R-ACES
Energy Cooperation Platform

Dissemination Reach Impact Report

[including impact monitoring from WP6]

AUTHORS: NAME, ORGANISATION

DATE: 31.03.2023

Technical References

Project Acronym	R-ACES
Project Title	fRamework for Actual Cooperation on Energy on Sites and Parks
Project Coordinator	ISPT – Institute for Sustainable Process Technology
Project Duration	1 June 2020 – 31 March 2023
Project Website	www.r-aces.eu

Deliverable No.	5.4
Dissemination level	PU - public
Type Deliverable	Report
Work Package	5 & 6
Lead beneficiary	LE2C
Contributing beneficiary(ies)	ESCI, EHP
Due date of deliverable	31 March 2023
Actual submission date	31 March 2023

Document history

	Date	Author (name, organisation)	Description
V0.1	14-15/03/2023	Fabrizio Guarrasi (LE2C)	First version
V0.2	24/03/2023	John Kapetanakis (EHP)	Updates and comments for dissemination
V0.3	29/03/2023	Kristine Jung (ESCI)	Communication parts
V1	31/03/2023	Fabrizio Guarrasi (LE2C)	Final version

Project Summary

The R-ACES project is an initiative promoted by 7 partners from 6 European countries, with the vision to support high-potential industry parks and clusters to become fully fledged ecoregions that reduce emissions by at least 10%. R-ACES means a step-change in the contribution of European Industry to the climate targets of the EU. The industry sector after all represents 25% of all energy demand – and 50% of the total cooling and heating demand on the continent; yet only 16% comes from renewables. By focusing on collective measures and clustering, the efficiency of industry can be drastically increased.

The focus of R-ACES therefore is to turn high-potential, high-impact industrial clusters into ecoregions that achieve at least a 10% reduction in emissions. They do so by exchanging surplus energy, making extensive use of renewables, and tying everything together with smart energy management systems. An ecoregion is a geographic area where energy and information exchanges occur between various companies and actors to reduce waste and energy consumption. Ecoregion can be centred on an (eco-)industrial park or (eco-) business park, linked to its surroundings by a 4th/5th generation district heating/cooling network.

R-ACES is the capping stone, condensing the knowledge and experience gathered throughout EU and national projects into a set of three focused tools, namely a self-assessment tool, a legal decision support tool, and a smart energy management platform for clusters. The tools are embedded in support actions built around peer-to-peer learning, more formal coursework and webinars, and serious games. Together they enable a cluster to really become an eco-region and set up meaningful energy collaboration. The entire package of tools and support is aimed at the high-potential clusters identified in the European Thermal Roadmap. It will be validated in three eco-regions, actively deployed in another seven regions, and disseminated to identified ninety regions European wide. In addition, the tools and support methodology will be made available to third parties in a sustainable way after the end of this project.

Partners

Institute for Sustainable Process Technology — https://ispt.eu/

Condugo — https://www.condugo.com/

Spinergy — http://www.spinergy.it/

energy CLUSTER DENMARK — https://www.energycluster.dk/

LE2C LOMBARDY ENERGY CLEANTECH CLUSTER — http://www.energycluster.it/en

pom antwerpen — https://www.pomantwerpen.be/

ESCI European Science Communication Institute — https://www.esci.eu

EUROHEAT & POWER — https://www.euroheat.org/

Executive Summary

The R-ACES project intends to pave the road for effective energy exchange in industrial clusters and business parks in Europe. As a Coordination and Support Action (CSA), the project was designed with the objective of disseminating the project results at a wide extent. This is the reason why a significant number of high priorities regions are targeted in order to reach a critical mass.

In this context, the present report is the '***Dissemination Impact Reach Report***' of the R-ACES project, which describes the dissemination and communication activities bring to primary stakeholders of the ninety high impact/high priority 'ecoregions 'in the countries of the partners of the R-ACES consortium. The report contains the impact assessment from the dissemination, as well as from the communication work packages.

Groups of stakeholders in the regions (such as industry park managers, business parks and intermediaries as potential multipliers) have been reached to strike their involvement in energy cooperation in general, and more specifically in industrial symbiosis.

Key Words

Dissemination, Dissemination Roadmap, Outreach, Impact, Impact Monitoring, Communication, Exploitation, Events, Articles, News Releases, Videos, Website, Social Media, Objectives

Disclaimer

This publication reflects only the author's view. The Agency and the European Commission are not responsible for any use that may be made of the information it contains.

Table of Contents

Table of Figures

Table of Tables

1 Introduction

1.1 R-ACES approach

The R-ACES funnel-type approach supports the main phases of the project:

• the condensation and development up to the three pilots

• followed by the expansion / scaling up with the involvement of the 10 ecoregions, the scaling-up and the wide band communication.

Condense:
Insights

... **condenses** the knowledge and best practices

from previous projects on energy cooperation to

Develop:
3 Practical tools

... **develops** 3 practical tools:

Self-assessment tool, legal decision-support tool and energy management platform.

Validate:
3 Eco-regions

... **validates** in 3 pilot ecoregions:

Antwerp (Belgium), Lombardy (Italy), and Nyborg

Involve:
10 Eco-regions

... **involves** another 7 high-priority regions

in Italy, Denmark, Belgium, France, and the

Distribute:
90 High-impact regions

... **distributes** the project tools and capacity building support

to 90 high-impact regions across

Communicate worldwide

Figure 1 R-ACES funnel approach

1.2 Objective of Work Packages 5&6

1.2.1 Objective of Work Package 5

The R-ACES project intends to pave the road for effective energy exchange in industrial clusters and business parks in Europe. We develop a methodology to come to concrete energy cooperation activities. To make a significant impact, we aim to disseminate the project results to a wide extend of 90 so-called ecoregions across Europe.

"Our ambition is to equip practitioners with capacities, knowledge and skills, to make them confident and well informed about the possibilities with energy cooperation as well as to support them with an implementation approach that fits their specific needs."

Our dissemination activities aim at enhancing the uptake and the extension of energy cooperation activities within the industrial clusters and/ or business parks. The tools and methods developed by R-ACES that could facilitate the uptake of these activities are:

- The **R-ACES Toolkit** consisting of three practical tools:
  - The Self-Assessment Tool helps to identify and start up new energy cooperation activities within an ecoregion.
  - The Legal Decision Support Tool helps to deal with legal issues related to the development of energy cooperation activities.
  - The Energy Management Platform helps to optimise and manage energy and waste streams within an ecoregion.
- The **R-ACES Serious Game "HEATopoly"** makes stakeholders familiar with the concept of energy cooperation and serves as a way to get to know stakeholders within an ecoregion.
- The **R-ACES online repository** containing materials that enable students and experts to obtain knowledge on various aspects of energy cooperation.
- A **Use Case Library** containing inspiring examples of energy cooperation projects.

We spread the materials and the R-ACES approach through national and European orientated webinars and other dissemination activities. All these activities will be focused on the needs of stakeholders within ecoregions: What knowledge and skills do they need to further develop energy cooperation activities? The identification of these needs is an iterative process of talking to stakeholders. Based on the outcome of these talks the dissemination materials are developed. For a more information, see the D5.1 R-ACES dissemination roadmap.

1.2.2 Objective of Work Package 6

The specific objective of WP6 is to guarantee professional and public coverage of the project results and achievements, benefits and potential deployment. This will be realised via the adoption of a large variety of distribution channels, including already existing platforms focusing on energy cooperation in industrial sites and business parks and energy exchange/cooperation at large. The R-ACES communication activities will aim to:

• set up and implement an effective communication strategy to guarantee the coverage of the project results to a variety of target groups and stakeholders beyond the countries, where the dissemination activities are present.

• support optimal conditions and solutions for the exploitation of the project outcomes by consolidating the project visibility among stakeholders at EU level and towards end-users likely to be interested in the outputs of the project.

• enable smooth communication and knowledge sharing among the consortium project partners.

• ensure liaison with other relevant energy efficiency networks and platforms.

The aim is to maximise the impact of the R-ACES project through widespread communication actions, which are to support the dissemination and exploitation activities.

1.3 Objective of the deliverable and key definitions

The objective of this deliverable, D5.4 Dissemination Reach Impact Report, is to provide a comprehensive overview of the dissemination and communication activities that have been implemented as part of the project, along with an assessment of their effectiveness in reaching the project's target audience and achieving the desired impact. This report builds upon the earlier deliverable, D5.1 Dissemination and Exploitation Roadmap, which outlined the overall strategy for disseminating the project's results and maximising their impact.

In order to ensure clarity and consistency in the report, a number of key definitions are provided. These definitions will be used throughout the report to describe the various dissemination and communication activities that have been undertaken, as well as the impact that these activities have had on the project's target audience.

The key definitions used in this report include:

- **Dissemination:** The act of sharing project results and outputs with stakeholders, including partners, policymakers, researchers, and the general public.
- **Communication:** The exchange of information and ideas between project partners, stakeholders, and the public, with the goal of building awareness and understanding of the project's goals, methods, and outcomes.
- **Target Audience:** The specific group or groups of individuals that the R-ACES project is intended to reach and impact : Legal & Policy, Industries & Energy Managers, Researcher & Universities, NGOs & Associations.

