Collaborative Harvesting: the CETPartnership Knowledge Community and Impact Network

24th of October 14:00-17:00 CEST
Moderation: Tanja Suni, Katharina Reffel

Co-funded by
the European Union

Moderation

Katharina Reffel
CETPartnership Knowledge Community Management

Tanja Suni
CETPartnership Impact Network Management

Agenda

Time	Content
14:00	Welcome
14:05	Collaborative Harvesting: Going beyond pure research …
14:10	Knowledge Management as key accelerator for the Clean Energy Transition
14:20	Get involved in the Knowledge Community – Demo group session
15:25	*Coffee break*
15:35	Maximising Exploitation and Impact
15:50	Get involved in the Impact Network – Panel, Survey, and Demo exercise
16:50	Wrap-up and next steps
17:00	Closing

Collaborative Harvesting: Going beyond pure research …

Katharina Reffel
Knowledge Community Management

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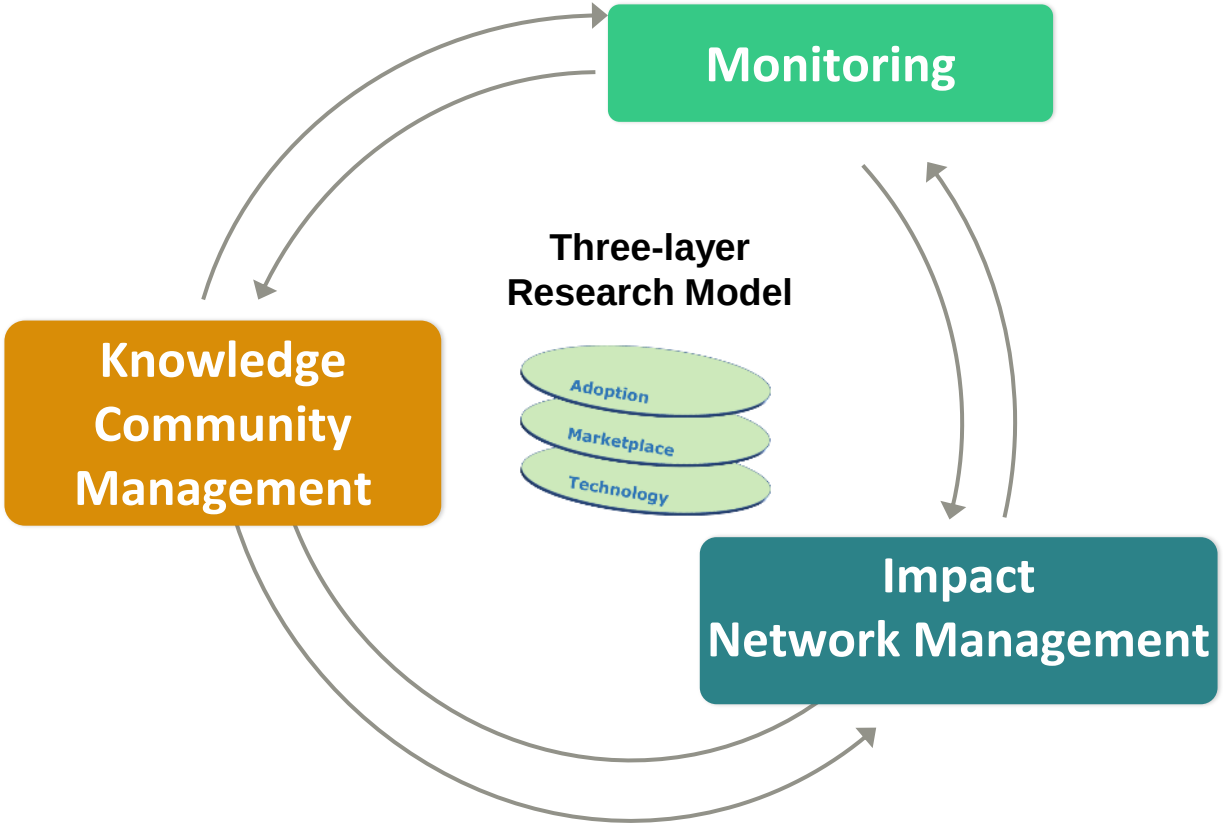
Collaborative Harvesting: Going beyond pure research …



Collaborative Harvesting: Going beyond pure research …

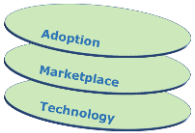
Monitoring

- measure performance of projects and the entire partnership
- collect data and check consistency
- analyse data against targets
- interpret results and draw conclusions

Knowledge

- generate tangible, trustworthy knowledge from projects' outputs
- create a community of collaboration with CETPartnership projects
- prepare joint aggregated outputs for further use

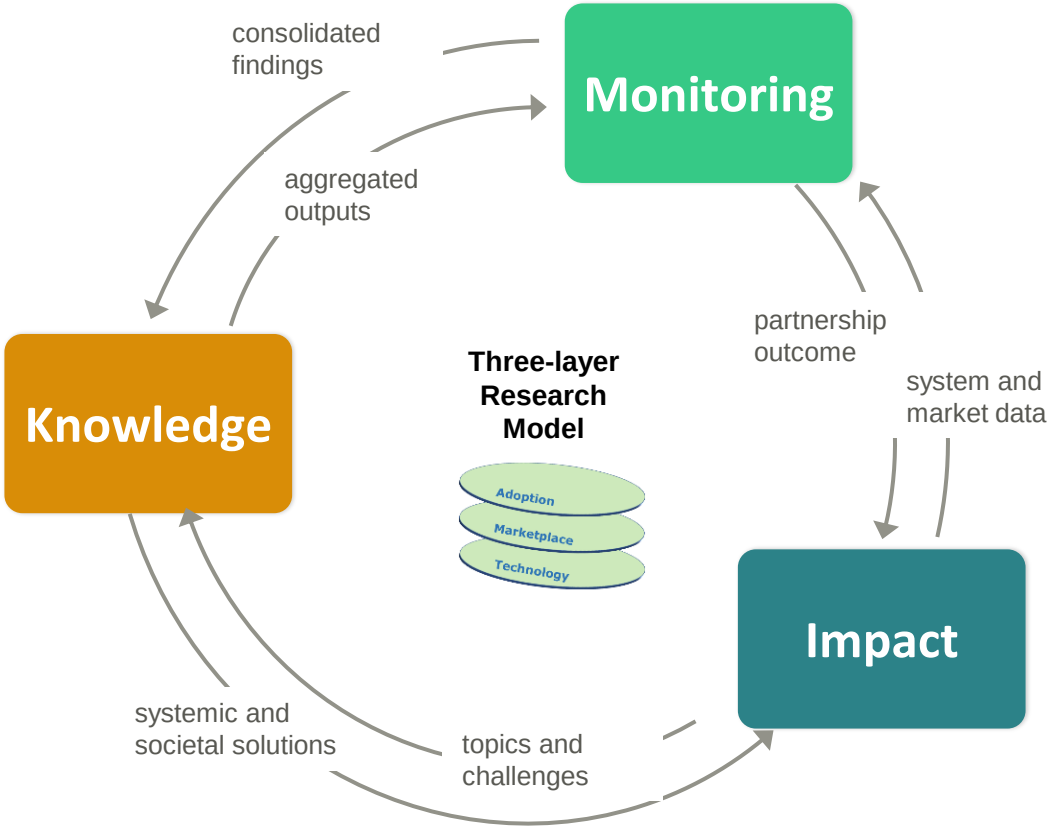
Three-layer Research Model



Impact

- develop interaction tools for impact generation
- build capacity on tools and validation methods
- engage external stakeholders
- organize CETPartnership level impact events with projects and need owners

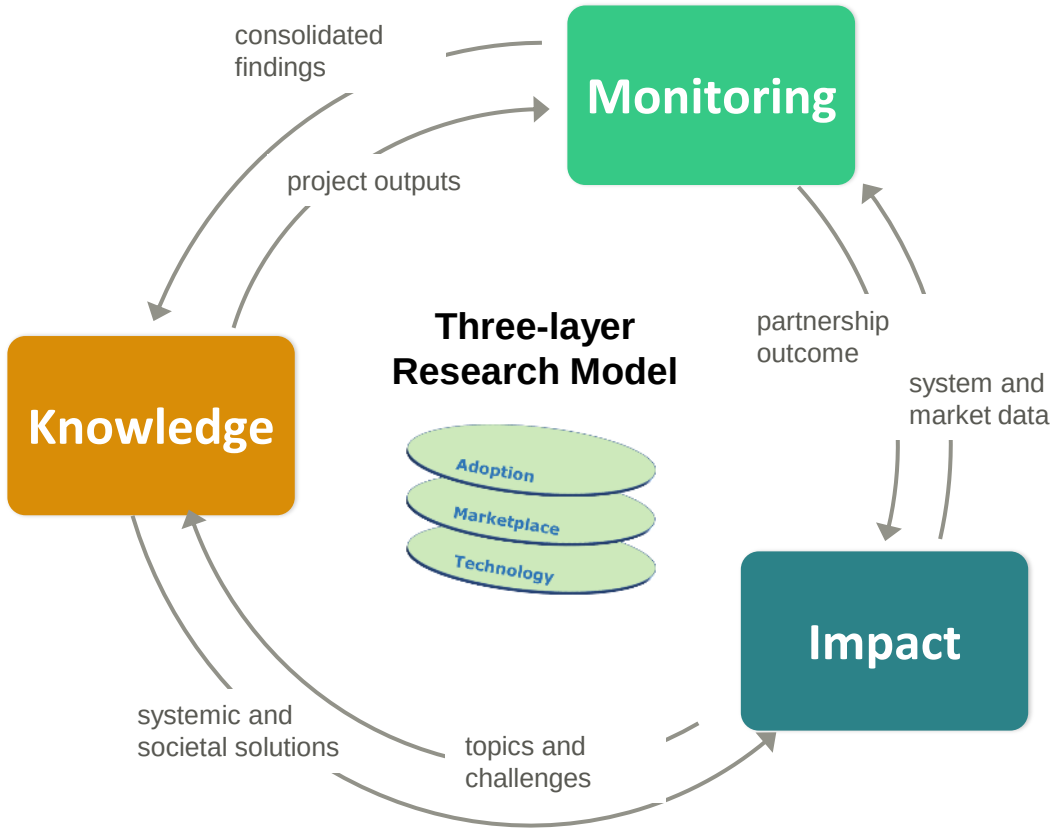
Collaborative Harvesting: Going beyond pure research …



Collaborative Harvesting: Going beyond pure research …

Internal stakeholders

- (EC and) CETPartnership
- Funding agencies
- Transition Initiatives
- Projects



External stakeholders

- Science
- Industry & business
- Policy (government and public sector)
- Civil society

