



**Circular economy ecosystem to Recover, Recycle and  
Re-use F-gases contributing to the depletion of  
greenhouse gases - LIFE Retradeables**

**Deliverable: Environmental and socio-economic impacts  
1<sup>st</sup> report. Progress report**

**Action D1**

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## Abstract

This deliverable represents the first of a total of three progress reports that will be produced during the LIFE Retrtradeables project in relation to the environmental and socio-economic impacts of it. Actually, impact monitoring is one of the most critical tasks to be implemented not only to measure the progress of the project towards the defined KPIs but also to validate the effectiveness of the KPIs themselves. It is therefore envisaged that the review of all applicable KPIs will be conducted on a consistent basis, so that the status of LIFE Retrtradeables performance can be tracked over time and both areas of success and areas for improvement can be identified accordingly. The 1<sup>st</sup> report focuses on presenting preliminary findings on the impact of LIFE Retrtradeables project in the 3 demo countries (SK, HU, CZ), while establishing a baseline on interim targets until the end of the project in June 2023. The current pace of progress is quite slow as the demos are not yet sufficiently developed and the Retrtradeables Marketplace is just being rolled out. Therefore, only a limited number of F-gas stakeholders have so far had the opportunity to register on the online trading platform. However, this is a temporary and reasonable situation that will have changed radically by the end of 2022 at the latest, given the intensification of communication and dissemination activities aimed at significantly increasing the popularity levels of the Retrtradeables Marketplace.



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## 1 Overview

A wide range of **Key Performance Indicators (KPIs)** have recently been used to define specific quantitative targets to be achieved during both the demonstration and replication phases of the LIFE Retradeables project (see D1's deliverable: "Monitoring methodology and tools"). From the start of the trials in Slovakia, Hungary and Czech Republic onwards, the same KPIs are applied to monitor progress against the desired level of performance.

The monitoring of the project impact is based on appropriate coordination between partners, **under the supervision of DACE**. Each partner will monitor its own impacts (e.g., attendance at an event, production of a publication). The overall impacts of LIFE Retradeables (e.g., tons of F-gas recovered) will be automatically tracked by the 3R ECOSYSTEM (i.e., DENV in charge of monitoring). DACE will be responsible for the evaluation of the indicators and the level of achievement. If relevant deviations are detected, contingency actions, such as buffer times, will be taken in line with a precise set of countermeasures defined in advance (see Section B5 – Figures 1 & 3 of Grant Agreement).

Basically, these are the **strategic objectives** of the project expressed in practical terms through the KPIs and categorised as below:

1. Improved Environmental and Climate Performance
2. Better Use of Natural Resource
3. Economic Performance, Market Uptake, Replication
4. Communication, Dissemination, Awareness Rising
5. Others (such as Socio-economic impact)

In addition, the **first reporting period** has fixed from 1/7/2020 <sup>(1)</sup> to 31/12/2021. All measured KPIs up to December 2021 are listed in the following 5 sub-sections. As the corresponding reporting period for the mid-term report was supposed to end in October 2021, the relevant results are also included to serve as a kind of reminder. The rest of the values are more regarded as an indicative outline of the project progress until the end of the demos in June 2023 (estimated KPIs). For completeness, an overview of the targeted KPIs under the LIFE Grant Agreement, including comments/clarifications, is attached in the respective sub-sections.

Finally, it should be highlighted that the follow-up of the KPIs has changed from **monthly to semi-annual**. This adjustment can be easily explained since the online marketplace has only recently become operational and a few more months will be needed before it is sufficiently rolled-out. Therefore, reporting the outcomes on a monthly basis is considered somewhat pointless, at least at present, as the information provided is in fact neither useful nor representative of the progress of the project during the whole demonstration phase. Instead, six-monthly impact monitoring seems to be more realistic, also allowing for the registration of a critical number of local installers and distributors per demo country. In any instance, the end-of-project targets remain the ones of the Grant Agreement.

*(1). The 3 country-level demos (SK, HU, CZ) started in July 2021.*



## 2 KPI 1: Improved Environmental and Climate Performance

### 2.1 Background

The project strongly promotes the **F-gas Circular Economy** by raising awareness of the need to re-use resources and creating a value for the recovered refrigerant, which would otherwise become waste in most cases. The first examples, from Daikin's partners in the 3 selected countries, give clear feedback that the value of recovered refrigerant is being recognised, thus encouraging further development of the processes associated with it. It can be alternatively said that the value of recovered refrigerant is almost a reality and volumes are expected to increase even more in the near future.