- **Key Performance Indicators (KPIs):** Metrics used to evaluate the success of the dissemination and communication activities, including measures of audience reach, engagement, and impact.

By providing clear definitions of these key terms, this report will ensure that all stakeholders have a shared understanding of the project's dissemination and communication efforts, and the impact that these efforts have had on the target audience.

1.4 Objectives of the dissemination reach impact report

The purposes of the "*Dissemination reach impact report*" are mainly twofold. Firstly, it aims to provide an overview of the project's dissemination and communication activities, including the dissemination strategies and roadmap employed, an overview of the implemented activities, and the target audience and outreach achieved.
Secondly, it aims to report on the impact of the project in terms of the KPIs defined in the project's dissemination and exploitation roadmap (D5.1).

The general objective of the dissemination reach impact report is to provide a comprehensive overview of the dissemination and communication activities implemented during the R-ACES project and their impact on the achievement of the project's objectives. This report aims to assess the effectiveness of the dissemination and communication strategies outlined in D5.1 and provide an analysis of the KPIs used to evaluate the impact of the project.

By evaluating the KPIs, the dissemination reach impact report can provide insights into the effectiveness of the dissemination and communication activities employed throughout the project. The report can serve as a tool for project partners to demonstrate the impact of their activities to stakeholders, funders, and other interested parties.

Overall, the dissemination reach impact report plays a crucial role in evaluating the success of the R-ACES project and ensuring that its outcomes and lessons learned are effectively communicated to stakeholders. The report's focus on the KPIs provides valuable insights into the project's achievements and challenges and serve as a reference for future projects aimed at promoting sustainable energy policies and energy cooperation among businesses.

2 Dissemination & Communication activities

This chapter *"Dissemination & Communication Activities"* provides an overview of the strategies employed by the R-ACES project to promote the dissemination and exploitation of its results. We describe the implemented activities and their impact on the project's target audiences. The chapter begins by outlining the dissemination strategies employed by the project, including the roadmap defined in D5.1. It then provides a comprehensive summary of the activities carried out to reach the project's target audiences, including the key stakeholders, general public, and policy makers. Additionally, the chapter highlights the KPIs and evaluation criteria used to measure the impact of the dissemination efforts. Finally, the chapter concludes with lessons learned and best practices that can be applied in future dissemination and communication activities.
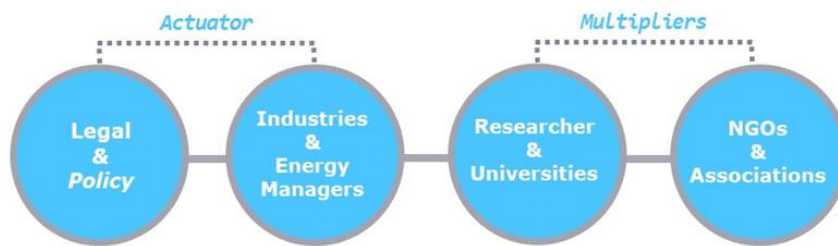
Figure 2 R-ACES target audiences' group

2.1 Dissemination strategies employed

In line with the D5.1 *"Dissemination and Exploitation Roadmap"*, various methodologies and channels were designed to reach the four target audiences' groups (Legal & Policy, Industries & Energy Managers, Researchers & Universities, NGOs and Associations) in the 90 high-priority regions outlined above.

To reach this objective at EU level, seven relevant channels have been used:

- Participation and organisation of **Regional Events**
- Participation in **International events**
- Promotion of the **R-ACES Toolkit**
- Creation of local and regional **Working Groups**
- Promotion of the **R-ACES repository** (use cases)
- Organize **Serious Game** sessions

- Sign and be involved in strategic **Partnerships**

Figure 3 Channels used to reach the target audiences

These channels made it possible to cover the identified stakeholder groups to enable proper dissemination of the results of R-ACES:

Table 1 Coverage of different channels with respect to stakeholder groups

	Legal & Policy	Industries & Energy managers	Research & Universities	NGO & Associations
Regional events				
International events				
R-ACES Online Toolkits				
Working groups				
R-ACES Online Repository				
Serious Game Sessions				
Partnership				

2.2 Overview of the implemented dissemination & communication activities

The complete overview of Dissemination & Communication Activities of the R-ACES consortium is attached in Annex 02.

In total during the R-ACES period, the following activities were organised:

- **22** Workshops *(of which **12** Serious Game sessions)*
- **13** Conferences
- **6** Training sessions
- **4** Activities organised jointly with other EU projects *(such as the Alliance 4ECEI)*
- **2** Trade fairs
- **2** Pitch events

These actions carried out reached approximately **1750 stakeholders** divided between **22 worldwide countries**: Albania, Austria, Belgium, Bosnia, Brazil, Canada, Denmark, France, Greece, Germany, India, Ireland, Italy, Japan, Lithuania, the Netherlands, Poland, Portugal, Spain, Sweden, the United Kingdom and Turkey.
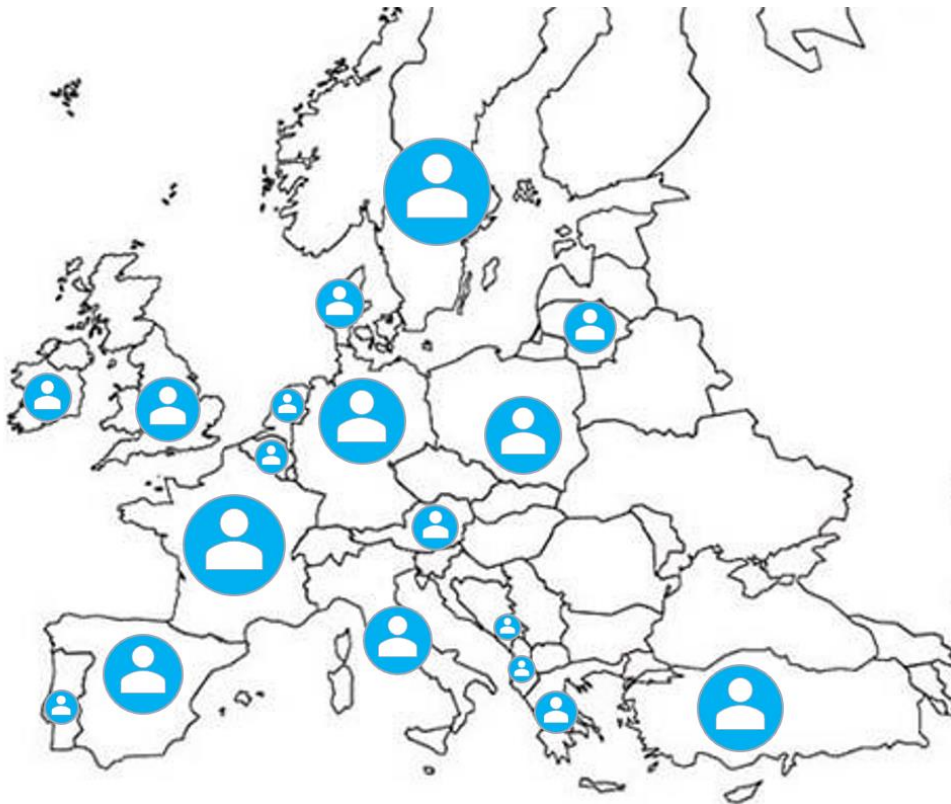
Figure 4 Coverage EU countries with R-ACES dissemination activities

Parallel to the above-mentioned activities, an important boost to the dissemination of R-ACES results was given by the partnerships and presence in other European platforms. In particular European Resource Efficiency Knowledge Network (EREK) and the DHC+ Knowledge Hub (EHP). Moreover, the joining of R-ACES project in the Alliance 4ECEI give a bigger outreach on EU level both on social media and joint participations to international

events (such as the EUSEW2022) and the partnership with Cluster Tecnologico Nazionale Energia (CTNE) - composed of 77 members, mainly Italian energy clusters - that allowed, at national level in Italy, to organize a roadshow of energy industrial symbiosis, in which three joint events were made.

Table 2 Main platforms and partnerships reached

Platforms & Partnership	Project results and channels
European Resource Efficiency Knowledge Centre	Toolkit, Training Material
DHC+ Knowledge Hub (EHP)	DH-related Use cases, resources (videos)
Alliance 4ECEI	Toolkit, Joint international events
Cluster Tecnologico Nazionale Energia (CTNE)	Joint national events

In addition to the previously described dissemination activities, typical communication channels (newsletters, social media, etc.) were key tools to support the best dissemination of R-ACES results.

Social media activities of partners

EHP supported the promotion of events and the dissemination of R-ACES news and resources through the social media accounts of DHC+ Platform (Linkedin: 1,360 followers and Twitter: 2,393 Followers). In coordination with the ISPT, EHP boosted the several campaigns, with own posts or reposts, reaching out to the DHC Community.

