solutions covering the aspects of business model innovation in the context of the technology adoption	

Q1.13 Number of technological and non-technological innovative solutions/services/products that reached TRL 3-4 - Lab Demonstration during the monitored period that were supported by the hub activities

	Answer (number)
Please count and answer	5
Experimentation relative to the circular technologies have brought five non-technologial solutions, particularly covering technologies in manufacturing of transport components and value-recovery maximization ensured by such technologies in energy industry.	

Q1.14 Number of technological and non-technological innovative solutions/services/products that reached TRL 5-6 - Field pilot during the monitored period that were supported by the hub activities

	Answer (number)
Please count and answer	0
-	

Q1.15 Number of technological and non-technological innovative solutions/services/products that reached TRL 7-8 - Market introduction or TRL 9 - Scaling during the monitored period that were supported by the hub activities

	Answer (number)
Please count and answer	0
-	

Q1.16 Number of businesses established based on achievements within the hub during the monitored period

	Answer (number)
Please count and answer	0
-	

Q1.17 Number of public green or innovation policies (strategies and tools) influenced by the hub activities during the monitored period

Answer (number)

Please count and answer	6
Energy Autonomy Vorarlberg 2050, Energy Future Vorarlberg, e5-Program, Spatial Planning Law Vorarlberg, Waste Management Law Vorarlberg, Open Innovation Austria 2025	

Q1.18 Number of strategies, roadmaps, impact studies, scenarios, analytical studies, monitoring studies or data models developed by the hub members during the monitored period

Answer (number)

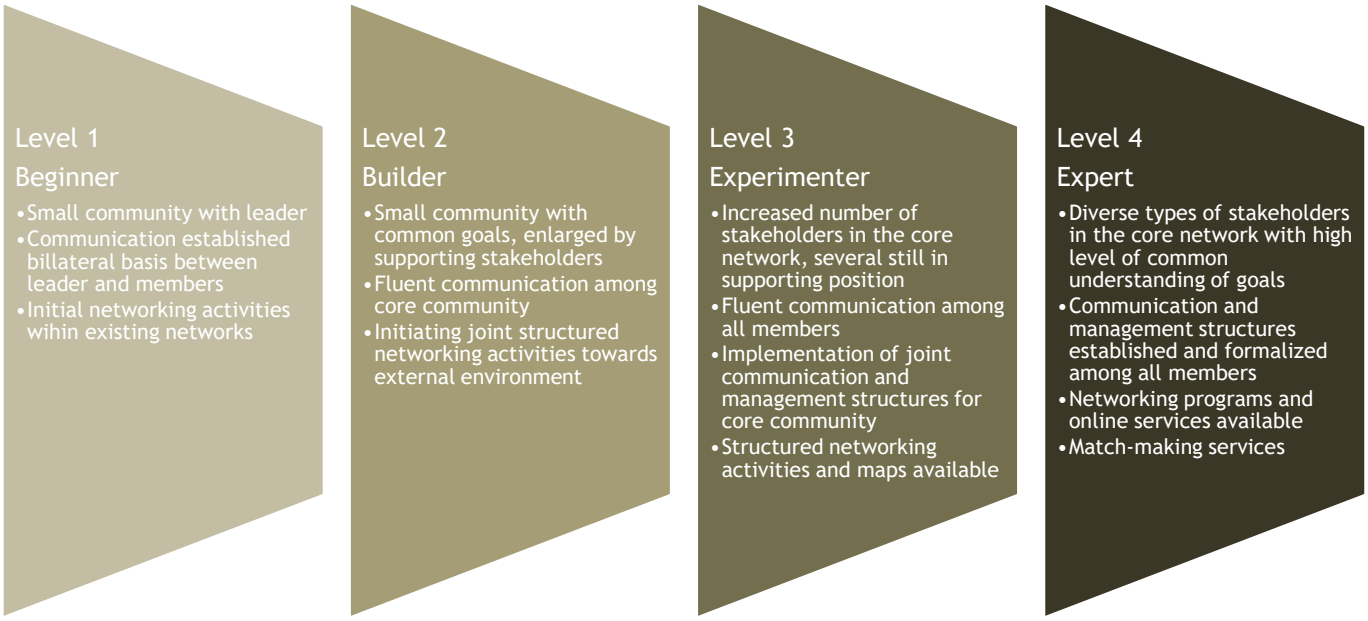
Please count and answer	7
Scenarios for circular transition include solutions within the scope of advanced manufacturing processes, circular economy driven quadruple helix model for regional innovation growth, and financial models for managing circular gaps	

2.2. Collaboration

Second category of evaluation covers the Level of collaboration organized and obtained by the hubs and, again, two perspectives will be adopted – the development level as the maturity perspective, and the supporting performance indicators presenting the more tangible outlook of activities and results delivered.