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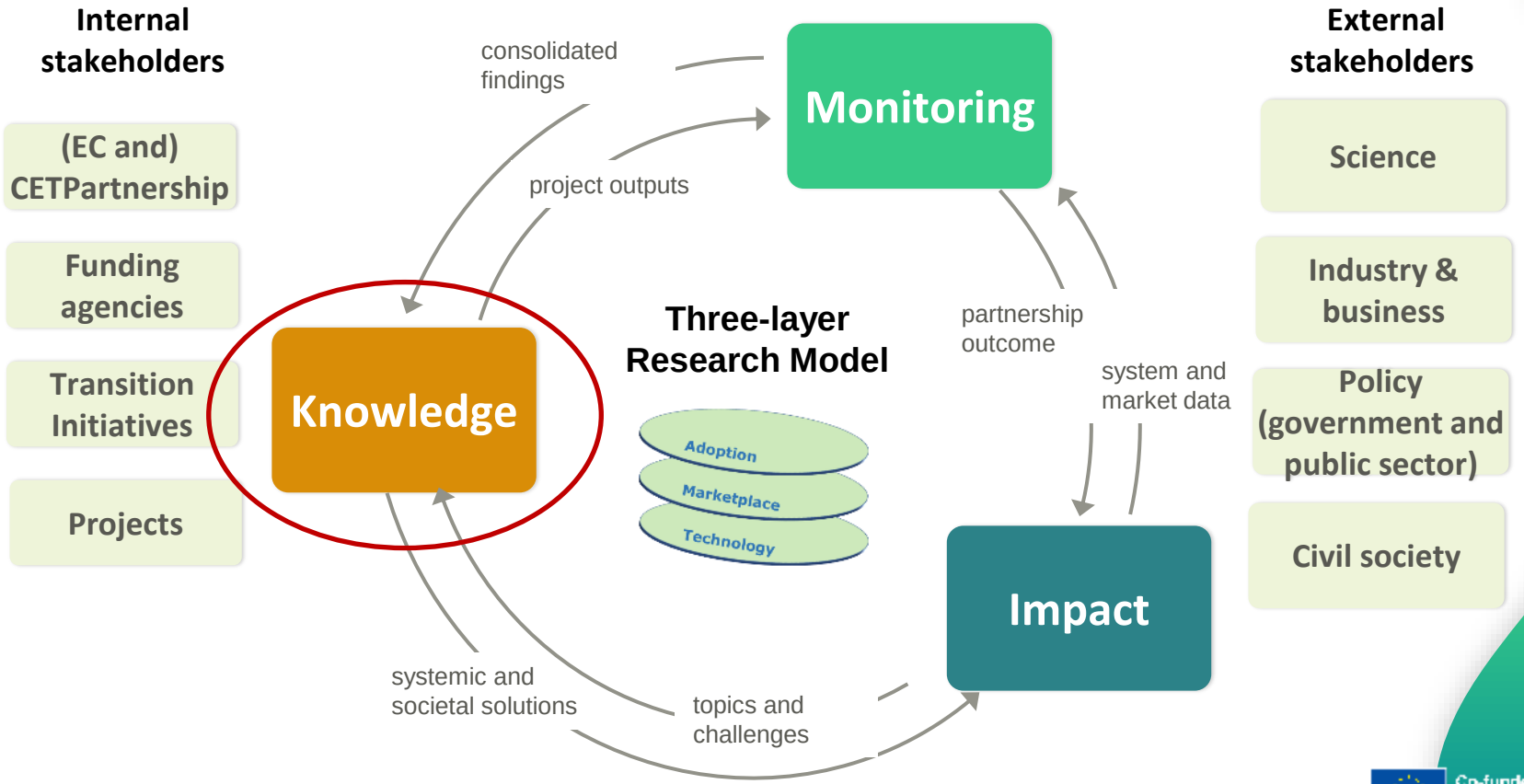
Knowledge Management as key accelerator for the Clean Energy Transition

Katharina Reffel

Knowledge Community Management

Collaborative Harvesting: Going beyond pure research …



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Objectives of the Knowledge Community

- **Leverage the knowledge** produced in the framework of the funded **projects** and put it together to answer the SRIA identified **(cross-cutting) challenges** and ultimately boost the clean energy transition:
  - Regulatory frameworks and market design
  - Resource efficiency and circularity
  - Fairness and justice principles
  - Digitalisation

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"The Commission will take action in the following areas: Include ***new priorities on cross-cutting issues, including sustainability by design, skills development, research and innovation, tailored to societal needs, digitalisation, and market accessibility."***

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  - Regulatory frameworks and market design
  - Resource efficiency and circularity
  - Fairness and justice principles
  - Digitalisation
- Create a **community of change-makers** who feel part of a CETPartnership “Family” and regularly contribute to the **jointly generated knowledge**

Knowledge Community: motivation

for the **projects**

- interaction among CETPartnership projects and other projects
- knowledge co-creation in cross-cutting thematic Working Group
- connections to need owners and other stakeholders → impact network
- Include ideas and partners for future calls

for the **initiative**

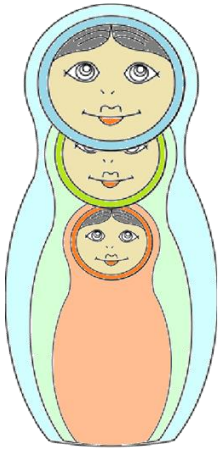
- evidence-based and strategic knowledge
- input for further RDI activities (“co-creation on program level”)
- working on critical topics not (yet) covered by funded projects
- a community of trust and respect in the „family of projects“

The Knowledge Community Levels

Partnership Level

Thematic Level

Project Level



Information Base (DISCCO)

- Experts Repository
- Projects Repository
- Links to Knowledge Platforms

The Knowledge Community Levels

Partnership Level	• Cross Cutting Working Group • Focus Groups • Creation of Status Document
Thematic Level	• Webinars • Taskforces • Topical Working Groups • Derivation of Recommendations
Project Level	• Peer-2-peer Feedback Meetings • Joint Paper Creation
Information Base (DISCCO)	• Experts Repository • Projects Repository • Links to Knowledge Platforms

Projects with similar topics invited to peer feedback rounds on evaluated RDI activities

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Contribution to webinar series “60 Minutes on … . From Project Theory to Project Practice”

The Knowledge Community Levels

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Working Group meetings identifying RDI needs and contributions on one cross-cutting topic

Get involved in the Knowledge Community – Demo group sessions

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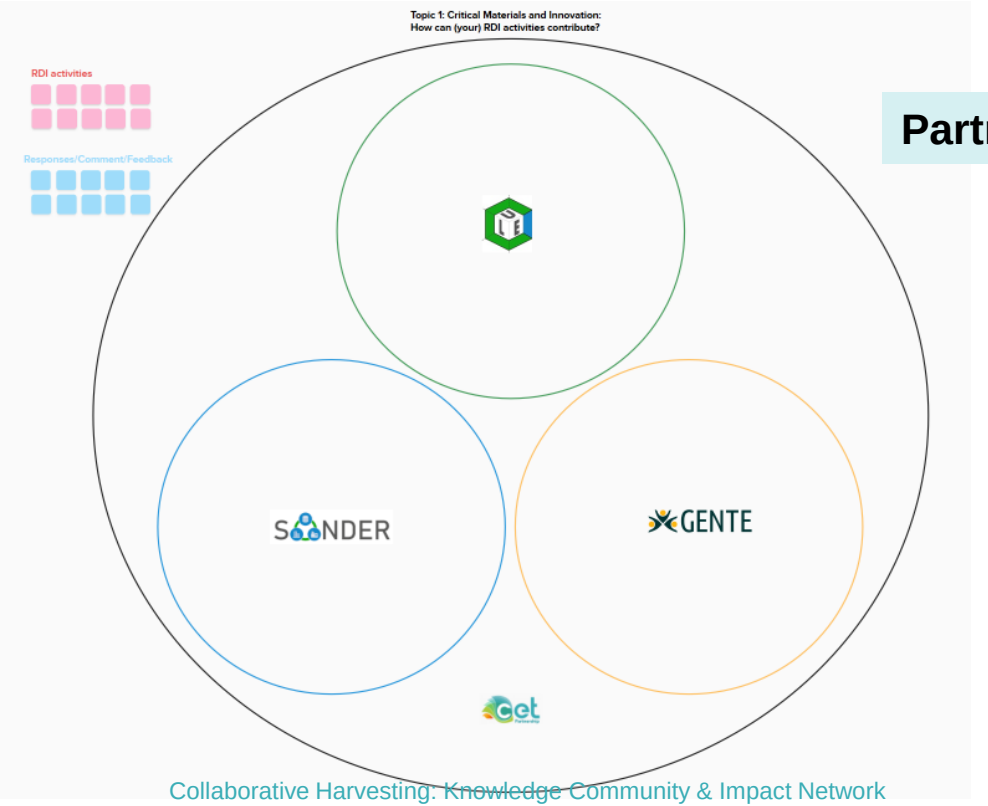
Room 1: Working Group session on Sustainable Supply Chains in the energy sector

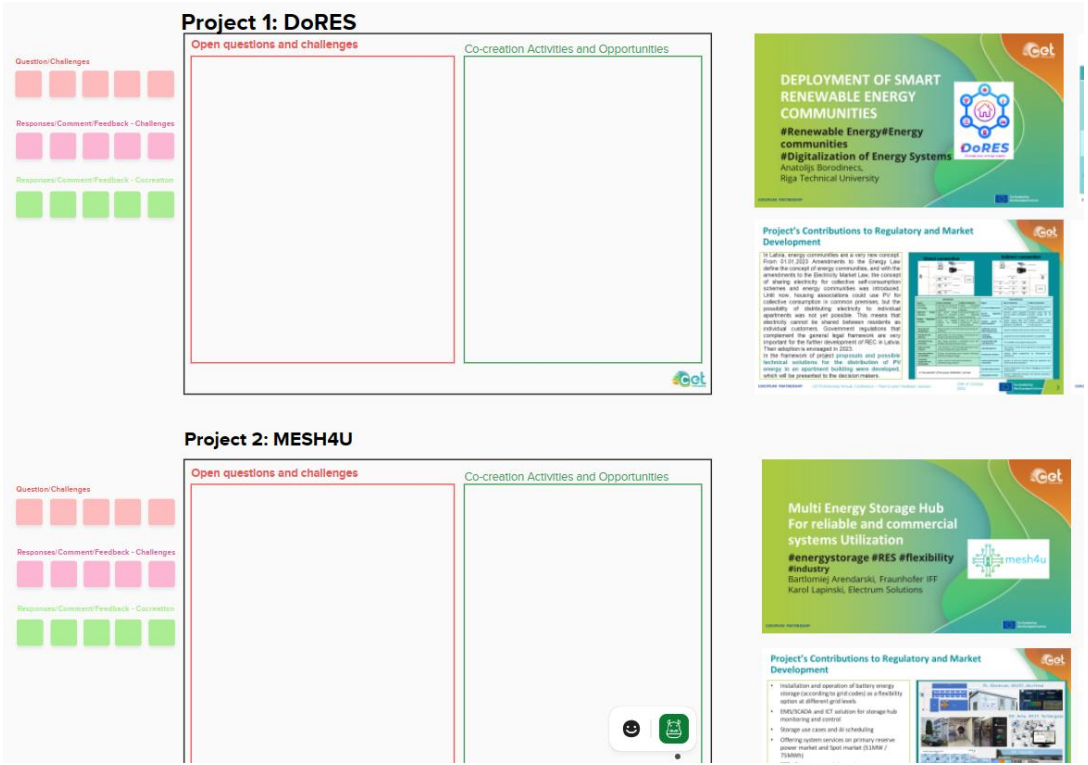


Partnership Level

Room 2: Webinar: “60 Minutes on Interoperability . From Project Theory to Project Practice”