A broad audience, related to the DHC sector but not exclusively, was reached through the regular communication of newsletters. R-ACES news and events were included in the two monthly newsletter editions 'DHC+ Updates' (~890 subscribers) and 'Euroheat & Power Newsletter' (~1990 subscribers).

A contribution in the communication and dissemination of R-ACES also came from the LE2C social accounts (Linkedin: 1,561 followers and Twitter: 701 followers) and from the newsletter that LE2C send regularly with R-ACES activities (~1,800 subscribers).

2.3 Target audience and outreach

2.3.1 Stakeholder Data Base

As initial task in Work Package 6, ESCI conducted desk research to identify stakeholders relevant for communication actions in R-ACES. This initial data base was amended by

DOWEL / later LE2C with local stakeholders and stakeholder associations. This complete data base was used to disseminate and communicate R-ACES results and support tools. After EHP entered the consortium, a list of stakeholders was identified among its members which were regularly updated about R-ACES through EHP's newsletters.

For the promotion of the final workshop (jointly organised with EMB3RS project), EHP informed the members (DHC utilities, energy providers) of its own 'Working Group on RES and Waste Heat'. Furthermore, EHP identified in the Industrial Emissions Alliance the target group of energy manager, most relevant stakeholder group for promoting the final workshop. As such EHP contacted all the associations-members of the Alliance and asked to share the event details with their members.

2.3.2   R-ACES Social Media Analysis - M3 to M34

Website

Since October 2020, the website has gained 9.245 visits, 20.020 pageviews, and 1.387 downloads. From year to year, the performance of the website improved; for example, the number of website visits increased over the three years. The falls in visits tended to be in July and December/January, which coincide with holiday seasons.

The table below shows the overall performance of the website since M5 (October 2020). The average visit duration and bounce rate shows that visitors engaged with the website's content.
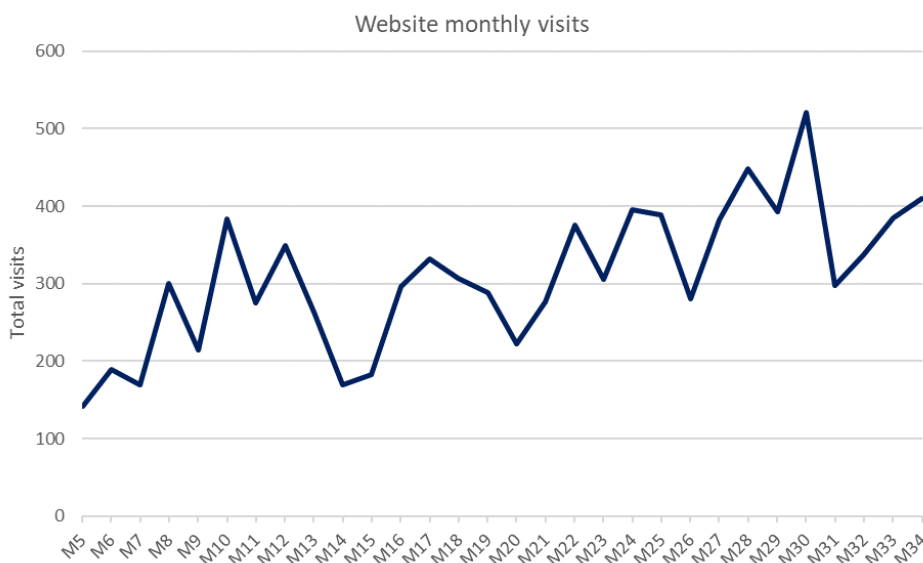

Figure 5 Figure Website visits 1st October 2020 (M5) to 27th March (M34).

Visitors' behaviour
Pages
The table below focuses on specific web pages. The pages about Tools were viewed more often than those under the Knowledge Hub and Ecoregions section. In particular, the page about the Legal Decision Support Tool was viewed the most among the different resources (871 views), followed by the Use cases page (634 views).

The average time on page is around the usual values considering the content of the pages. The bounce rate is higher for certain pages, specifically the Legal Decision Support tool, the Serious Board Game, and the specific ecoregions. This means visitors were likely more interested in these specific pages rather than other materials or content offered by website.

Visitors acquisition
Channels
Most visitors arrived from direct entries (e.g. bookmarks), and several from search engines. Only 3% of visits were from social media. Even if they arrived from different channels, visitors on average engaged with the website's content instead of leaving as soon as they arrived.

Visitors also arrived from 61 distinct websites. Among these visitors, most arrived from www.energycluster.it (50 visits), followed by www.euroheat.org (46) and www.alliance4ecei.eu (29).

Most social media visits were from LinkedIn (132 visits) or Twitter (79). This can mean that the social media presence of the project succeeded in directing some visitors to the website A few visitors also arrived from Facebook (19) but didn't stay on the website.

Visitors' location
77% of visitors were from Europe (n=7.111), 13% were from North America (especially USA) and 8% from Asia. A few visitors were from Africa, Oceania, South America, and Central America (<1% each). Among the visitors from Europe, most were from the Netherlands, Italy, and Belgium.

Table 3 Visitor location overview

	Top 10 Countries	Visits	
1	Netherlands	1.228	13%
2	Italy	1.206	13%
3	United States	1.099	12%
4	Belgium	911	10%
5	Germany	836	9%
6	France	750	8%
7	Denmark	349	4%
8	United Kingdom	308	3%
9	Finland	277	3%
10	Austria	244	3%

LinkedIn

The LinkedIn channel gained 191 fans, 45.015 impressions and 3.876 interactions. The number of fans grew especially during the first year of the project, and then slowly but steadily increased over the next two years.

The LinkedIn channel has fewer fans than the Twitter channel; however, it has a higher number of impressions and interactions, showing that those LinkedIn fans were very engaged. The table below shows the performance of the LinkedIn channel for each metric.
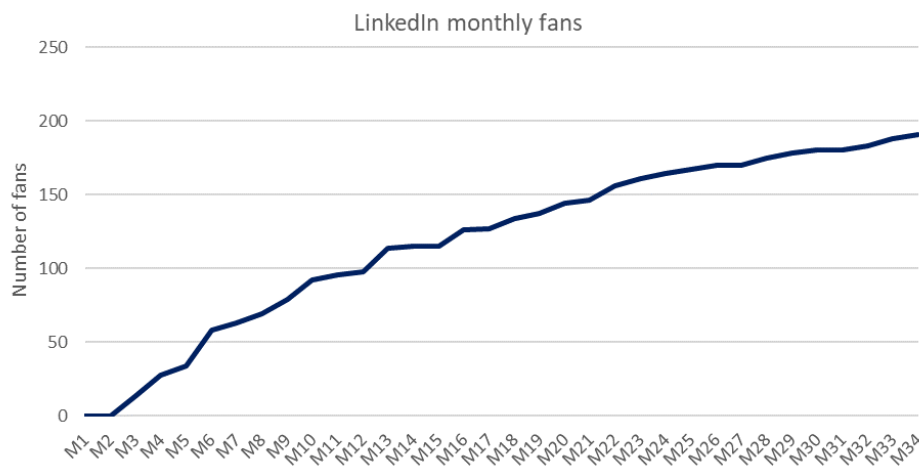

Figure 6 Figure Development LinkedIn followers M3-M34

Dissemination Reach Impact Report

Table 4 Overview of the most successful LinkedIn posts

Posted on 7 September 2021

1.595 impressions
49 reactions
56 clicks
3,1% engagement rate

Posted on 26 October 2021

1.164 impressions
22 reactions, 5 shares and 2 comments
23 clicks
2,5% engagement rate

Posted on 21 September 2021

912 impressions
25 reactions, 3 shares and 1 comment
37 clicks
3,2% engagement rate

Posted on 19 January 2021

1.772 impressions
15 reactions and 2 comments
15 clicks
1,0% engagement rate

Twitter

Since August 2020 (M3), The Twitter channel gained 327 fans, 31.695 impressions, and 1.558 interactions. The biggest increase in fans occurred during the first year. During the second and third year the fan growth rate decreased. The channel performed well during the first and second year of the project, especially because several tweets were posted (77-87). In the third year, fewer tweets were posted, hence causing a slight decrease in impressions. The table below shows the overall performance of the Twitter channel for each metric.
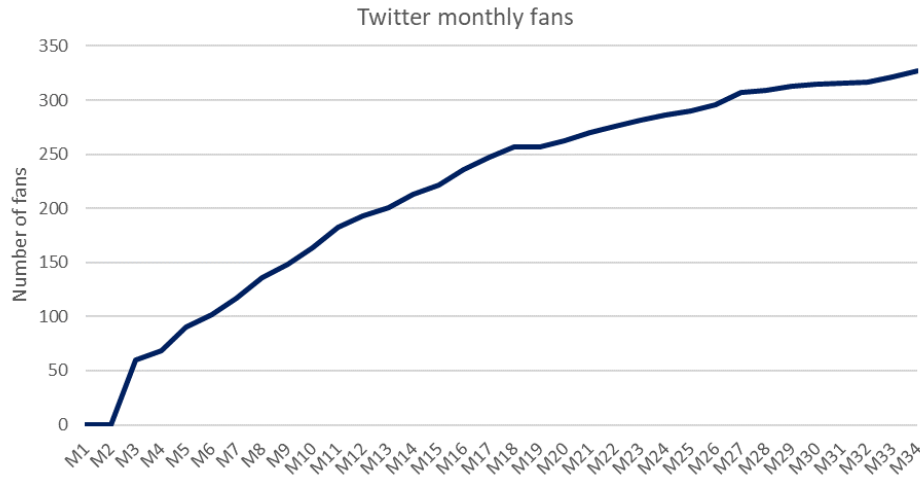
Figure 7 Figure Development Twitter followers M3-M34

Table 5 Overview of the most successful Twitter posts

Posted on 5 October 2021

1.392 impressions
6 likes and 4 shares
0,4% engagement rate

Posted on 18 November 2020

556 impressions
9 likes and 3 shares
2,0% engagement rate

YouTube

In total 10 videos were published in the R-ACES channel on YouTube. While the video "Want to find out how to reduce CO2 through energy cooperation?" has more views, the one about Tutorial R-ACES Legal Decision Support Tool was watched the longest.