Moreover, the recognition of some value for the recovered refrigerant is directly linked to a reduction of leakage rates. Given the growing interest of companies in recovered refrigerants, leakage rates will be gradually reduced either by paying more attention to the quality of the installations (tightness) or by taking care of the refrigerant collection at the end of a lifecycle. This kind of approach is supposed to prevent the illegal release of such refrigerants into the atmosphere (**Prevention of direct CO<sub>2</sub> emissions**).

Another asset of legally placing additional quantities of refrigerants on the market (F-gases collected through the platform, recycled or reclaimed and then reused) is also the **reduction of space for illegal refrigerants**, reinforcing EU efforts to eliminate this issue. Although this effect is hard to measure, it will be kept at a high priority level by all market players anyway.

### 2.2 Preliminary results against KPI targets

All targeted and measured/estimated KPIs relevant to the 1<sup>st</sup> key project objective of "Improved Environmental and Climate Performance", within the demonstration phase, are summarized in **Tables 1 & 2**, respectively:



Table 1: Overview of "Improved Environmental and Climate Performance" targeted KPIs during the project.

1 <sup>st</sup> KPI: Improved Environmental and Climate Performance (Demonstration phase: 2021-2023)				
Indicators	Mean of verification	Estimated impact		Comments
		Absolute values *	Change (%) **	
<b>1. Reduction of greenhouse gas emissions (GHG)</b>	Estimation of the F-gas recovered via 3R ECOSYSTEM (CO <sub>2</sub> equivalent)	1,5 million Tons CO <sub>2</sub> ,eq /year	98%	For the 3 demo countries a calculation was made over the installed base - number of units sold per year multiplied by the average life time of the equipment. Then, assumptions were made over the renovation rate per different sector. The total amount is 3,1 million Tons of CO <sub>2</sub> eq. reduced during the demos (2 years) so an average of 1,5 million Tons eq./year has been estimated. This means a 98% change estimation, since the previous reduction rate was zero.
<b>2. Waste reduction</b>	The annual amount of refrigerant to be introduced in the platform - F-gas reusability levels (per year)	742 Tons/year	98%	The amount of the F-gas recovered, expressed in Tons/year. Since the total recovery will be 1.485 Tons of F-gas at the end of the project, the average per year (2 years for the demos) will be 742,5 Tons of F-gas recovered. This means a 98% change estimation, since the previous reduction rate was zero.

\* F-gases GWP is considered to be equal to this of R410a: 1 ton of F-gas=2.087,5 tonnes of CO<sub>2</sub>.

\*\* Expected change (in %) compared to the initial situation. This is normally directly linked to the assumed baseline.

Table 2: Overview of "Improved Environmental and Climate Performance" measured and estimated KPIs during the project.

Indicators	Targeted impact by the end of the project	10/2021	12/2021	06/2022	12/2022	06/2023
<b>1. Reduction of greenhouse gas emissions (GHG)</b>	3,1 million Tons CO <sub>2</sub> ,eq	214	<b>404 tons</b>	1.500.000	2.250.000	3.100.000
<b>2. Waste reduction</b>	1.485 Tons of F-gas	0,106 (106 kg)	<b>0,200 tons (200 kg)</b>	742,5 (742.500 kg)	1.114 (1.114.000 kg)	1.485 (1.485.000 kg)

\* All quoted values after 12/2021 are only estimates/forecasts of project performance levels (per 6 months) until the end of the LIFE Retradeables demos.



### 3 KPI 2: Better Use of Natural Resource

#### 3.1 Background

The prototype units are regarded as one of the most innovative elements of the LIFE Retradeables project, the dynamic introduction of which in the 3 demo countries is expected to play a key role in the increase of the recycling capacity of local companies as well as the overall recycling capacity (**maximization of the total amount of recycled/reclaimed refrigerant**). Meanwhile, it is the efficient F-gas recovery/recycling process through prototypes that will enable **significant reduction in raw materials**. In fact, the updated characteristics and IOT functionalities in the equipment will allow installers to analyse the composition of the existing refrigerant on site prior to the recovery and upload data automatically to the Self-certification platform. Based on the outcome of the analysis, the same equipment will support the recovery and recycling or only the recovery of the refrigerant, if reclamation is required. The ultimate goal is that **all available recovered refrigerants across the European territory will be reused on the market**.