Thematic Level

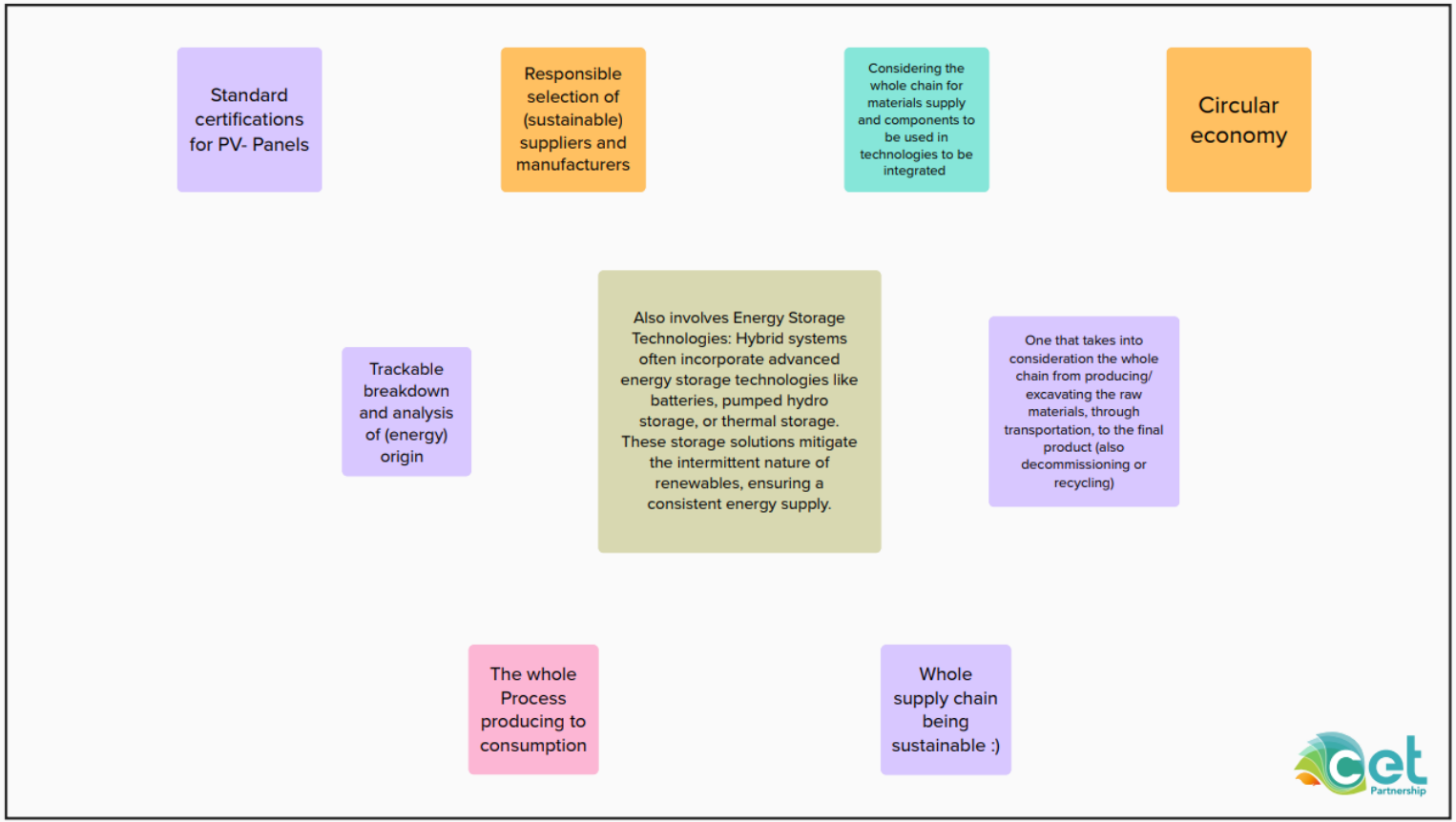
Room 3: Peer-to-peer feedback session on Regulatory and Market Development