Table 6 YouTube view statistic M6-M34

Title Publication date Video length	Views	Average view duration	Average percentage viewed	Likes
The Energy Cooperation Platform! Want to find out how to reduce CO2 through energy cooperation? 16/12/2020 02:21	1.051	00:44	31%	5
R-ACES Ecoregion Meeting – Initiating District Heating Networks 09/06/2021 01:53:18	6	01:07	NA	0
The Energy Cooperation Platform! Peter Verboven presenting R-ACES at SES Conference 2021 30/09/2021 10:03	33	01:30	15%	1
Tutorial R-ACES Self-Assessment Tool 10/12/2021 03:54	82	01:51	47%	0
Tutorial R-ACES Legal Decision Support Tool 20/01/2022	60	01:35	63%	0

02:32				
Tutorial R-ACES Energy Mangement Platform 30/03/2023 6:58	5	NA	NA	0
R-ACES Inside - Sergio Pinotti talks about our tools 21/03/2023 04:07	17	01:40	41%	2
R-ACES Inside - Charlotte Baumgartner talks about our Danish ecoregions 23/03/2023 04:27	17	NA	NA	2
R-ACES Inside - Gabriele Pesce talks about our dissemination activities 28/03/2023 04:41	41	NA	NA	2
INSIDE R-ACES – Agata van Oosten-Siedlecka talks about our goals 30/03/2023 3:18	12	NA	NA	2

Mention Analysis

In the last year, from the 1st of March 2022 to the 26th of March 2023, R-ACES was mentioned 254 times across different platforms by 84 unique users. These mentions created 203K impressions.

The Word cloud below shows the keywords and hashtags most used when mentioning R-ACES. One person was often mentioned with the project, Fabrizio Guarrasi from the project partner LE2C.

Figure 8 R-ACES word cloud reflecting all hashtags of R-ACES

R-ACES was mentioned in relation to at least 25 different URL links. These links were often related to the project's website, to the joint workshop with EMB3Rs, or to the project's YouTube videos. Other links were about articles written about the project.

The country with most mentions was Belgium.

Table 7 Top 10 authors that most mentioned R-ACES. The number of Twitter followers and reach for each author is also displayed.

	Author name	Mentions ▼	Twitter Fo…	Reach
1	sowhat_project	35	271	43
2	Emb3rs_project	21	283	62
3	WedistrictH2020 Spain	21	486	0
4	Alliance4ECEI Belgium	19	90	33
5	DHCPlus Belgium	18	2.4k	1.9k
6	LE2Cluster Italy	9	696	142
7	lucadon82 Italy	8	2.1k	1.3k
8	shravan_k23 Sweden	7	86	0
9	CB_SciComm Germany	6	222	0
10	carmendisan Italy	5	362	38

Journalistic Articles

In total there were 6 journalistic articles and 10 press / news releases published in R-ACES during the project time. The overview and links to the publications in shown in the table below. All publications were additionally included in the news section of the project website. For broader dissemination, some of the article were published in Italian.

Dissemination Reach Impact Report

Table 8 Overview of Journalistic Articles and Press Releases

Publication	Date	Link
Article 1	09 Sept 2022	Ecoregions ready to help European industrial hotspots make huge emission cuts https://illuminem.com/illuminemvoices/927c9c64-17b1-44e5-9c2c-fb9182a02691
Article 2	13 Oct 2022	Ecoregioni: cosa sono e perché possono aiutare l'industria a superare la crisi energetica https://www.rivistaenergia.it/2022/10/ecoregioni-cosa-sono-e-perche-possono-aiutare-lindustria-a-superare-la-crisi-energetica/
Article 3	09 Dec 2022	HEATopoly – R-ACES Serious Game https://www.boardgame-news.com/news/heatopoly
Article 4	01 Feb 2023	How to make Europe's new 'ecoregions' thrive https://www.euroscientist.com/how-to-make-europes-new-ecoregions-thrive/
Article 5	24 Mar 2023	Lessons from Denmark's thriving district heating sector https://www.theengineer.co.uk/content/in-depth/lessons-from-denmark-s-thriving-district-heating-sector
Article 6	31 Mar 2023	Crisi dell'energia e neutralità carbonica, un progetto europeo per sprecare di meno e riciclare di più https://www.alphagalileo.org/en-gb/Publications/ItemId/232085
Press Release 1	28 Sept 2020	Effective Energy Exchange in Industrial Clusters across Europe
Press Release 2	10 Nov 2020	EMB3RS, INCUBIS, R-ACES, SO WHAT and S-PARCS to host webinar on industrial waste heat recovery
Press Release 3	02 Mar 2021	Waste heat solutions for Europe's green recovery
Press Release 4	13 Apr 2021	New Alliance for Energy Cooperation in European Industries created
Press Release 5	15 Oct 2021	The benefit of energy cooperation in fostering ecoregions across Europe
Press Release 6	26 Oct 2021	New tool available for setting up energy cooperation projects
Press Release 7	20 May 2022	R-ACES project at the SPARK 2022 exhibition in London
Press Release 8	01 Jun 2022	R-ACES Ecoregion Meeting 7 June 2022
Press Release 9	23 Jan 2023	Joint EMB3RS & R-ACES Workshop
Press Release 10	31 Mar 2023	Stakeholder test innovative platforms to calculate the benefits from recycling waste heat and cold https://www.alphagalileo.org/en-gb/Item-Display/ItemId/232076?returnurl=https://www.alphagalileo.org/en-gb/Item-Display/ItemId/232076

2.4 Key performance indicators and evaluation criteria

2.4.1 Methodology

To monitor the KPI data of the R-ACES project, two main methods have been used. The one method *"Ecoregion KPI"* is focused on KPIs related to the ecoregions in WP3 and WP4. The other method *"Communication KPI"* is focussed on KPIs related to the whole communication activities.

Ecoregion KPI

To monitor indicators that are related to the ecoregions, we used a country-based approach. Partners in Italy filled in the ecoregion data for Italy, partners in Belgium filled in the data for Belgium ecoregions, and so on.

We have sent the questionnaire to the ecoregion coordinators on four different dates: September 2021, March 2022, October 2022, and March 2023. For each ecoregion, a questionnaire was filled in by the coordinator of that specific ecoregion. Afterward the results were collected and combined in a shared excel file attached in Annex 03.

This methodology made it possible to monitor the progress of the project and the activities carried out by each ecoregion. During the project, several meetings were organized between the ecoregion coordinators to share experiences and considerations regarding the progress of the KPIs.