#### 3.2 Preliminary results against KPI targets

All targeted and measured/estimated KPIs relevant to the 2<sup>nd</sup> key project objective of "Better Use of Natural Resources", within the demonstration phase, are summarized in **Tables 3 & 4**, respectively:

*Table 3: Overview of "Better Use of Natural Resources" targeted KPIs during the project.*

2 <sup>nd</sup> KPI: Better Use of Natural Resources (Demonstration phase: 2021-2023)				
Indicators	Mean of verification	Estimated impact		Comments
		Absolute values	Change (%)	
<b>1. Reduced resource consumption - Raw materials (excluding energy)</b>	Measure of the recycled or reclaimed, recovered F-gas	594 Tons/year	80%	During the recycling or reclamation of the recovered gas (742 Tons/year), a maximum of 20% of mass loss is envisaged due to the chemical procedure used (i.e.: 594 Tons/year → 1.188 Tons in total at the end of the project). Hence, an 80% improvement is foreseen.



Table 4: Overview of "Better Use of Natural Resources" measured and estimated KPIs during the project.

Indicators	Targeted impact by the end of the project	10/2021	12/2021	06/2022	12/2022	06/2023
<b>1. Reduced resource consumption - Raw materials (excluding energy)</b>	1.188 Tons of recycled or reclaimed, recovered F-gas	0,085 (85 kg)	<b>0,160 tons (160 kg)</b>	594 (594.000 kg)	891 (891.000 kg)	1.188 (1.188.000 kg)

\* All quoted values after 12/2021 are only estimates/forecasts of project performance levels (per 6 months) until the end of the LIFE Retradeables demos.

## 4 KPI 3: Economic Performance, Market Uptake, Replication

### 4.1 Background

LIFE Retradeables can also act as a powerful tool to **increase economic activity and create new jobs**. Already some companies, outside the typical pool of companies, have expressed their interest to engage themselves in the process as recyclers of refrigerants. This trend is expected to gradually increase market coverage and therefore remove the existing barriers of limited availability of refrigerant recycling centres. In general, the more companies that participate in the process, the more refrigerant will be reused, thus allowing for healthier competition in the market.

### 4.2 Preliminary results against KPI targets

All targeted and measured/estimated KPIs relevant to the 3<sup>rd</sup> key project objective of "Economic Performance, Market Uptake, Replication", within the demonstration phase, are summarized in **Tables 5 & 6**, respectively:





Table 5: Overview of "Economic Performance, Market Uptake, Replication" targeted KPIs during the project.

3 <sup>rd</sup> KPI: Economic Performance, Market Uptake, Replication (Demonstration phase: 2021-2023)				
Indicators	Mean of verification	Estimated impact		Comments
		Absolute values	Change (%)	
1. Employment	Jobs created	72 FTEs	98%	This calculation is based in 3 direct jobs (3 FTEs) in DENV for the operation of the platform itself + an assumption of involving 1.369 installers as users in the demos, with a dedication of 0,05 FTE = 68,5 FTEs, both at the end of the project. This means a 98% change estimation, since the previous reduction rate was zero.
2. Replications/ Transfers	Number of replications /transfers carried out	3 replications	N/A	3 demo countries (SK, CZ, HU) completed at the end of the project.
3. Expected revenues	Sales management	135.214 euros	N/A	For more information, see Section B3 – Figure 3 of Grant Agreement.
4. Market size in number of customers	Users and partners engaged	1.407 customers	N/A	Assumption based on 1.369 dedicated Daikin installers + 4 Chemical Producers + 14 Gas Distributors + 6 Manufacturers of HVAC-R + 14 Wholesalers involved in the demo countries at the end of the project.
5. Payback time	Financial management and accounting	N/A	N/A	Payback period (PBP) is estimated in a longer-term basis. PBP = Capital invested / Net income.

Table 6: Overview of "Economic Performance, Market Uptake, Replication" measured and estimated KPIs during the project.

Indicators	Targeted impact by the end of the project	10/2021	12/2021	06/2022	12/2022	06/2023
1. Employment	72 FTEs	6	7	35	53	72
2. Replications/ Transfers	3 replications	3	3	3	3	3
3. Expected revenues	135.214 euros	8	10	1.000	10.000	135.214
4. Market size in number of customers	1.407 customers	66	71	655	1.019	1.407

\* All quoted values after 12/2021 are only estimates/forecasts of project performance levels (per 6 months) until the end of the LIFE Retradeables demos.