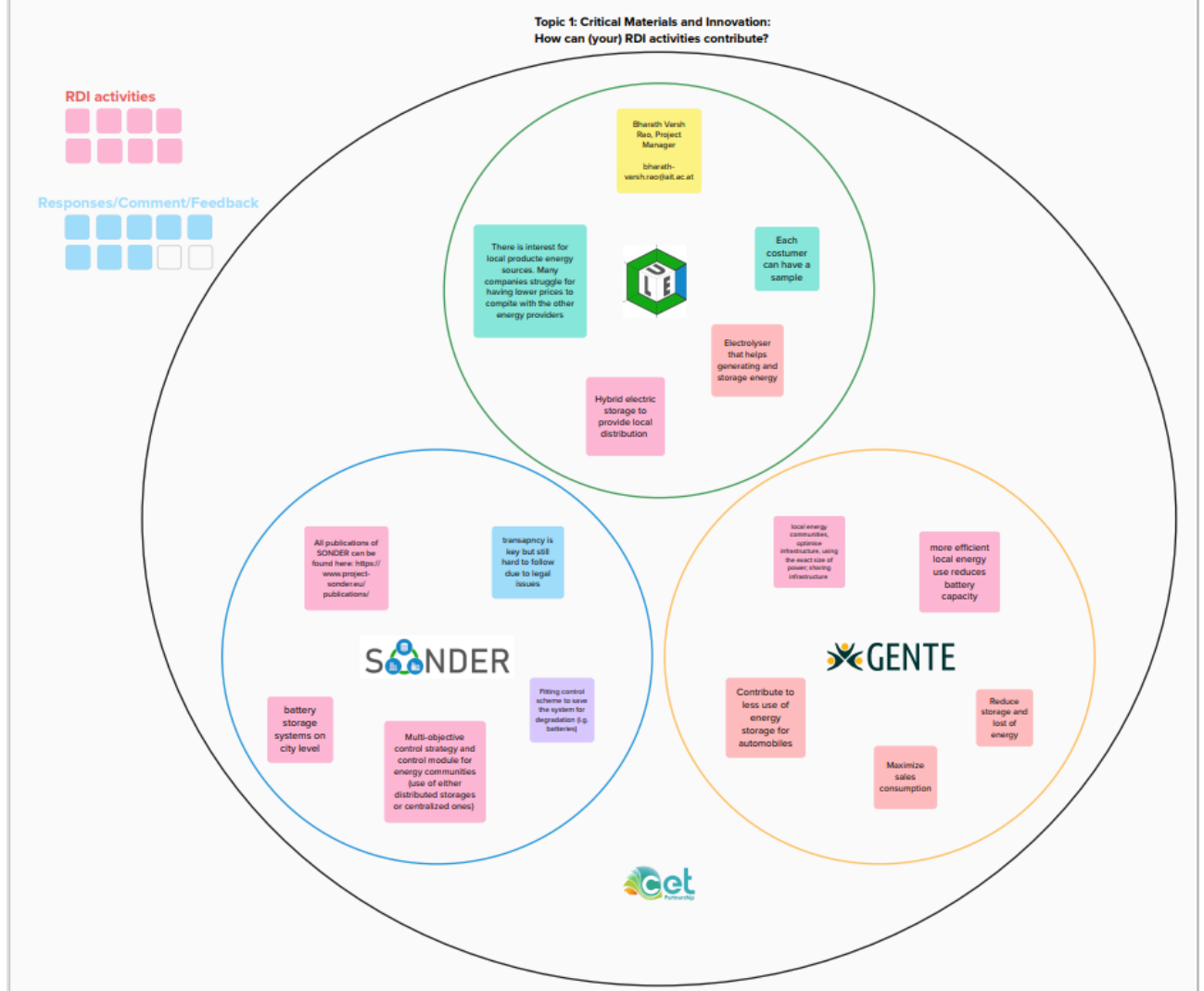


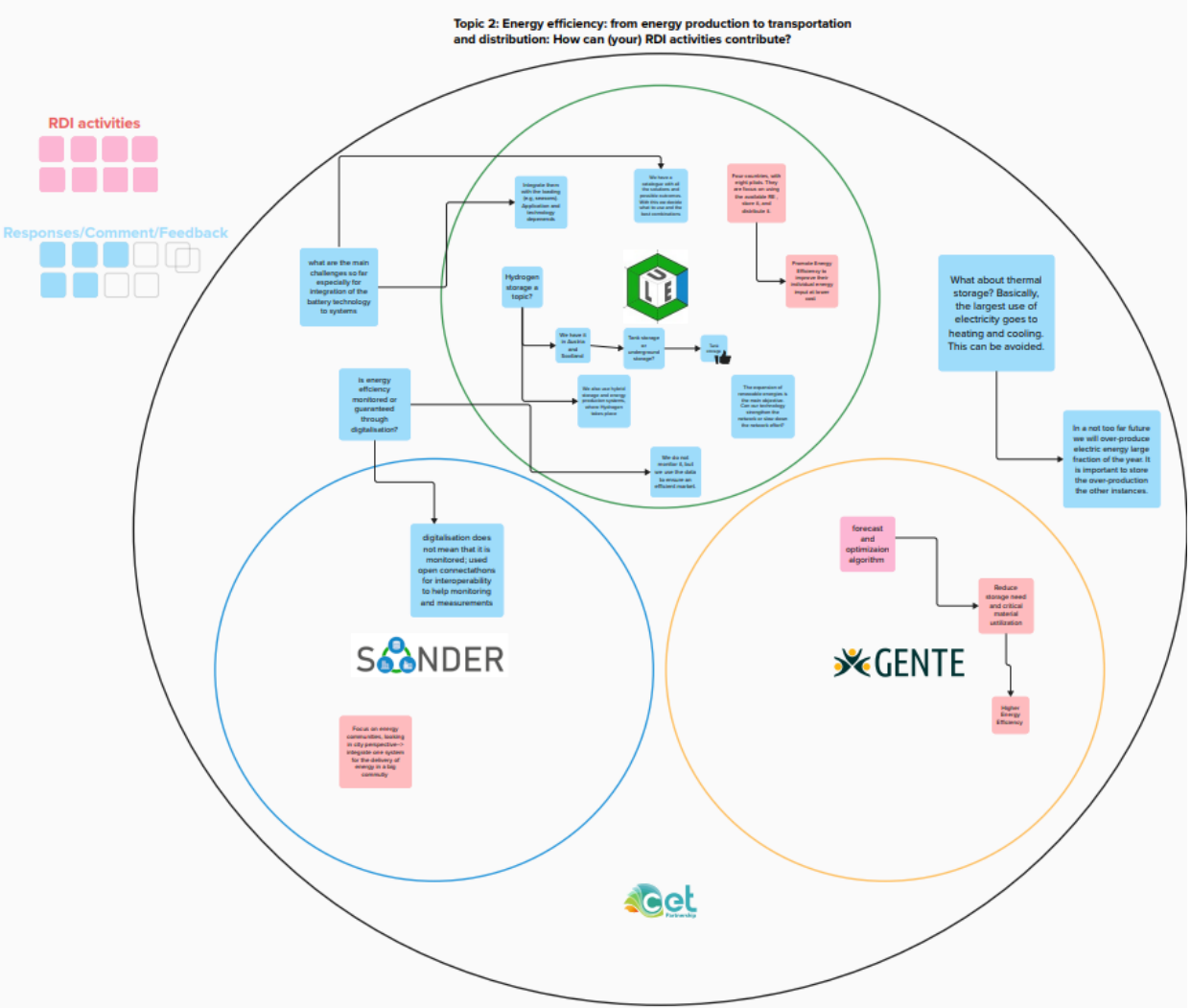
Project Level

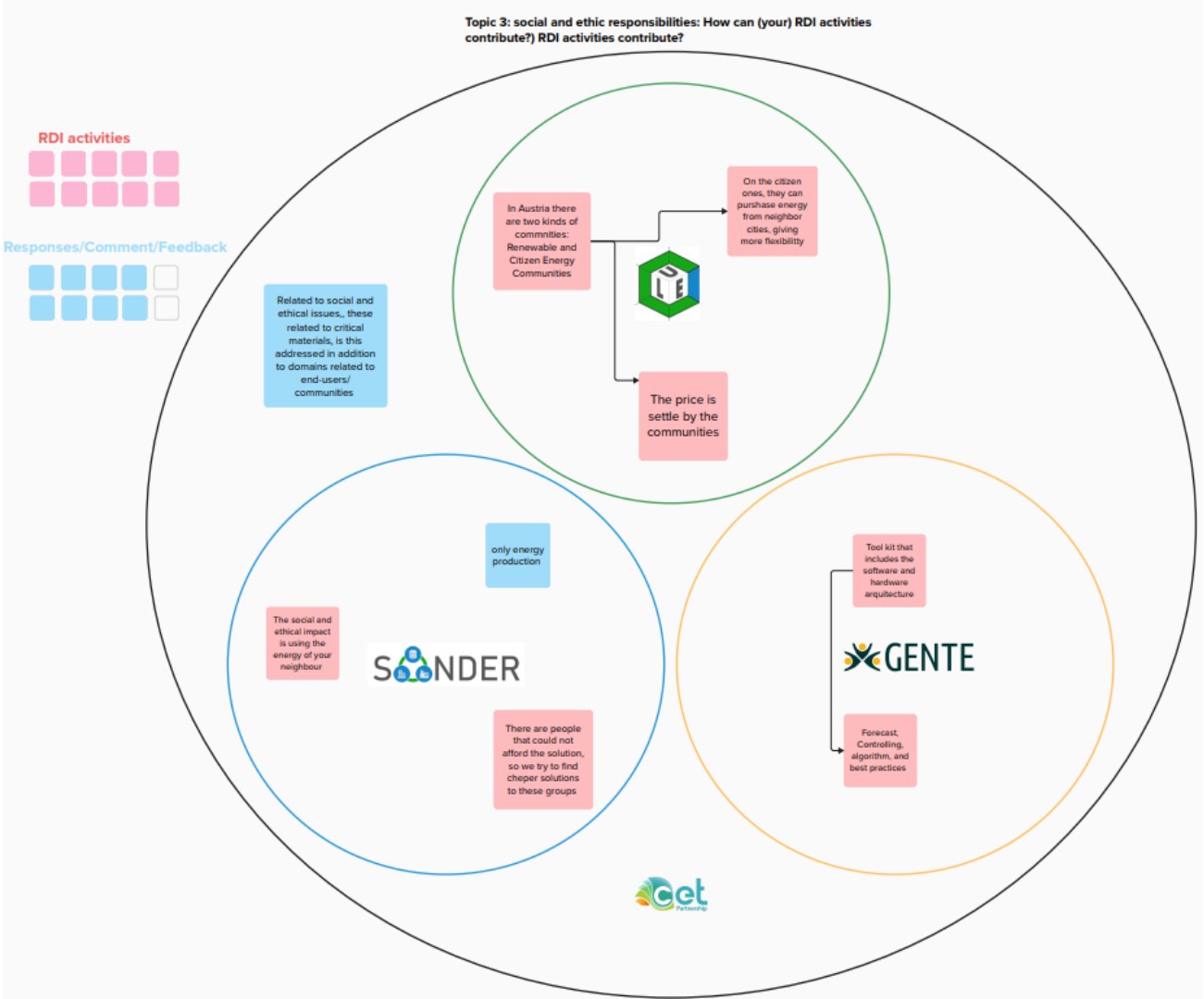
Working Group session

What do you understand by Sustainable Supply Chains in the energy sector?




Topic 1: Critical Materials and Innovation:
How can (your) RDI activities contribute?
RDI activities
Responses/Comment/Feedback
Bharath Vesh Rao, Project Manager
bharath-vesh.rao@ait.ac.at
There is interest for local producte energy sources. Many companies struggle for having lower prices to compite with the other energy providers
Each costumer can have a sample
Electrolyser that helps generating and storage energy
Hybrid electric storage to provide local distribution
All publications of SONDER can be found here: https://www.project-sonder.eu/publications/
transapncy is key but still hard to follow due to legal issues
SONDER
battery storage systems on city level
Multi-objective control strategy and control module for energy communities (use of either distributed storages or centralized ones)
Fitting control scheme to save the system for degradation (e.g. batteries)
local energy communities, optimize infrastructure, using the exact size of power, sharing infrastructure
more efficient local energy use reduces battery capacity
GENTE
Contribute to less use of energy storage for automobiles
Reduce storage and lost of energy
Maximize sales consumption
cet Partnership


Topic 2: Energy efficiency: from energy production to transportation and distribution: How can (your) RDI activities contribute?
RDI activities
Responses/Comment/Feedback
what are the main challenges so far especially for integration of the battery technology to systems
Integrate them with the leading (e.g. seasons) Application and technology requirements
We have a catalogue with all the solutions and possible outcomes. With this we decide what to use and the best combinations
Four countries, with eight pilots. They are focus on using the available RE, store it, and distribute it.
Promote Energy Efficiency to improve their individual energy input at town and
Hydrogen storage a topic?
We have it in Austria and Scotland
Tank storage an underground storage?
Tank storage
is energy efficiency monitored or guaranteed through digitalisation?
We also use hybrid storage and energy production systems, where Hydrogen takes place
The expansion of renewable energies is the main objective. Can our technology strengthen the network or slow down the network effect?
We do not monitor it, but we use the data to ensure an efficient market
digitalisation does not mean that it is monitored; used open connectathons for interoperability to help monitoring and measurements
SONDER
Focus on energy communities, looking in city perspective-> integrate core systems for the delivery of energy in a big community
What about thermal storage? Basically, the largest use of electricity goes to heating and cooling. This can be avoided.
In a not too far future we will over-produce electric energy large fraction of the year. It is important to store the over-production the other instances.
forecast and optimization algorithm
Reduce storage need and critical material utilization
GENTE
Higher Energy Efficiency
cet
Partnership


Topic 3: social and ethic responsibilities: How can (your) RDI activities contribute?) RDI activities contribute?
RDI activities
Responses/Comment/Feedback
Related to social and ethical issues,, these related to critical materials, is this addressed in addition to domains related to end-users/ communities
In Austria there are two kinds of commities: Renewable and Citizen Energy Communities
On the citizen ones, they can purchase energy from neighbor cities, giving more flexibility
The price is settle by the communities
only energy production
The social and ethical impact is using the energy of your neighbour
SONDER
There are people that could not afford the solution, so we try to find cheper solutions to these groups
Tool kit that includes the software and hardware arquitecture
GENTE
Forecast, Controlling, algorithm, and best practices

Webinar

Webinar: “60 Minutes on Interoperability: From Project Theory to Project Practice”

Watch the webinar on YouTube via **this link**.

Peer-to-peer feedback session

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DEPLOYMENT OF SMART RENEWABLE ENERGY COMMUNITIES

#Renewable Energy#Energy communities
#Digitalization of Energy Systems

Anatolijs Borodinecs,
Riga Technical University

EUROPEAN PARTNERSHIP

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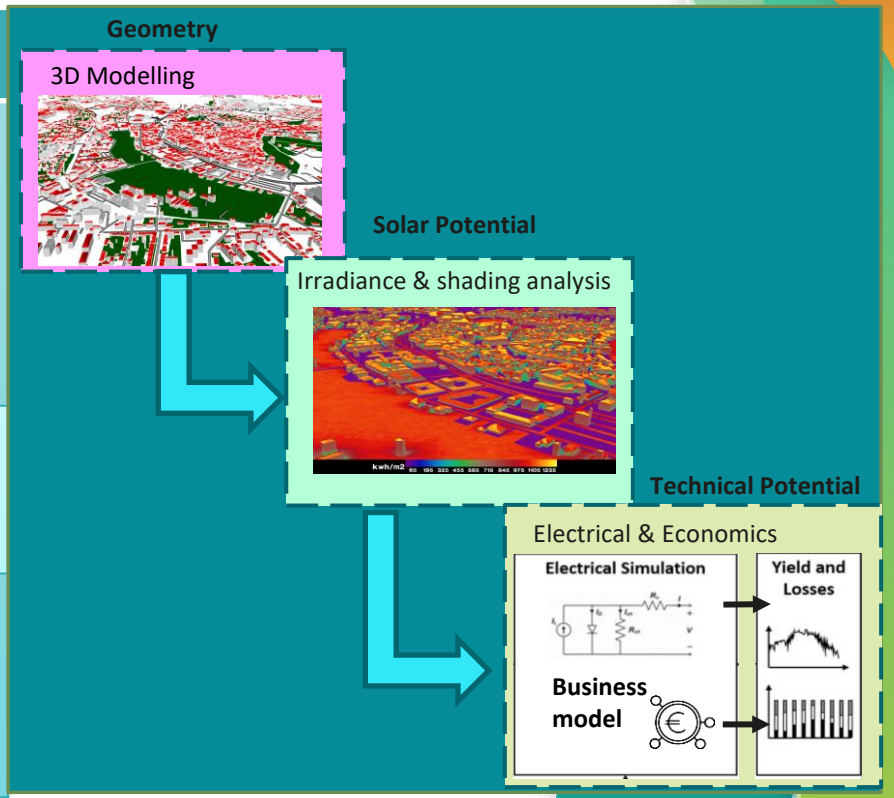
Project Activities & Results in 2023

	Activities/Results
Techno-logy	● Framework and tools for effectively designing and assessing large-scale PV systems for decarbonizing built environment. ● A toolbox for designing, simulating, and optimizing PV/BES in the energy community. ● Two case studies in Latvia & Czechia to validate and demonstrate project solutions in local networks.
Market	● Smart operation of electrical energy systems considering flexibility and energy trading. ● Testing and evaluation of different business models
Adoption	● Energy coaching of residents ● Simple framework containing principles and requirements of the energy communities and will create the base for strategic decisions at the urban scale.