Table 9 R-ACES Key Performance Indicators

KPI No.	Description	Target short term
KPI 1	Primary energy savings triggered by the project (in PJ/a)	151,17
KPI 2	Investments in sustainable energy triggered by the project (in million Euro);	0
KPI 3	Number of (operational and organizational separated) plant sites (within one industrial park) and the number of industrial parks where businesses commit to energy cooperation;	400
KPI 4	Number of relevant stakeholders (e.g. ESCOs, industrial park managers) aware of and/or interested in/ implementing joint energy services;	210
KPI 5	Number of policies and legal frameworks created and/ or adapted to facilitate energy cooperation among businesses;	10
KPI 6	Reduction of the greenhouse gas emissions (measured in MtCO2eq) and/or air pollutants (in kg/year) triggered by the project;	12

Communication KPI

A variety of original editorial content (written, visual and audio-visual) was produced and distributed through a wide range of communication channels. Goal of this approach was to attract regions and professionals via peer-to-peer contact in dedicated events, in storytelling and use cases. The following table provides an overview of the envisaged measures to maximise the impact through communication activities:

Table 10 Description of Communication KPIs

Communication Activities	Goals / Description	Outreach
Logo, visuals, presentations templates	Creating a common visual identity	> 20.000s views in the media, online and on printed materials
R-ACES website/ project portal	Main entry point to the project, repository of news and public contents, access to the energy portal	> 4.000 visits
R-ACES social media accounts	Interaction and engagement with online communities. Managed in English and original content reused (retweeted) by local partners in local languages	Community with > 300 followers and >1.000 mentions on Twitter & LinkedIn, > 500 views on YouTube
Introductory Video	1-3 min video with animated elements presenting the project (in English with subtitles in other local languages)	> 500 views on YouTube, ≥200 views on Twitter
Four Infographics	Visual representations of concept and technologies to explain them in a clear and concise manner, to be used online and integrated on print materials.	10.000s views on printed materials (brochure, roll-ups), online (website, social media) and in the media (supporting press releases, interviews and journalistic articles)
One Brochure, Roll-Ups	Communication materials to be distributed at events	1.000 brochures distributed; 4 roll-ups printed for events
Six interviews	Project related interviews for online and offline media outlets	At least 6 interviews, > 4.000 readers via website, social media, web multipliers & portals
Four journalistic articles	Independent articles on the project issues, e.g. on the role of industry as key actors in the clean energy transition or on the latest good practice examples in industry park management.	4 articles, outreach of > 6.000 readers reached via website, social media, & web multipliers
> 2 press releases	Project related news for the media.	Project partners will regularly publish press releases to be distributed to their local/regional/national news outlets.

Mobilisation of energy technology/DHC network publications and stakeholder associations	Dedicated communication flow; synergies with their channels/events, provision of media material	> 30 specialist publications and associations contacted to promote the R-ACES portal and project

2.4.2   Impact report

Ecoregion KPI

The methodology described above made it possible to monitor the progress of the project and the impact R-ACES had in the ecoregions addressed in WP3 and WP4. As can be seen from the table below, many KPIs were largely achieved while others were not met due to some external factors such as the pandemic crisis due to Covid-19 which limited travel and direct contact with stakeholders.

Table 11 Overview of KPIs monitoring results

KPI #	KPI	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 Sept. 2021 and 1 March 2022	Realized between 1 March 2022 and 1 Oct. 2022	Realized between 1 Oct. 2022 and March 2023	Realized total	% Short term goal reached	% Long term goal reached
1	Energy savings triggered by R-ACES in PJ/a <(1) the recovery of excess heat that is used for district heating, (2) the energy reduction of business parks in the region and joint energy services, (3) the improved efficiency of DHC networks as a result of upgrading technology and usage of renewable energy sources>	151,17	293	0	0,01692	0,01782	0,123297625	0,158037625	0,104542981	0,05393775
2	€ Investments in sustainable energy	0	9.901.881,25	0	0	0	20149549,33	20149549,33	100	203,492132
3	Actors that commit to energy cooperation - High priority areas	10	23	12	15	8	8	43	430	186,956521
3	Actors that commit to energy cooperation - industrial sites	400	920	63	73	63	67	266	66,5	28,9130434
3	Actors that commit to energy cooperation - business parks	30	69	9	8	6	11	34	35	49,2753623
3	Actors that commit to energy cooperation - DHCs	118	288	43	31	43	38	155	131,3559322	53,8194444
4	Number of relevant stakeholders aware of and/or interested in implementing joint energy	210	830	73	275	186	114	648	308,5714286	78,0722891
5	Number of contracts, policies and legal frameworks, including (1) Legislation/ regulation on DHC and trade in heat, (2) Local Energy Communities and the direct exchange of heat, (3) Grid codes and tariffs, (4) Mechanisms to jointly own/invest in renewable energy sources (e.g. a wind turbine), (5) Zoning regulations and building codes (specifically the obligation to connect to DHC instead of gas)	10	23	0	1	4	2	7	70	30,4347826
6	GHG reduction triggered by the R-ACES project measured in MtCO2eq	12	23	0	0	4,56	10,91314714	15,47314714	128,9428928	67,2745527

A brief description and analysis regarding the impact reached for each KPI are listed below:

KPI1
This was the most complicated KPI to achieve due to an unrealistic number compared to the energy savings triggered by the project. The 151.17 PJ to be saved is in fact too high a number, equivalent to 4.199 167 ×104 GWh. Consider that KPI1 is closely linked to KPI6 (GHG reduction) and as can be seen, the two KPIs are not proportional.
R-ACES activities, mainly in WP3, resulted in an estimate of **0,158 PJ/a** only **0.1%** from the target set.

Table 12 Overview of KPI1 results

KPI 1							reached
KPI Desciption	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1 March 2022	Realized between 1 March 2022 and 1 October 2022	Realized between 1 October 2022 and March 2023	Realized - end of the project
Energy savings triggered by R-ACES in PJ/a <(1) the recovery of excess heat that is used for district heating, (2) the energy reduction of business parks in the region and joint energy services, (3) the improved efficiency of DHC networks as a result of upgrading technology and usage of renewable energy sources>	151,17	293	0	0,01692	0,01782	0,123297625	0,158037625

KPI2

This KPI, which could be concretely monitored at the end of the project and thus in the last phase of data collection in March 2023, contains the economic estimates that the three ecoregions in WP3 will bring as a result of the project's realised activities. Specifically, it is estimated that:

- The **Bergamo ecoregion** will bring approximately **90,000 euros** in investments
- The **Antwerp ecoregion** will bring in about **19,590,000 million euros** in investments
- The **Nyborg ecoregion** will realise about **470,000 euros** of investments

The estimated total sustainable energy investment realised by the project amounts to approximately **EUR 20,150,000** in investments, thus broadly reaching the KPI2 target.

Table 13 Overview of KPI2 results

KPI 2							reached
KPI Desciption	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1 March 2022	Realized between 1 March 2022 and 1 October 2022	Realized between 1 October 2022 and March 2023	Realized - end of the project
€ Investments in sustainable energy	0	9.901.881,25	0	0	0	20149549,33	20149549,33

KPI3

The activities of R-ACES such as events, workshops and serious games allowed for a broad coverage especially towards industrial sites mainly concerned with district heating. The difference between 'industrial sites' and 'business parks' was not always valid with respect to the various European regions. For example, due to morphology and industrial fabric, this definition does not exist in Italy where companies are evenly spread over the territory and do not form so-called industrial parks. Therefore, especially in Italy, dissemination activities have been carried out on individual companies.

As can be seen from the figure below, the project yielded excellent results with respect to the stakeholders who engaged in energy cooperation.

Table 14 Overview of KPI3 results

KPI 3							reached
KPI Description	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1 March 2022	Realized between 1 March 2022 and 1 November 2022	Realized between 1 October 2022 and March 2023	Realized - end of the project
High priority regions/ parks	10	23	12	15	8	8	43
Number of industrial sites	400	920	63	73	63	67	266
Number of business parks	30	69	9	8	6	11	34
Number of DHCs	118	288	43	31	43	38	155

KPI4

This KPI "Number of relevant stakeholders aware of and/ or interested in implementing joint energy" clearly represented the intended results of the dissemination activities. As can be seen, the project reached **648 relevant stakeholders**, thus **achieving 308%** of the initial target forecasted of 210 stakeholders.

Table 15 Overview of KPI4 results

KPI 4							reached
KPI Desciption	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1	Realized between 1 March 2022 and 1 October 2022	Realized between 1 October 2022 and	Realized - end of the project
Formal training courses participants	40	120	0	7	0	13	20
Online training courses (participants that obtain certificate)	10	10	6	0	39	12	57
Learning community participants	100	100	64	141	103	82	390
Serious game sessions participants	60	600	3	127	44	7	181
Total	210	830	73	275	186	114	648

KPI5

This KPI was strongly affected by the Covid-19 situation in the first year. Due to reduced travel and exclusively online meetings, the partnership's activity towards policy makers and regional authorities was limited.

In spite of this, the partnership succeeded in the WP3 and WP4 ecoregions to stimulate discussion around **7** policy makers with respect to district heating legislation, the importance of subsidies to achieve energy cooperation projects and in general to activate a dialogue to facilitate energy industrial symbiosis on a European level. Specifically, these were the regions where the expected results of KPI5 were achieved:

- **Antwerp** – 4
- **Bergamo** – 1
- **Emilia Romagna** – 1
- **Gent-Terneuzen** - 1

So KPI5 was **70% achieved**

Table 16 Overview of KPI5 results

KPI 5							reached
KPI Desciption	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1 March 2022	Realized between 1 March 2022 and 1 October 2022	Realized between 1 October 2022 and March 2023	Realized - end of the project
Number of contacts, policies and legal frameworks, including (1) Legislation/ regulation on DHC and trade in heat, (2) Local Energy Communities and the direct exchange of heat, (3) Grid codes and tariffs, (4) Mechanisms to jointly own/invest in renewable energy sources (e.g. a wind turbine), (5) Zoning regulations and building codes (specifically the obligation to connect to DHC instead of gas)	10	23	0	1	4	2	7

KPI6

The GHG reduction triggered by the project have been calculated just on the WP3 Ecoregions. This is because it was very difficult and unrealistic to estimate CO_2 reductions in the ecoregions of WP4. In fact, in the 7 ecoregions, due to the shallower activity carried out, there was more information and training for the stakeholders concerned, which is why estimating CO_2 reductions now was unrealistic.