## 5 KPI 4: Communication, Dissemination, Awareness Rising

### 5.1 Background

Many presentations and introductions of the project have taken place so far. There is a full support from experts, a wide range of companies involved as well as requests for further expansion of LIFE Retrtradeables to other European countries. These conditions are absolutely favourable for both **increasing public awareness of the recycling potential** and **promoting new technologies that have the circular economy at their core**. A public pressure is then established for the development of new similar technologies based on the reuse of resources (circular economy).

Furthermore, various ministries and government agencies have expressed clear support for the project. In fact, awareness levels on the circular economy of refrigerants can be enhanced by setting specific terms and conditions in the F-gas market, forcing the industry to produce less waste and recycle as much as possible. Thanks to LIFE Retrtradeables, **adjustments to the legal interpretations of some incomplete legislation** (recovered refrigerant is not waste until it is declared as waste) were triggered and additional interpretations of existing legal frameworks were allowed, too. These interpretations have made the process clearer and cheaper for the customer holding the recovered refrigerant. Additional efforts are being made to escalate the "refrigerant is not waste" issue to EU authorities to work towards achieving a common EU legal framework for recovered refrigerant in order to support the circular economy.

### 5.2 Preliminary results against KPI targets

All targeted and measured/estimated KPIs relevant to the 4<sup>th</sup> key project objective of "Communication, Dissemination, Awareness Rising", within the demonstration phase, are summarized in **Tables 7 & 8**, respectively:



Table 7: Overview of "Communication, Dissemination, Awareness Rising" targeted KPIs during the project.

4 <sup>th</sup> KPI: Communication, Dissemination, Awareness Rising (Demonstration phase: 2021-2023)				
Indicators	Mean of verification	Estimated impact		Comments
		Absolute values	Change (%)	
<b>1. Awareness rising</b>	Number of entities/individuals reached/made aware (+training)	30.600 individuals	98%	30.000 individuals reached combining the demos and the Dissemination and communication actions: Calculation based on the amount of Installers/Service Companies and total amount of other stakeholders. 600 individuals involved in training campaigns: 200 persons per demo country. Overall, this means a 98% change estimation, since the previous reduction rate was zero.
<b>2. Website</b>	Visits counter	10.000 visits	N/A	At least 10.000 visits are expected for the project website at the end of the project, as a result of the Dissemination and Communication actions
<b>3. Behavioural change</b>	Number of entities/individuals changing behaviour	1.369 installers	80%	The installers that participate in the platform will focus more and more efforts on the recovery compared to the past. In the relevant countries we assume that only 20% of them were already active in recovery today.

Table 8: Overview of "Communication, Dissemination, Awareness Rising" measured and estimated KPIs during the project.

Indicators	Targeted impact by the end of the project	10/2021	12/2021	06/2022	12/2022	06/2023
<b>1. Awareness rising</b>	30.600 individuals	2.065	<b>6.780</b>	16.250	24.659	30.600
<b>2. Website</b>	10.000 visits	1.000	<b>1.500</b>	5.000	7.500	10.000
<b>3. Behavioural change</b>	1.369 installers	65	<b>70</b>	650	1.009	1.369

\* All quoted values after 12/2021 are only estimates/forecasts of project performance levels (per 6 months) until the end of the LIFE Retradeables demos.



### **Highlights:**

- ✓ The website (main access point to key information on the project) has been developed (<https://retradeables.com/>). The homepage displays aggregated information about the main aspects of the project. It is supported by an introductory video about the project, as well as key aspects, the project's process and key partners.
- ✓ Regarding Social Media, a YouTube channel to provide informational material (link: [https://www.youtube.com/channel/UC1GUPP0cqp9t\\_tyA9qBqoBQ](https://www.youtube.com/channel/UC1GUPP0cqp9t_tyA9qBqoBQ)) and a LinkedIn page to promote project actions and messages among policy makers and stakeholders and to support networking (link: <https://www.linkedin.com/company/retradeables>) have both been operational.
- ✓ A dissemination and communication plan has been elaborated. Deliverable: "Dissemination and Communication plan" has been completed. It is noted that the project Dissemination and Communication plan will be continuously updated.
- ✓ The trademark registration has been finalized. The project logo that is used in all the internal and external communication materials has been designed.
- ✓ The project video (audio-visual promotional tool of LIFE Retradeables) has been completed (link: <https://www.youtube.com/watch?v=zsnJeE9ET0k>).
- ✓ Digital media have been generated and have been distributed among the target groups and the general public.