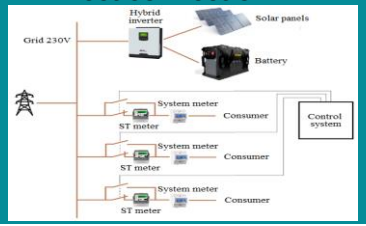


Project's Contributions to Regulatory and Market Development

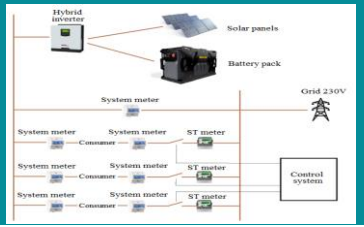
In Latvia, energy communities are a very new concept. From 01.01.2023 Amendments to the Energy Law define the concept of energy communities, and with the amendments to the Electricity Market Law, the concept of sharing electricity for collective self-consumption schemes and energy communities was introduced. Until now, housing associations could use PV for collective consumption in common premises, but the possibility of distributing electricity to individual apartments was not yet possible. This means that electricity cannot be shared between residents as individual customers. Government regulations that complement the general legal framework are very important for the further development of REC in Latvia. Their adoption is envisaged in 2023.

In the framework of project **proposals and possible technical solutions for the distribution of PV energy in an apartment building were developed**, which will be presented to the decision makers.

Direct connection



Indirect connection



ADVANTAGES			DISADVANTAGES		
Aspect	**Direct Connection**	**Indirect Connection**	**Aspect**	**Direct Connection**	**Indirect Connection**
Electricity Cost Savings	Consumers do not pay for solar power if ST consent is obtained	Similar cost-saving potential if ST consent is obtained	**ST Consent Requirement**	ST may not grant consent for meter bypass	ST may not grant consent for meter disconnection
Optimized Energy Utilization	Solar power directly supplied to consumers, minimizing grid reliance	Grid synchronization for power balancing ensures optimal use	**Inverter Regulation Constraints**	Inverter's power regulation may not match consumption demand	Inverter's power may not provide enough for all consumers
Battery Integration Flexibility	Choice to integrate batteries for energy storage	Option to opt for a conventional inverter without batteries	**Complex Control in Battery Depletion**	Unclear control when the battery is depleted, and solar generation is insufficient	Unclear control when inverter power is insufficient for all consumers
Enhanced Grid Independence	Reduces reliance on the external grid, promoting self-sufficiency		**Individual Cord and Meter Requirement**	Requires individual cords and two meters for each consumer	
Potential for Net Metering	Opportunities for excess energy to be fed back into the grid, potentially earning credits		**Equipment Compatibility**	Equipment must be carefully selected for compatibility	
Distributed Energy Generation	Solar energy production is distributed across the building, reducing transmission losses		**Programmable Logic Controller (PLC)**	PLC installation and programming required	
Reduced Carbon Footprint	Lower reliance on fossil-fuel-based grid power leads to decreased greenhouse gas emissions		**Data Management**	Data center or cloud service required for consumption data management	
Improved Resilience and Reliability	Provides a decentralized source of power, enhancing reliability during grid outages		**Visualization Solutions**	Requires skilled programmers for development and maintenance	
Community Engagement and Sustainability	Fosters a sense of community involvement in renewable energy initiatives		**Internet and Electrical Connections**	Requires at least two internet cables per apartment and specific electrical switchboard	
ST-the operator of the power distribution services			**Iterative Enhancements**	Product development may require debugging and iterative enhancements	
			Independent Services	Requires independent electricity and internet connections, incurring additional costs	

Opportunities for Exchange on Regulatory and Market Development

OPEN QUESTIONS AND CHALLENGES
(YOUR QUESTIONS TO PEER EXPERTS)

- Business models that can be used in renewable energy communities?
- What can be the regulatory aspects of energy communities?

WE OFFER EXPERIENCE IN…
(AREAS OF EXPERTISE & EXPERIENCE TO SHARE)

- Energy Communities, microgrids, PEDs
- BAPV & BIPV design and assessment
- Energy management, including forecasting, optimization and dynamic electricity prices

Multi Energy Storage Hub For reliable and commercial systems Utilization

#energystorage #RES #flexibility #industry

Bartlomiej Arendarski, Fraunhofer IFF
Karol Lapinski, Electrum Solutions

EUROPEAN PARTNERSHIP

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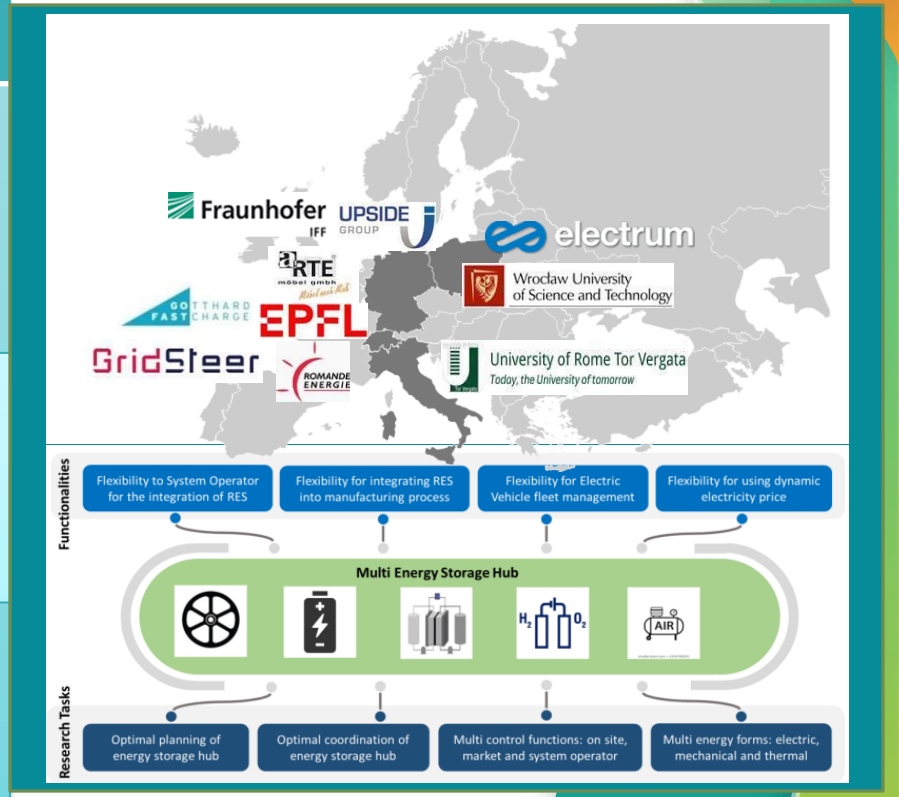
Project Activities & Results in 2023

	Activities/Results
Techno-logy	• Multi energy storage hub solutions (technology and service) • SCADA/ Energy Management System Storage • Virtual Power Plant
Market	flexibility operation from • end customers in the local grids • via SMEs (small and medium enterprises)/ industry • technology providers • up to the ESO (energy system operator)/DSO (distribution system operator)
Adoption	• Net-Zero-Energy-Factory • Sustainable 'green' products • Grid services



Project's Contributions to Regulatory and Market Development

- Installation and operation of battery energy storage (according to grid codes) as a flexibility option at different grid levels
- EMS/SCADA and ICT solution for storage hub monitoring and control
- Storage use cases and AI scheduling
- Offering system services on primary reserve power market and Spot market (51MW / 75MWh)
- FCR - frequency containment reserve
- aFRR - automatic frequency restoration reserve
- Four high innovative Mesh4U demonstrators →

Opportunities for Exchange on Regulatory and Market Development

OPEN QUESTIONS AND CHALLENGES
(YOUR QUESTIONS TO PEER EXPERTS)

- Searching for new technical and economic use cases for storage systems, e.g. flexibility offering
- Legal and regulatory aspects of energy storage operation, trading
- Multi functions for storage systems
- Finding optimal business model

WE OFFER EXPERIENCE IN…
(AREAS OF EXPERTISE & EXPERIENCE TO SHARE)

- Methodology and tool for optimal planning and sizing of energy storage
- EMS/SCADA for storage operation in combination with other assets: RES, loads, grid, market, incl. forecast, scheduling etc.
- ICT architecture
  - Web Portal, Web API, Engineering Station, Database SQL Server, Emacs Server
  - Communication drivers – Modbus TCP Client
  - Message Bus RabbitMQ, RESTful API, Energy Storage Domain

Coffee break

Please be back at 15:35 CEST

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Maximising exploitation and impact