2.2.1. Development level

Respecting the Level of development / the maturity level, 4 levels are distinguished – from less advanced hub at Beginner, through Builder and Experimenter, to most advanced at Expert. The characeristics of the Level of operations is described for each category.



2.2.2. Development level - self-assessment

Q2 - Collaboration - level of development / maturity

	Level 1 Beginner		Level 2 Builder		Level 3 Experimenter		Level 4 Expert
Please rate the current level of maturity	1	1 ½	2	2 ½	3	3 ½	4

Comments:
Implementation of the pilot as well as facilitation hub activities has encompassed larger number of stakeholders involved in the process and the core network, but also additional stakeholder still in supporting position. The process of communication among members has been carried smoothly.
Opportunitites for improvement:
Further materialization of networking programs and available online services is needed, simultaneously followd by additional match-making services. Moreover, it is foreseen to advance communication models for better common understanding of stekholders involved, as well as application of methods for inclusion of additional stekholders from diverse background.

Lessons learnt:
Lessons learned and recommendations include the following set of challenges to target: • Cross-sectoral collaboration needs to be empowered • Lack of enablers of cross-cycle and cross-sector performance • Internal organizational culture of financing institutions but also of industrial sector should be promoted to support circular culture • Promoting skills and investment of circular design • Standardization of CE and ESG metrics • Application of methodes and models to increase trust between partners and transparency along value chain • Synergies in updating circular policies is requried, considering quadruple helix system actors

2.2.3. Performance indicators

Following table presents the set of indicators to be measured for the circular economy hub networking and connecting activities. Two types of indicators are indicated – qunatitative (where measurement units can be applied) and qualitative (where self-assessment will be adopted).

Nr.	Performance Indicators - Networking and connecting	Type
1.	Variety of stakeholders in the hub from the quadrupple helix perspective	Qualitative
2.	Level of involvement and variety of civil society organizations and citizens in the hub activities	Qualitative
3.	Level of involvement and variety of research and innovation organizations in the hub activities	Qualitative
4.	Level of involvement and variety of public authorities in the hub activities	Qualitative
5.	Level of involvement and variety of private sector in the hub activities	Qualitative
6.	Importance/impact level of the hub members	Qualitative
7.	Quality level of hub networking services	Qualitative
8.	Quality level of internal communication and management structure	Qualitative
9.	Level of adoption of digital technology for external communication and networking services of the hub	Qualitative

10.	Number of civil society organizations and citizens being hub members in total	Quantitative
11.	Number of research and innovation organizations being hub members in total	Quantitative
12.	Number of public authorities being hub members in total	Quantitative
13.	Number of private sector organizations being hub members in total	Quantitative
14.	Number of new hub members that joined in the monitored period	Quantitative
15.	Number of projects/initiatives jointly proposed in the monitored period	Quantitative
16.	Number of projects/initiatives being jointly implemented in the monitored period	Quantitative
17.	Amount of budget requested by hub members in joint activities (in €) in the monitored period	Quantitative
18.	Amount of budget attracted by hub members in joint activities (in €) in the monitored period	Quantitative
19.	Amount of budget requested by hub members in joint activities per hub member (in €) in the monitored period	Quantitative
20.	Amount of budget attracted by hub members in joint activities per hub member (in €) in the monitored period	Quantitative
21.	Number of partners being presented within hub´s networking services in total	Quantitative
23.	Number of requests received for match-making in the monitored period	Quantitative
24.	Number of communication channels in use in the monitored period	Quantitative
25.	Number of website and social media accounts visits in the monitored period	Quantitative

2.2.4. Performance indicators - self-assessment

Q2.1 Variety of stakeholders in the hub from the quadrupple helix perspective

	Low		Medium 2		High
Please rate the level	1	2	3	4	5
Stakeholder network characterizes with continuous inclusion od diverse stakeholder groups - public institutions, industrial representatives ranging from different sectors, citizens, academia and research institutions including student participation					

Q2.2 Level of involvement and variety of civil society organizations and citizens in the hub activities

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

Civil society organizations and citizens are reached through the participation of the public body - City of Dornbirn.