In WP3, on the other hand, where concrete projects and feasibility studies could be carried out, estimates of CO_2 reductions resulted:

Antwerp – **4,41 $MtCO^2$**

Bergamo – **4,56 $MtCO^2$**

Nyborg – **6,5 $MtCO^2$**

In total, therefore, R-ACES achieved a reduction of about **15.47 $MtCO^2$** in WP3 alone, i.e. about **130%** of the planned target.

Table 17 Overview of KPI6 results

KPI 6							reached
KPI Desciption	Target short term (during R-ACES)	Target long term (after R-ACES)	Realized on 1 September 2021	Realized between 1 september 2021 and 1 March 2022	Realized between 1 March 2022 and 1 October 2022	Realized between 1 October 2022 and March 2023	Realized - end of the project
GHG reduction triggered by the R-ACES project measured in MtCO2eq	12	23,00	0	0	4,56	10,91314714	15,47314714

<u>Communication KPI</u>

The assessment of the communication KPI show clearly that for most of the materials they were achieved or even surpassed the estimates from the proposal. During the monitoring process it was further seen that for some of the communication materials the chosen parameter or resolution was not the appropriate one. For example, for the "mention"

category in social media monitoring we saw that the mentions itself were rather low with only 254 in total resulted over times across different platforms by 84 unique users in the creation of 203K impressions.

Table 18 KPI measuring for the communication work package

Web presence viewers / year	4000	4000	4357				20.020
R-ACES social media account followers (	300	300	373				518
R-ACES social media account mentions	1000	1000	LinkedIn ~70/month; Twitter 102 in P1				203000
R-ACES video views (on Youtube)	500	500	956				1326
Viewers infographics	10000	10000		NA	NA	NA	66
Distributed brochures	1000	1000	180	NA	NA	NA	845
Distributed roll ups	4	4	1	NA	NA	NA	15
Project related interviews	6	6	0			6	6
Journalistic articles	4	4	0			4	5
Press releases	2	2	4			2	10

2.5 Lessons learned and best practices

The R-ACES project encountered significant obstacles as it was launched in the midst of the COVID-19 pandemic, which had a major impact on its dissemination and communication activities. The inability to hold physical events or workshops in the first year posed significant obstacles in reaching out to stakeholders, particularly industry stakeholders, who were tough to engage in online events, and mistrust from them was observed, making it difficult to achieve the desired outcomes.

The project encountered challenges with KPIs as some of the predicted KPIs were not realistic, such as KPI1, and some could not be met due to unforeseen circumstances.

The most important lesson learnt from the R-ACES project was the significance of cooperation between WPs. Collaboration is critical to achieving the project's objectives, and it is essential to work together to ensure that all activities are coordinated and aligned. Effective communication between WPs is also important to ensure that project activities are streamlined, and objectives are achieved in a timely and efficient manner.

In conclusion, the R-ACES project faced numerous challenges due to the factors mentioned above. Despite these challenges, the project was able to adapt and devise new strategies, such as increased collaboration between WPs, to accomplish its objectives.

So, based to the R-ACES experience, our lessons learned and best practices could include:

- **Plan for unexpected events:** The COVID-19 pandemic demonstrated the importance of having contingency plans in place to adapt to unforeseen circumstances that could impact the project's timeline and ability to hold physical events.

- **Diversify dissemination strategies:** Since engaging industry stakeholders can be challenging, future projects may need to employ a range of communication channels and strategies to reach and build trust with this audience.
- **Set realistic KPIs:** It's important to ensure that KPIs are achievable within the project's timeline and resources.
- **Collaborate across work packages:** Collaboration between different work packages within the project is essential for achieving the overall goals and objectives, especially in situations where some KPIs cannot be fulfilled.

These lessons learned and best practices can be applied to future dissemination and communication activities to ensure that they are successful, even in the face of unexpected challenges.

3 Conclusion

3.1 Summary of the main achievements and findings

The project conducted case studies in 90 high-priority regions in Europe, which identified the potential for the integration of renewable energy sources in district heating and cooling systems, as well as the barriers and opportunities for their deployment. The project's findings highlight the importance of a comprehensive approach to district heating and cooling systems, which takes into account the technical, economic, and social aspects of their development and operation. The project also demonstrated the potential of waste heat recovery and thermal energy storage as key technologies for the integration of renewable energy sources in district heating and cooling systems, as well as the importance of policy and regulatory frameworks to support their deployment.

Overall, the project achieved several key findings and milestones, including the development of the R-ACES toolkit, which provides a framework for assessing the economic, social, and environmental impacts of regional energy efficiency initiatives. The project also successfully engaged with stakeholders to create regional action plans and implement pilot projects, resulting in measurable improvements in energy efficiency and a reduction in carbon emissions. Finally, the project's dissemination and communication activities were instrumental in increasing awareness and promoting the uptake of energy efficiency measures, with many stakeholders expressing interest in replicating the project's approach in their own regions.

3.2 Recommendations for future dissemination and capacity-building efforts

As the R-ACES project comes to an end, the lessons learned from its dissemination and communication efforts can be used to improve the dissemination of future European projects. Here are some recommendations that could help other projects in the future:

- Develop a **comprehensive dissemination plan early on in the project**: This plan should be reviewed and updated throughout the project as needed.
- Use a **variety of dissemination channels**: To reach a diverse audience, it's important to use a variety of dissemination channels. These channels should be tailored to the specific target audience.
- **Engage stakeholders and end-users early on**: This can be done through surveys, focus groups, and other means of consultation.
- Utilize **partnerships and collaborations**: Collaborating with other European projects, platforms, and organizations can help to increase the project's visibility and reach.
- **Measure and evaluate dissemination efforts**: This can help to identify areas for improvement and ensure that the project's results are reaching the target audience.
- Use **innovative tools and methodologies**: can help to engage the target audience and increase their understanding of the project's results. It's important to identify the most appropriate tools and methodologies for the target audience and ensure that they are accessible and easy to use.

It's important to remember that effective dissemination and communication are key to ensuring that the project's results are widely understood and have a lasting impact.
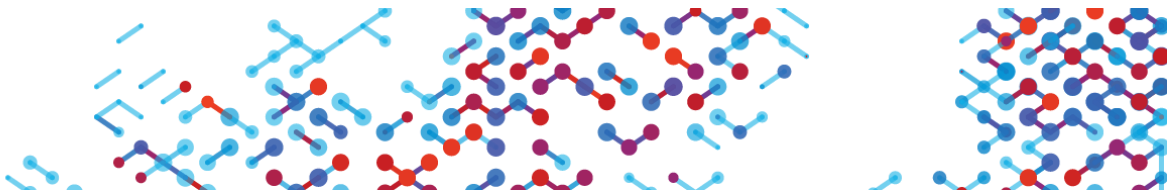
4   Annexes

4.1 Annex 01 - R-ACES Project Glossary

Definition of Key Concepts in the R-ACES project

Business park: An area of land in which many office buildings are grouped together with a common infrastructure (Wikipedia). Business parks, like industrial sites, often have similarities in heating and cooling demand. Certain businesses may even have residual energy streams, for example data centers. As such, business parks may also organize as an ecosystem or eco business park (EBP) and become an important stakeholder within an ecoregion.

Eco Business Park: *"An eco-industrial park is a community of businesses located on a common property in which businesses seek to achieve enhanced environmental, economic and social performance through collaboration in managing environmental and resource issues. This is known as industrial symbiosis, which is a means by which companies can gain a competitive advantage through the physical exchange of materials, energy, water and by-products, thereby fostering inclusive and sustainable development."* (United Nations Industrial Development Organization)

Communicate: professional and public coverage of the project results and achievements, benefits and potential deployment. This will be realised via the adoption of a large variety of distribution channels, including already existing platforms focusing on energy cooperation in industrial sites and business parks and energy exchange/cooperation at large.

Disseminate: exploitation of the project results to relevant stakeholders in the regions. It intends to ensure a low threshold in accessibility, usage of R-ACES tools and methods. This includes access to the tools, to the use case libraries and to the training and capacity building material and related self-explanatory instruction manuals.

DHC: Abbreviation of District Heating and Cooling. A system for distributing heating/cooling generated in a centralized location through a system of insulated pipes for residential and commercial heating requirements such as space heating/cooling and water heating/cooling.

> 4th generation DHCs: *"4GDH systems provide the heat supply of low-energy buildings with low grid losses in a way in which the use of low-temperature heat sources is integrated with the operation of smart thermal grids. Smart thermal grids consist of a network of pipes connecting the buildings in a neighbourhood, town centre or whole city, so that they can be served from centralised plants as well as from a number of distributed heating and cooling producing units (or decentralised units) including individual contributions from the connected buildings. The concept of smart thermal grids can be regarded as being parallel to smart electricity grids. Both concepts focus on the integration and efficient use of potential future renewable energy sources as well as the operation of a grid structure allowing for distributed generation which may involve interaction with consumers."* (adapted from Lund et al, Energy 68; 2014, p1-11).