Tanja Suni
CETPartnership Impact
Network Management

Co-funded by
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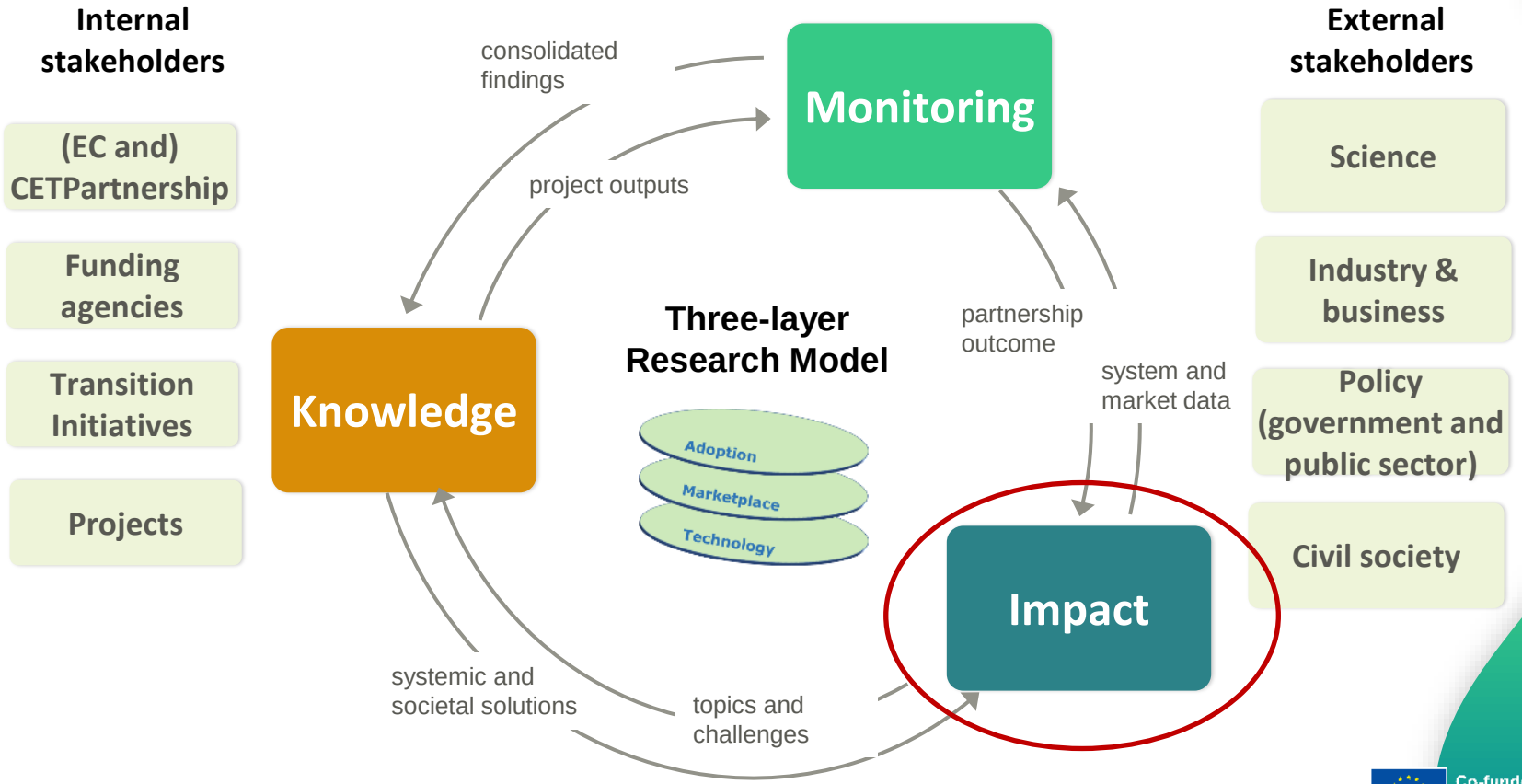
Collaborative Harvesting: Going beyond pure research …



Outlook

CETP Impact Vision

Driving Impact Through Systemic Transformation and the Quadruple Helix

The Exploitation Pathway

Co-funded by the European Union

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CETP Impact Vision

Driving Impact Through Systemic Transformation and the Quadruple Helix

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CETP impact vision

Background[1]:

Today's energy system is still built on several **parallel, vertical energy value chains,** which rigidly link specific energy resources with specific end-use sectors.

This model of separate silos cannot deliver a climate neutral economy. It is technically and economically inefficient and leads to substantial losses in the form of waste heat and low energy efficiency.

The EU needs a transition to an **integrated clean energy system across multiple energy carriers, infrastructures, and consumption sectors.**

Impact vision:

CETP **enables the clean energy transition**

- from enabling technologies to integrated energy systems
- from regional to national and global level

to make Europe a frontrunner in energy innovation and implementation.

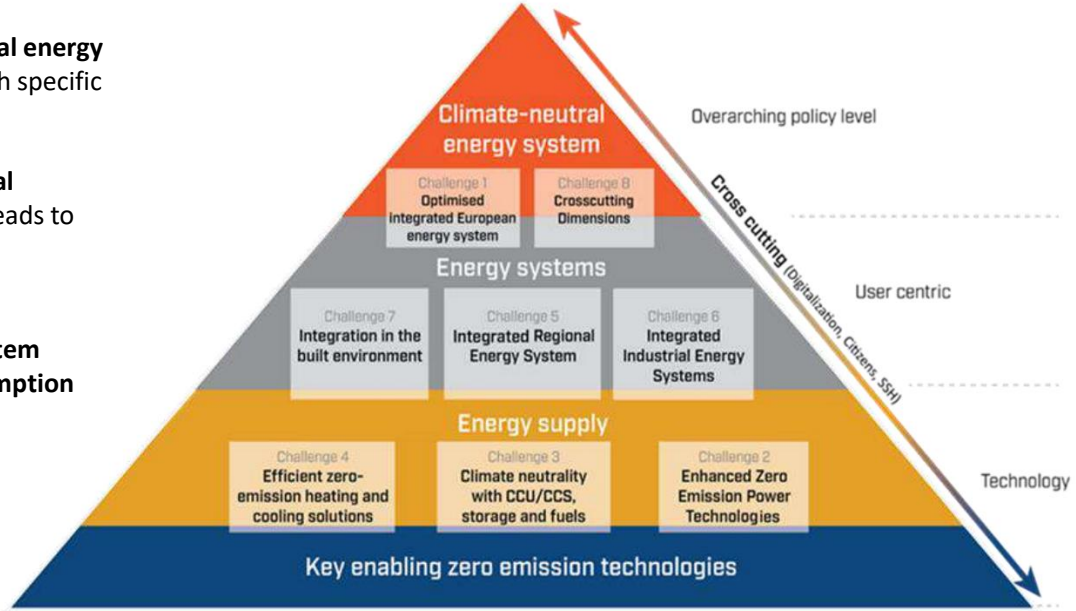

Figure 3 From enabling technologies towards and integrated energy system

1. *Powering a climate-neutral economy: An EU Strategy for Energy System Integration. COM(2020) 299 finai*

CETP impact vision

What do we want?
Expected impact of CETP:

- **High-quality new knowledge, skills and technologies** for a well-defined transition into a new, integrated clean energy system.
- **An evidence and fact base for policymaking** in support of Europe's energy transition in domains of innovation, market entry and diffusion, as well as regulation, and procurement.
- **Higher use (=exploitation) of research results**, innovation, services and knowledge to support the transition in policy, industry, and society.
- **Uptake of innovation in society** via increasing technological readiness and increasing compatibility with societal needs and values (societal readiness) of the solutions.

How do we get there?
CETP Impact pathways:

- **Problem-based projects with co-creation and engagement with stakeholders** from research, industry, society and policy (the Quadruple Helix of systemic transition)
- **Projects moving along the Exploitation Pathway:** from basic technology research to development, piloting and demonstration to business creation and societal adoption.
- **Capacity building in the CEPT community:** training exploitation- and impact-boosting methodologies & building networks to policy, industry and value chain partners, and regional and local communities.
- **Strategic relations with other EU partnerships and initiatives and nationally:** regular exchange on policy developments, opportunities for joint actions and events or promotion of results to enhance the impact of CETP.

Outlook

CETP Impact Vision

Driving Impact Through Systemic Transformation and the Quadruple Helix

The Exploitation Pathway

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What kind of impact do CETP solutions strive for?

Environment and Health: Defossilization of the energy system with solutions that are compatible with multiple soil/land use needs, biodiversity goals, and zero pollution, thus improving planetary and public health and overall well-being. Circular solutions that allow reducing the reliance on pristine natural resources and critical materials.

Social Equity and Inclusivity: Solutions that are fair, inclusive, and affordable in different regions, ensuring the green transition reaches all segments of society and reflects the diverse values of nature, landscapes, and urban environments. Addressing social equity concerns fosters a more inclusive and diverse market ecosystem.

Regulatory and Policy Impact: Shaping regulatory and policy environments to accelerate the adoption of sustainable practices within the green transition. Identification of regulatory barriers in CETP projects can help promote incentives & innovative regulatory sandboxes to boost the clean energy market.

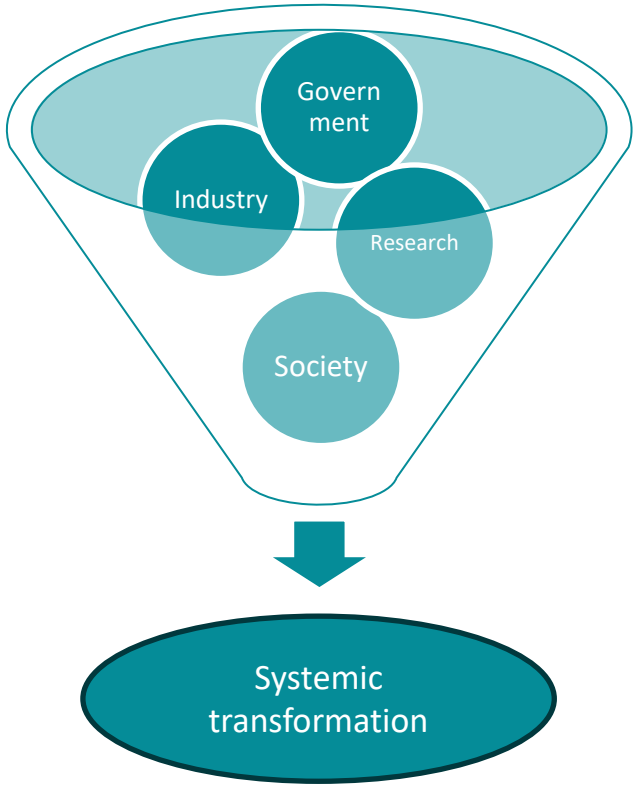
What do we need in order to get the desired impact?
- Systemic transformation requires the Quadruple Helix approach

Systemic transition problems are typically related to complex and interacting societal, economic, and environmental challenges. Examples include

- Reaching climate neutrality
- Transitioning to a clean energy system
- Reimagining urban mobility

Addressing systemic transformation involves more than just innovation at the product level. It requires input from **multiple stakeholders,** including **government, academia, industry, and civil society.**

The **Quadruple Helix approach** emphasizes the involvement of all four of these sectors to drive systemic change.



What does the Clean Energy System Transition require from the Quadruple Helix?