Q2.3 Level of involvement and variety of research and innovation organizations in the hub activities

	Low		Medium 2		High
Please rate the level	1	2	3	4	5
Majority of stakeholders include representatives of the research and innovation organizations - covering the range of digital innovation, business informatics, industry 4.0 and open science fields.					

Q2.4 Level of involvement and variety of public authorities in the hub activities

	Low		Medium 2		High
Please rate the level	1	2	3	4	5
City of Dornbirn, Vorarlberg Government, Local public institutions					

Q2.5 Level of involvement and variety of private sector in the hub activities

	Low		Medium 2		High
Please rate the level	1	2	3	4	5
Industrial representatives have been primarly reached trhough resarch institutes and public bodies. However, in the second part of the pilot implementation closed collaboration has been achieved with industry representatives and SMEs - including collaboration on student projects					

Q2.6 Importance/impact level of the hub members

	Low		Medium 2		High
Please rate the level	1	2	3	4	5
The hub consists of highly relevant regional actors - public and research bodies, and industrial sector.					

Q2.7 Quality level of hub networking services

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

Good quality of the networking services among regional actors has been provided by the hub.
Executed workshops and participatory events have provided foundational frames for delivering new project and business ideas within the region.

Q2.8 Quality level of internal communication and management structure

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

Efficient and timely communication has marked the period, resulting in series of succesful participatory and dissemination events organized in the contex of hub memebers with the main goal of promoting the further uptake of innovative business ideas and project opportunities.

Q2.9 Level of adoption of digital technology for external communication and networking services of the hub

	Low		Medium 2		High
Please rate the level	1	2	3	4	5

As a member of the Hub, Digital Innovation Hub Vorarlberg provides innovative digital solutions and enables inclusion of the broader range of regional actors. Smart City Dornbirn, initiative and the digital platform of the City of Dornbirn, ensures inclusion and development of innovation communities in Vorarlberg.

Q2.10 Number of civil society organizations and citizens being hub members in total

	Answer (number)
Please count and answer	2

City of Dornbirn has provided a platform for indirect inclusion and participation of civil society organizations and citizens

Q2.11 Number of research and innovation organizations being hub members in total

Answer (number)

Please count and answer	3
Fachhochschule Vorarlberg, Josef Ressel Zentrum für Robuste Entscheidungen, Digital Innovatoin Hub Vorarlberg	

Q2.12 Number of public authorities being hub members in total

Answer (number)

Please count and answer	1
City of Dornbirn	

Q2.13 Number of private sector organizations being hub members in total

Answer (number)

Please count and answer	0
Future implementation of the hub strategy envisions formal inslusion of private sector	

Q2.14 Number of new hub members that joined in the monitored period

Answer (number)

Please count and answer	0
The City of Dornbirn, 4STEPS Digital Innovation Hub, Josef Ressel Zentrum für Robuste Entscheidungen, FH Vorarlberg	

Q2.15 Number of projects/initiatives jointly proposed in the monitored period

Answer (number)

Please count and answer	8
Urban bioeconomy; On-deman manufacturing; Advanced manufacturing based on renewable raw materials; Fexible manufacturing strategies (2); Circular economy for digital transformation (2); Social impact bonds in circular transition;	

Q2.16 Number of projects/initiatives being jointly implemented in the monitored period

	Answer (number)
Please count and answer	0
Opportnuities foreseen to be implemented in the future.	

Q2.17 Amount of budget requested by hub members in joint activities (in €) in the monitored period

	Answer (number)
Please count and answer	0
implementation of joint activities to be funded are projected in the future period.	

Q2.18 Amount of budget attracted by hub members in joint activities (in €) in the monitored period

	Answer (number)
Please count and answer	0
-	

Q2.19 Amount of budget requested by hub members in joint activities per hub member (in €) in the monitored period

	Answer (number)
Please count and answer	0
-	

Q2.20 Amount of budget attracted by hub members in joint activities per hub member (in €) in the monitored period

Answer (number)

Please count and answer	0
-	

Q2.21 Number of partners being presented within hub´s networking services in total

Answer (number)

Please count and answer	N/A
N/A	

Q2.22 Number of requests received for match-making in the monitored period

Answer (number)

Please count and answer	4
Internal procedures related to the project implementation	

Q2.23 Number of communication channels in use in the monitored period

Answer (number)

Please count and answer	17
The number is calculated based on the application of the formula n (n - 1) /2, referring to the number of people regularly communicating within the hub.	

Q2.24 Number of website and social media accounts visits in the monitored period

Answer (number)

Please count and answer	N/A
No information available	