> 5th generation DHCs: *"5GDHC is a highly optimized, demand-driven, self-regulating, energy management system for urban areas. Its key features are: 1) ultra-low temperature grid with decentralized energy plants; 2) closed thermal energy loops*

ensuring hot and cold exchange within and among buildings; 3) integration of thermal and electricity grids." (D2grids, Interreg NWE)

Ecoregion: An ecoregion within the R-ACES project is a geographic area where energy and information exchanges occur between stakeholders of various types to reduce energy consumption. Geographical size does not matter (the size of an ecoregion can be as small as a business park or as large as a city). Important is that an ecoregion relies on an anchor organization responsible for managing the area (for example park management). Another aspect is the proximity of stakeholders to ensure interconnected energy flows (continuity of supply, quality of supply, quantity). Within an ecoregion, a wide range of assets could be involved: office parks, data centers, multimodal centers, technological centers, agro-centers, science parks, brain parks, lighthouse parks, chemical parks, eco-industrial parks, and cluster/business parks. For the demand of heat, also residential areas could be taken into account. As such, the term ecoregion functions as an 'umbrella term'.
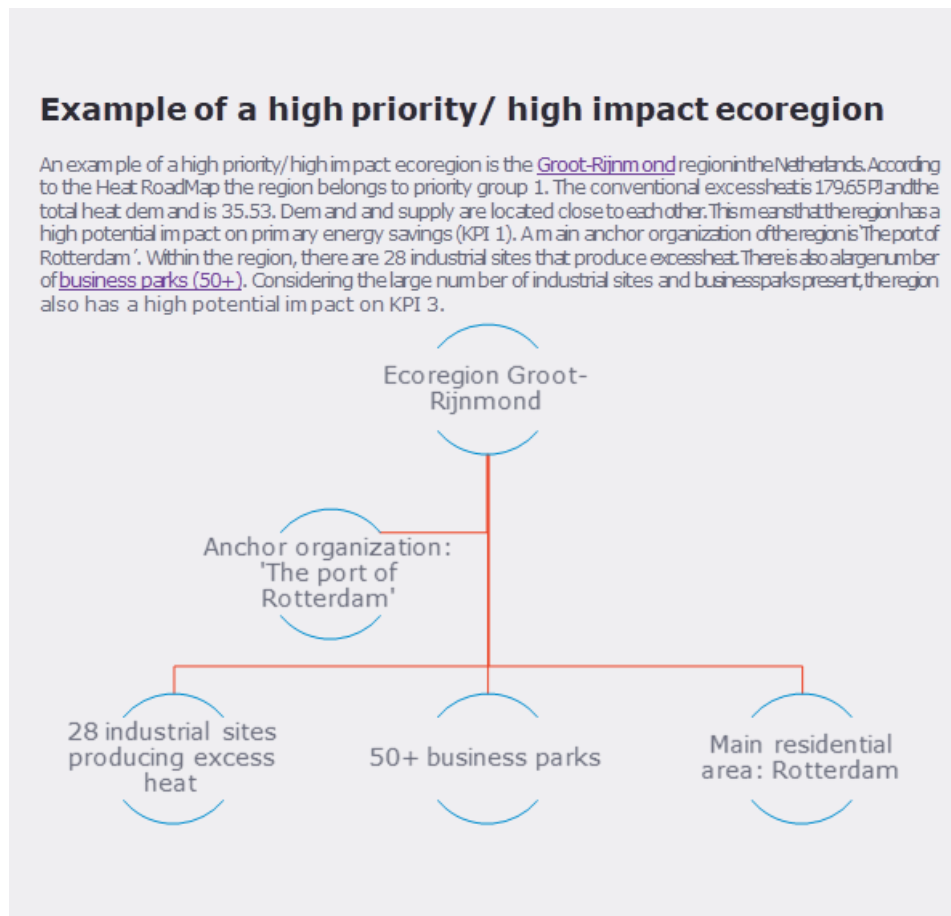
Figure 9 Diagram illustrating a high-impact ecoregion

High priority region: A high priority region is an Ecoregion, as defined above, that has balanced potential match of heating/cooling supply and heating/cooling demand in both quantitative (amount of heating/cooling) and qualitative (temperature, form of heat) terms. The region should be identified by heat roadmap studies (for example, the Heat RoadMap Europe or Stratego) or other research activities. In addition, the regions should have networking possibilities. The regions can include industrial sites, business parks and residential areas.

The table below gives an indication of the priorities. R-ACES will focus on priority group 1 +2.

Table 19 Excess heat (Eheat) and heat demand (Qtot) characteristics for the definition of priority groups to identify heat synergy regions

Priority group	Characteristics Excess heat[a] [PJ/a]	Heat demand[b] [PJ/a]	Priority status	Comment
1	$\Sigma E_{heat,o} > 10$	$Q_{tot} > 10$	Very high	High levels of both $E_{heat,o}$ and Q_{tot}
2	$1 < \Sigma E_{heat,o} < 10$	$Q_{tot} > 10$	High	Moderate levels of $E_{heat,o}$ and high Q_{tot}
3	$\Sigma E_{heat,o} > 10$	$1 < Q_{tot} < 10$	Moderate	High $E_{heat,o}$ and moderate levels of Q_{tot}
4	$1 < \Sigma E_{heat,o} < 10$	$1 < Q_{tot} < 10$	Low	Both $E_{heat,o}$ and Q_{tot} at moderate levels
0	$\Sigma E_{heat,o,max} < 2.5$	$Q_{tot,max} < 25$	No priority	Both $E_{heat,o}$ and Q_{tot} at low levels

[a] Maximal theoretical levels of annually available excess heat.
[b] Space heating and domestic hot water preparation in residential and service sectors.

High potential region: Within the project proposal, sometimes the term high potential ecoregion is mentioned. From now on, this term will not be used within the scope of the R-ACES project.

High impact (in R-ACES terms): Regions that have a high potential impact on the R-ACES KPIs. More specifically, regions are meant that have a high potential impact on KPI 1: Primary energy savings, and KPI 3: Number of plant sites and number of industrial parks where businesses commit to energy cooperation.

Energy cooperation: Energy cooperation activities between industries, which include physical clustering (e.g., of buildings and processes, energy exchange, collective production) and/ or service clustering (e.g., joint contracting). Both can deliver a more stable cumulative demand, economy of scale for larger installations with higher efficiencies and smaller spatial footprint and an optimized demand response. Within R-ACES, the focus is mainly on energy cooperation through the exchange of heating and cooling.

Energy Management Platform: is an ICT-tool that makes energy flows transparent; allows energy consumption and production to be allocated to specific installations, stakeholders and nodes; and identifies anomalies and opportunities. A key feature is that it is very easy to use for a wide range of stakeholders. In this way, it is possible to deploy it in a cluster and give access to the different company and cluster managers – each at their level of detail and with the information they should have access to. On the ecoregion level, there will be a dashboard that shows different energy flows.

ESCO: Abbreviation for Energy Service Company. An ESCO is a business that provides a broad range of energy solutions including designs and implementation of energy savings projects, retrofitting, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management.

Facilitator: someone who helps to bring about an outcome (such as learning, productivity, or communication) by providing indirect or unobtrusive assistance, guidance, or supervision. This task does not include technical expert know-how, instead facilitators are trained to facilitate interaction between multiple actors.

Industrial cluster: Within the project proposal, sometimes the term Industrial cluster is used. From now on, this term will not be used within the scope of the R-ACES project.

Industrial park: Within the project proposal, sometimes the term Industrial park is used. From now on, this term will not be used within the scope of the R-ACES project.

Industrial region: Within the project proposal, sometimes the term Industrial region is used. From now on, this term will not be used within the scope of the R-ACES project.

Industrial site: An area zoned and planned for the purpose of industrial development. An industrial site can be thought of as a more "heavyweight" version of a business park or office park, which has offices and light industry, rather than heavy industry. They may contain oil refineries, ports, warehouses, distribution centres, factories, and companies that provide manufacturing, transportation, and storage facilities, such as chemical plants, airports, and beverage manufacturers (Wikipedia).

(R-ACES) Learning community: Local group of stakeholders that are (a) directly involved with the energy collaboration on a site; and (b) engaging in both organised and informal exchange of knowledge and best practices over the course of the project period. These groups are the first beneficiaries of instruments like serious gaming. Learning communities from different sites in this project will eventually be brought into contact with each other to further stimulate the exchange of best practices.

Learning network: *"Allow for enduring relationships built on trust to develop among companies within an industrial site. In turn these relationships encourage information sharing, creative solutions, long term planning and governance among stakeholders. Social aspects increase interactions among stakeholders and strengthen collaborations and partnerships including industrial ones"* (Scaler, 2018). To establish such learning networks, the R-ACES project will use learning communities.