Industry

- Solutions that have been validated and piloted in practice as part of value chains
- Integration and digital optimization among different parts of the system – energy production, storage, distribution, users, multiple energy carriers
- Business models and Go-To-Market strategies that fit the new integrated system and create value on different levels

Govern-ment

- Testbeds and regulatory sandboxes for testing the legislative changes required
- Cross-sectoral political guidance, ambitious and cohesive climate, environment, and energy targets
- Financial support and incentives coordinated to support the integrated clean energy system

Society

- Citizens, regions, companies, industrial hubs, cities, and municipalities = stakeholders committed to adopting the new solutions
- User groups to inform about their needs and to validate solutions in real environments
- NGOs and citizens in different regions to engage about cultural and social values and goals
- Education and training for new skills necessary to run the new clean energy system

Research

- Systemic aspects of the planetary triple crisis: interactions among biodiversity, climate, and pollution
- Societal and environmental impact of supply chains, material, energy, and water use
- Scenarios and transition pathways, risks, foresight

Outlook

CETP Impact Vision

Driving Impact Through Systemic Transformation and the Quadruple Helix

The Exploitation Pathway

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THE CETP EXPLOITATION PATHWAY

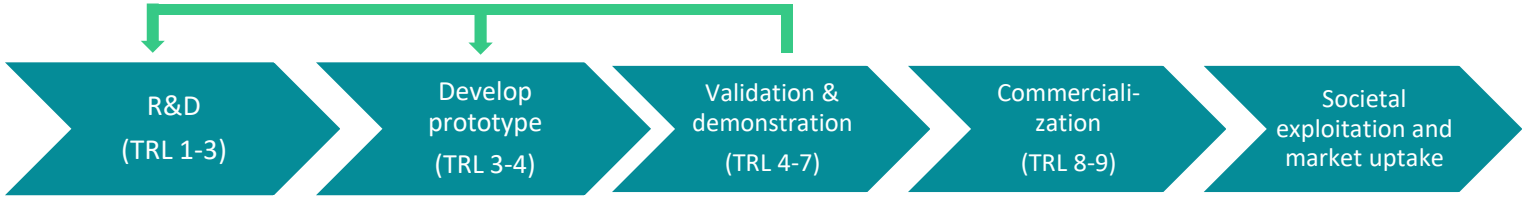
Horizon Europe goal: continuous flow of innovations to market

Define objectives Solution concept Feasibility studies Technical challenges	Build prototype Test performance Gather data	Lab & field trials Assess scalability Societal readiness	System complete and qualified. Plan commer-cialization strategy, seek investment & partners.	Launch in the market, implement marketing, monitor societal and environmental impact.

Collaborate with policymakers, advocate for supportive policies and ensure compliance.
Engage the industry, academia, policymakers, and the public to ensure useful, inclusive solutions that have the desired environmental sustainability impacts and sufficient public support and acceptance for swift adoption.

THE CETP EXPLOITATION PATHWAY

Horizon Europe goal: continuous flow of innovations to market



Define objectives
Solution concept
Feasibility studies
Technical challenges

Build prototype
Test performance
Gather data

Lab & field trials
Assess scalability
Societal readiness

System complete and qualified. Plan commer-cialization strategy, seek investment & partners.

Launch in the market, implement marketing, monitor societal and environmental impact.

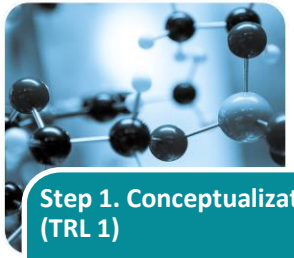
Policy influence and regulatory engagement

Stakeholder engagement and societal readiness

Collaborate with policymakers, advocate for supportive policies and ensure compliance.
Engage the industry, academia, policymakers, and the public to ensure useful, inclusive solutions that have the desired environmental sustainability impacts and sufficient public support and acceptance for swift adoption.

What could an exploitation pathway look like?

Collaborative Harvesting: Knowledge Community & Impact Network

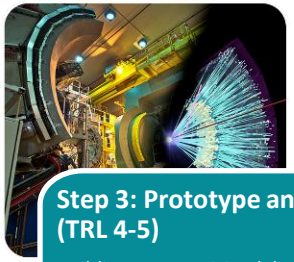


Step 1. Conceptualization (TRL 1)

Researchers conceptualize an innovative H2/CCU technology that combines renewable energy sources and advanced catalysts to efficiently convert carbon dioxide emissions into synthetic fuels and chemicals. Stakeholder engagement ensures that the innovation aligns with environmental goals and future policy expectations.

Step 2: Lab research (TRL 2-4)

In the laboratory, the research team conducts experiments to test the feasibility of the technology. They study the catalysts, analyze energy conversion efficiencies, and refine the design. Stakeholders provide early input on potential environmental concerns and policy needs related to the technology under development. Market shaping with other similar initiatives (CETP) can begin.



Step 3: Prototype and validation (TRL 4-5)

Building on promising lab results, the team develops a prototype reactor that can convert CO_2 emissions to carbohydrates. Initial tests show that the technology works effectively under controlled conditions. Tests with other modules begin. Dialogue with local community, value chain industry, policy and sustainability researchers including visits to the testing facilities for discussion and feedback.

Step 4: Validation in Real-World Environment (TRL 6-7)

The innovation advances to pilot project stage. It is tested at an industrial facility, where it captures CO_2 emissions from flue gases and converts them into synthetic fuels. Piloting provides real-world validation with users and industry partners and showcases the technology's practicality, usability, and compliance with environmental and societal goals.

Step 5: Business Plan (TRL 8)

The team focuses on sectors that produce substantial CO_2 emissions and where hydrogen can be utilized as an alternative energy carrier (e.g. steel manufacturing). The BP assesses the market size, competitive landscape, and revenue potential and engages the critical stakeholders in supply, demand, infrastructure, local community, policy, environment, and investment to leverage their support and address their interests and concerns.

Step 6: Go-to-Market Strategy (TRL 8)

The GMS outlines the steps to introduce the H2/CCU innovation to its target market. The team identifies early adopters and end-users within the selected industries. The team plans to collaborate with a steel manufacturing company that seeks to reduce its carbon footprint. The strategy engages suppliers, customers, distributors, marketing partners, media, and the local community to build the business and get feedback.

Step 7: Market Integration and Scale-Up (TRL 9)

With successful pilot projects, broad societal acceptance, supportive regulations, and a well-developed business plan and go-to-market strategy in place, the H2/CCU technology attracts investments and partnerships for large-scale implementation, reducing carbon emissions and participating in a new, integrated clean energy system.

CETP support for impact: Stakeholder networks, impact-boosting methods library, capacity building through training and networking events

Impact Network – database and map of relevant stakeholders

Networking events for climbing the TRL ladder through validation:

CETP Pitching & Matchmaking Event for validation cooperation, new project initiatives and applicants

ONLINE THEMATIC EVENTS

09:00-13:00

135 participants signed up for this session

starts

he upcoming Joint Call for

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tion partners for your
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ologies, this event is your
labs, test beds, and living
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Capacity building on living labs, exploitation, societal readiness, and more…

Impact-boosting methods library

Example video and library from www.enoll.org

Impact and exploitation
Interactive session

CETP Annual Conference
Collaborative harvesting
24 Oct 2023

Co-funded by the European Union

Programme

Welcome and aims of the session

- Introductory panel discussion on impact and exploitation with TRI experts
- Survey with online audience
- Fishbowl demonstration of an impact-boosting tool

Wrap-up and final words

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Panel discussion with TRIs on impact and exploitation

Giuseppe Palazzo
TRI1
Integrated Net-Zero Emissions Energy System

Isabel Cabrita
TRI3
Storage Technologies, Renewable Fuels, CCU/CCS

Kristina Starborg
TRI5
Integrated Regional Energy Systems

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What kind of impact do CETP solutions strive for?

Environment and Health: Defossilization of the energy system with solutions that are compatible with multiple soil/land use needs, biodiversity goals, and zero pollution, thus improving planetary and public health and overall well-being. Circular solutions that allow reducing the reliance on pristine natural resources and critical materials.

Social Equity and Inclusivity: Solutio
different regions, ensuring the green
and reflects the diverse values of nat
Addressing social equity concerns fos
ecosystem.

Regulatory and Policy Impact: Shapi
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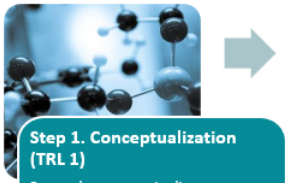
Identification of regulatory barriers i
incentives & innovative regulatory sa

RECAP

on impact and exploitation

The Exploitation Pathway



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Step 4: Validation in Real-World Environment (TRL 6-7)

The innovation advances to the pilot project stage. It is tested at a power plant or industrial facility, where it captures CO2 emissions from flue gases and converts them into synthetic fuels. Piloting provides real-world validation with users and industry stakeholders and showcases the technology's practicality, usability, and compliance with environmental and societal goals.

Step 5: Business Plan (TRL 8)

The team focuses on sectors that produce substantial CO2 emissions and where hydrogen can be utilized as an alternative energy carrier (e.g. steel manufacturing). The BP assesses the market size, competitive landscape, and revenue potential. The team collaborates with policy stakeholders to shape regulations and incentives that promote the adoption of CCU technologies.

Step 6: Go-to-Market Strategy (TRL 8)

The GMS outlines the steps to introduce the H2/CCU innovation to its target market. The team identifies early adopters and end-users within the selected industries. The team plans to collaborate with a steel manufacturing company that seeks to reduce its carbon footprint. The strategy emphasizes how the innovation addresses environmental concerns and supports the transition to a sustainable energy ecosystem, aligning with policy objectives.