(R-ACES) Legal support tool: A tool that supports practitioners by giving the legal decision support for joint contracts. A low threshold for usage is a critical requirement. The tool is self-explanatory, application oriented, using well-defined and clear terminology. The tool should be able to deal with a high diversity of local situations. For practical reasons, the name of the legal tool might change during the R-ACES process. In this case, the consortium will be informed.

LESTS framework: Abbreviation for Legal, Economic, Spatial, Technical and Social/Managerial. LESTS is a framework that is used in the project to categorize barriers and drivers in ecoregions. The different categories include: Legal, e.g. liabilities, regulatory requirements, third party contracts, service agreements, rules; Economic, e.g. cost savings, waste/ resource recovery value, funding mechanism, taxes & environmental considerations; Spatial, including geographical proximity, planning rules and environmental considerations; Technical, e.g. sharing and cascading resources, system stability, facilities; Social/Managerial, e.g. with regard to workers, consumers, local communities employment, community engagement, and capacity building.

Lock-in: Exchange of by-products will lead to long term reliance on an outside company, which will restrict flexibility of the involved companies and possibility for innovation, or possibility to relocate the site.

Longlist (for example longlist of regions): Exists of lists of items (rows), for example regions, that have been selected on the basis of loose selection criteria (columns). The long list is a first step in creating a short list. The long list should cover all potential subjects that might be of interest to the short list. Example:

Region	Region	Country	Source	# DHCS	# Industrial sites	# Business parks	Contact person	Contact details
1	Maasvlakt	Nederland	...					
2	Chemelot	Nederland	...					
3	Terneuzen	Nederland	...					

Long-term: Long-term impact of R-ACES is gained after the end of the R-ACES project (in KPI terms).

Peer2peer: A network of peers (R-ACES stakeholders) that perceive each other as equal. The peers interact with each other in order to learn from each other. The peer2peer learning context is a formal or informal setting, in small groups or online. Pear learning

manifests aspects of self-organization. By this is meant, that there is no hierarchical structure within a peer2peer network (Wikipedia).

(R-ACES) Self-assessment tool: A tool that helps ecoregions to determine the next steps they have to take in the energy cooperation process. The tool exists of a number of questions practitioners have to answer. Based on the answers, the practitioners will get a score and some practical considerations they should take into consideration.

Serious gaming: A method for learning-through-experience that presents participants with a case study in which they have to play pre-assigned roles to each reach a pre-defined objective as quickly as possible. The interactive & competitive gaming element increases the attractiveness and the learning outcome of the case study. Serious gaming addresses cooperation elements among a large variety of practitioners and focus at creating acceptance and awareness, where the learning communities focus at sharing experiences between peers.

Shortlist (for example shortlist of regions): List of items, for example regions, that have been selected from a long list on the basis of (strict) selection criteria. Hereby, the advantages and disadvantages of each item are considered (OpenLearn). The shortlist contains items that have a high potential and likelihood to contribute to the R-ACES goal.

Short-term: Short-term impact of R-ACES is gained during the R-ACES project.

Use case: A written description of the sequence of steps performed by an ecoregion to come to fruitful energy cooperation.

Use case library: A library that contains multiple use cases.

4.2 Annex 02 - R-ACES dissemination activities

Table 20 Dissemination and communication activities

4.3 Annex 03 - R-ACES KPIs monitoring

Table 21 Detailed overview of the KPI monitoring

10 R-ACES ecoregions - WP 3 & 4

Ecoregion	High priority parks	Industrial Sites	Business parks	DHCs	N Participants Learning community	N Participants Training courses	N Participants Online Training Courses	N Participants Serious game sessions	Energy savings triggered in PJ/a	€ investment triggered in sustainable energy	Number of contacts, policies and legal frameworks triggered	Savings Triggered in CO2-eq
Sonderjulland	1	14	0	16	3	0	0	0	x	x	x	x
Nyborg	1	2	1	1	0	0	0	0	x	x	x	x
Ghent	1	3	2	1	0	0	1	1	x	x	x	x
Antwerpen kanaalkant	1	6	0	0	20	0	1	0	x	x	x	x
Antwerpen terbekehof	1	3	1	1	5	0	0	0	x	x	x	x
Milano	1	3	0	11	2	0	1	0	x	x	x	x
Bergamo	1	5	0	2	8	0	2	0	x	x	x	x
Castegnato	1	1	0	1	2	0	0	0	x	x	x	x
Brescia	1	6	0	1	4	0	1	0	x	x	x	x
Naarden Vesting	1	3	0	2	10	0	0	0	x	x	x	x
Torino - Pessione	1	1	1	2	2	0	0	0	x	x	x	x
Emilia-Romagna	1	13	1	5	3	0	0	0	x	x	x	x
Total	12	60	6	43	59	0	6	1	0	0	0	0

Realized on 1 September 2021

10 R-ACES ecoregions - WP 3 & 4

Ecoregion	High priority parks	Industrial Sites	Business parks	DHCs	N Participants Learning community	N Participants Training courses	N Participants Online Training Courses	N Participants Serious game sessions	Energy savings triggered in PJ/a	€ investment triggered in sustainable energy	Number of contacts, policies and legal frameworks triggered	Savings Triggered in CO2-eq
Sonderjulland	1	29	0	5	3	0	0	0	x	x	x	x
Nyborg	1	4	2	0	8	0	0	0	x	x	x	x
Antwerp Foodcluster	1	3	4	0	5	0	0	0	x	x	x	x
Antwerp Altoni Kelderma	1	1	0	1	10	0	0	0	x	x	1	x
Antwerp Wijnegem/Schoten	1	1	0	0	55	0	0	0	x	x	x	x
Antwerp Terbekehof	1	3	0	1	15	0	0	0	x	x	x	x
Antwerp Science Park Niel	1	1	0	1	3	0	0	0	x	x	x	x
Antwerp Willebroek Noord - Puurs	1	1	0	0	3	0	0	0	x	x	x	x
Milano	1	4	0	11	3	0	0	0	x	x	x	x
Bergamo	1	3	2	2	5	0	0	0	0,01692	x	x	x
Brescia	0	6	0	1	2	0	0	0	x	x	x	x
Emilia-Romagna	0	13	0	5	17	0	0	2	x	x	x	x
Novara	1	3	0	2	2	0	0	0	x	x	x	x
Naarden Vesting	0	1	0	2	10	0	0	0	x	x	x	x
Total	15	73	8	31	141	0	0	2	0,01692		0	1

Attiva Windows

Realized between 1 Sept. 2021 and 1 March 2022

10 R-ACES ecoregions - WP 3 & 4

Ecoregion	High priority parks	Industrial Sites	Business parks	DHCs	N Participants Learning community	N Participants Training courses	N Participants Online Training Courses	N Participants Serious game sessions	Energy savings triggered in PJ/a	€ investment triggered in sustainable energy	Number of contacts, policies and legal frameworks triggered	Savings Triggered in CO2-eq
Sonderjulland	1	29	1	19	25	0	25	0	0,0009	x	x	x
Antwerp	1	3	2	1	16	0	0	0	x	x	2	x
Milano	1	3	0	11	31	18	4	31	x	x	x	x
Bergamo	1	5	0	2	7	5	0	2	0,01692	x	1	4,56
Brescia	1	6	0	1	6	0	3	3	x	x	x	x
Emilia-Romagna	1	13	0	5	7	0	7	0	x	x	1	x
Novara	1	3	0	2	3	2	0	0	x	x	x	x
Naarden Vesting	1	1	3	2	8	0	0	8	x	x	x	x
Total	8	63	6	43	103	25	39	44	0,01782		0	4	4,56

Realized between 1 March 2022 and 1 Oct. 2022

10 R-ACES ecoregions - WP 3 & 4

Ecoregion	High priority parks	Industrial Sites	Business parks	DHCs	N Participants Learning community	N Participants Training courses	N Participants Online Training Courses	N Participants Serious game sessions	Energy savings triggered in PJ/a	€ investment triggered in sustainable energy	Number of contacts, policies and legal frameworks triggered	Savings Triggered in CO2-eq
Sonderjulland	1	29	1	19	0	0	0	0	x	470.000	x	6,5
Antwerp	1	4	3	1	45	0	0	0	0,123297625	19.589.549,33	1	4,41314714
Milano	1	4	0	8	6	2	2	0	x	x	x	x
Bergamo	1	5	2	2	12	2	0	0	x	90.000	x	x
Brescia	1	6	0	1	8	0	5	0	x	x	x	x
Emilia-Romagna	1	13	0	4	4	4	0	0	x	x	x	x
Novara	1	3	0	1	0	0	0	0	x	x	x	x
Gent-Terneuzen	1	3	5	2	7	5	5	7	x	x	1	x
Total	8	67	11	38	82	13	12	7	0,123297625	20149549,33		2	10,91314714

Realized between 1 Oct. 2022 and March 2023