Step 7: Market Integration and Scale-Up (TRL 9)

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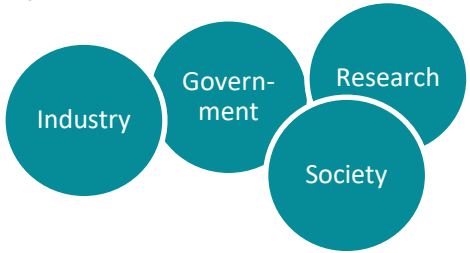
Collaborative harvesting: input from you for the Support Services

Quadruple Helix



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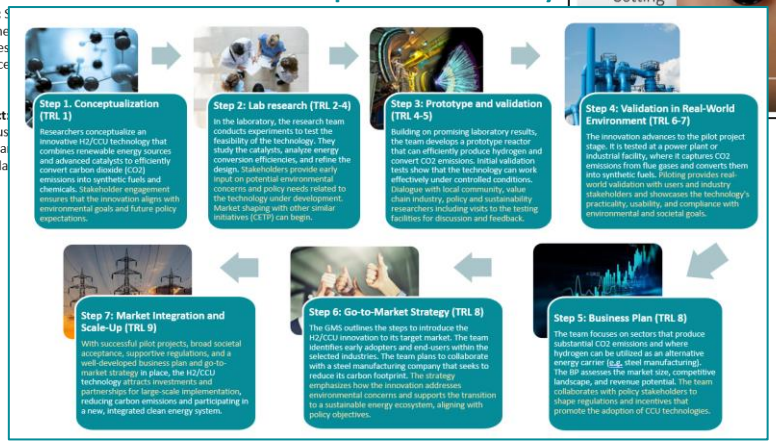
Capacity building on living labs, exploitation, societal readiness, and more…

The Exploitation Pathway



Support Services

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09:00-13:00

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You will be able to join 10 minutes before the session starts

DESCRIPTION:

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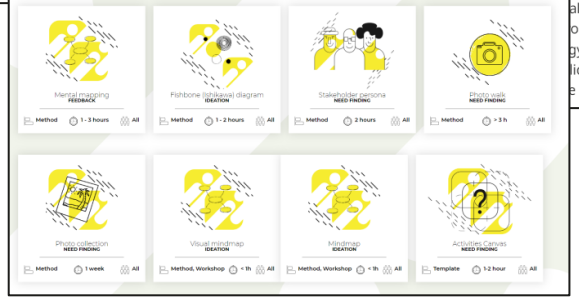
Impact-boosting methods library



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How confident do you feel:

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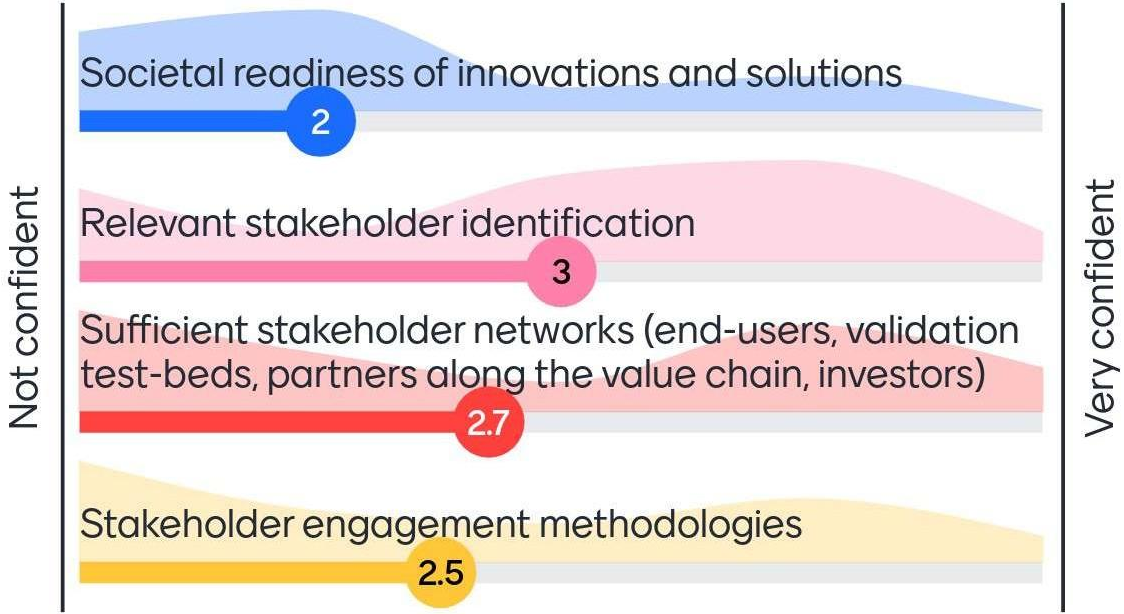

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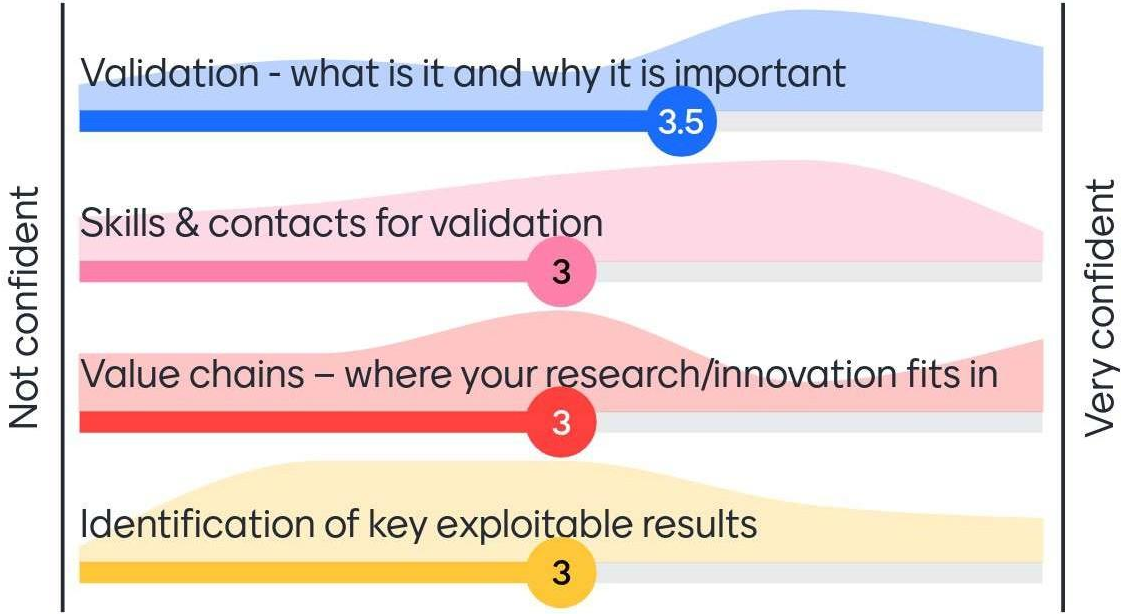


How confident do you feel:

What are the most difficult issues/obstacles for you in exploitation and impact?

33 responses

RECAP: What does the Clean Energy System Transition require from the Quadruple Helix?

Industry

- Solutions that have been validated and piloted in practice as part of value chains
- Integration and digital optimization among different parts of the system – energy production, storage, distribution, users, multiple energy carriers
- Business models and Go-To-Market strategies that fit the new integrated system and create value on different levels

Government

- Testbeds and regulatory sandboxes for testing the legislative changes required
- Cross-sectoral political guidance, ambitious and cohesive climate, environment, and energy targets
- Financial support and incentives coordinated to support the integrated clean energy system

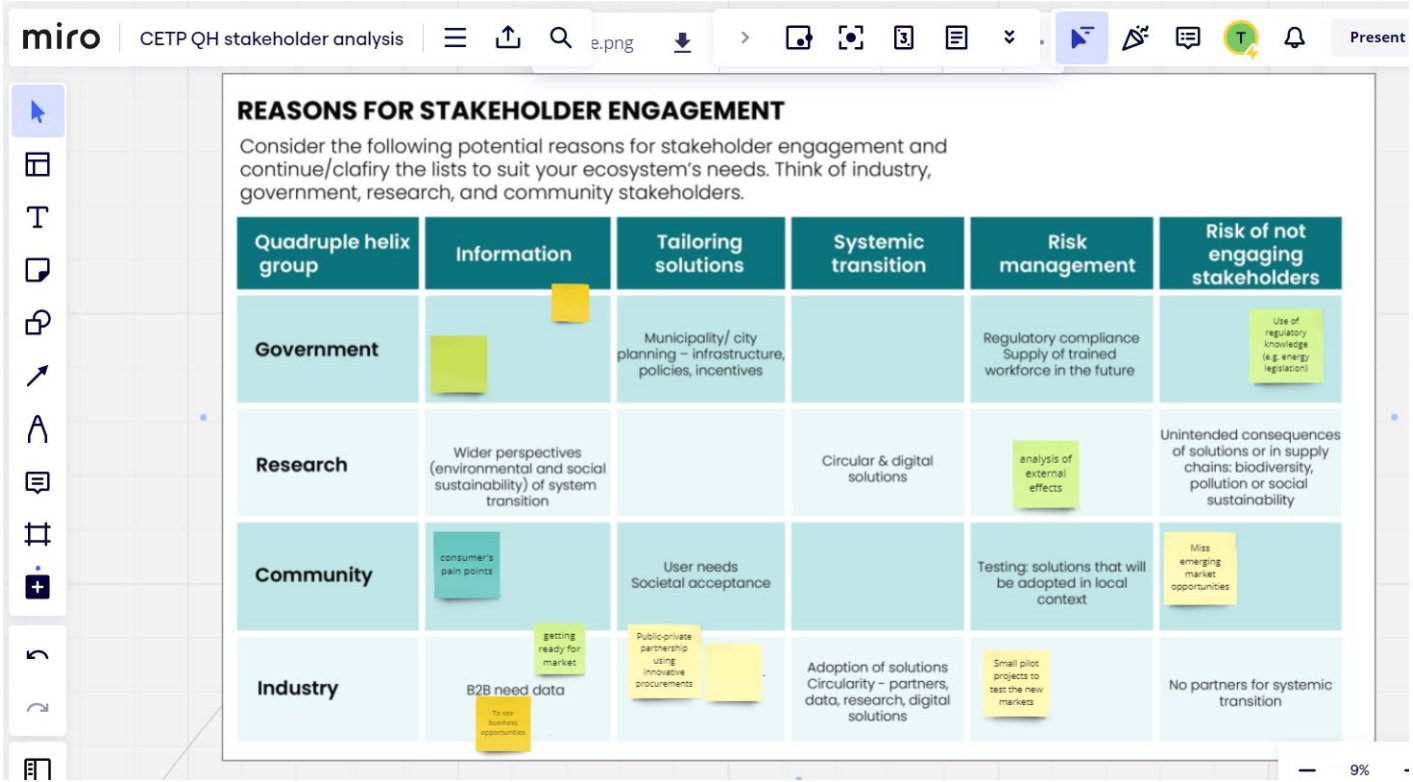
Society

- Citizens, regions, companies, industrial hubs, cities, and municipalities = stakeholders committed to adopting the new solutions
- User groups to inform about their needs and to validate solutions in real environments
- NGOs and citizens in different regions to engage about cultural and social values and goals
- Education and training for new skills necessary to run the new clean energy system

Research

- Systemic aspects of the planetary triple crisis: interactions among biodiversity, climate, and pollution
- Societal and environmental impact of supply chains, material, energy, and water use
- Scenarios and transition pathways, risks, foresight

Fishbowl demonstration of the Quadruple Helix tool for three TRIs



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Thank you!

tanja.suni@clicinnovation.fi

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What to expect tomorrow?

Morning

10:00 RDI Projects in the center and CETPartnership challenges

Afternoon

14:00 Joint Call 2023 Q&A session

15:30 Opportunities for matchmaking for the Joint Call 2023

Closing