## **6 KPI 5: Others**

### **6.1 Background**

A **dedicated set of dissemination and communication actions** have been planned under LIFE Retradeables project to ensure high impact of results, in terms of attracting interest of main stakeholders involved, informing and raising awareness to the general public and transferring technical information of the lessons learnt by the target stakeholders (e.g.: AC sector and other F-gas users such as F-gas distributors, policy makers, technological developers etc.). The main goal behind these activities is to **create value within the project's target communities and initiatives in the EU**, while **fully complying with GDPR** (General Data Protection Regulation) provisions.



## 6.2 Preliminary results against KPI targets

All targeted and measured/estimated KPIs relevant to the 5<sup>th</sup> key project objective of "Others" (i.e., other Dissemination and Communication actions), within the demonstration phase, are summarized in **Tables 9 & 10**, respectively:

Table 9: Overview of "Others" targeted KPIs during the project.

5 <sup>th</sup> KPI: Others (Demonstration phase: 2021-2023)				
Indicators	Mean of verification	Estimated impact		Comments
		Absolute values	Change (%)	
<b>1. Events/ Conferences</b>	Number of events/ conferences/ workshops	2 events	N/A	At least 2 workshops will be organised by the project partners. Additional participation in events is also expected.
<b>2. Scientific Dissemination</b>	Number of articles published	4 publications	N/A	At least 4 publications will be done during the project.
<b>3. Networking actions</b>	Number of networks established or preserved	2 actions	N/A	At least 2 networking actions with current projects are envisaged before the end of the project.
<b>4. Training campaigns</b>	Number of training sessions and attendance list	12 training campaigns	N/A	(1 live training session + 3 webinars) per demo country (3 in total) = 12 campaigns at the end of the project.
<b>5. Monitor and Measure Indicators</b>	KPIs on target Vs total KPIs	0,85	N/A	Monthly monitoring of KPIs with the aim of 85% of them being on target. <b>→ Changed to semi-annual monitoring</b>
<b>6. Monitor and Measure Indicators</b>	KPIs not reaching target for three or more months	<1		No KPIs should remain for more than 3 months below target.



Table 10: Overview of "Others" measured and estimated KPIs during the project.

Indicators	Targeted impact by the end of the project	10/2021	12/2021	06/2022	12/2022	06/2023
<b>1. Events/Conferences</b>	2 events	1	1	1	2	2
<b>2. Scientific Dissemination</b>	4 publications	0	0	0	1	4
<b>3. Networking actions</b>	2 actions	1	1	1	2	2
<b>4. Training campaigns</b>	12 training campaigns	0	0	3	9	12

\* All quoted values after 12/2021 are only estimates/forecasts of project performance levels (per 6 months) until the end of the LIFE Retradeables demos.

### **Highlights:**

- ✓ **Events/Conferences:** The LIFE Retradeables project team organized an online kick-off event in May 2021 to celebrate reaching the first milestone: the launch of the RETRADEABLES (link: <https://www.youtube.com/watch?v=75JkedUk86Q>). All project partners and the LIFE Programme Monitoring & Evaluation Expert participated in the online milestone meeting, each providing updates and future plans to the LIFE Programme. This event also involved an audience of more than 100 representatives from various stakeholders (installers, distributors, media, journalists, networking partners, people from other ongoing projects). All viewers were able to ask questions via a chat.

In addition, the most important local events organised until 31/12/2021 in the 3 demo countries (SK, HU, CZ) are listed in **Table 11**:



Table 11: Overview of local events organised during the 1<sup>st</sup> reporting period (1/7/2020 - 31/12/2021).

Demo Country	Events	Date
Slovakia (SK)	Training session	30/9/2021
	International service conference	20-22/10/2021
Czech Republic (CZ)	Webinar: How to sell used refrigerant	19/10/2021
	Kick off meetings with installers – registered partners now	06–09/2021
	Kick off meetings with dealers Ekotez, Kovo, Linde, EAF, Veskom, NEKO klima	06–12/2021
	CZGBC – Working group on the Circular economy - Green strategy	03/2021
Hungary (HU)	Daikin HU Annual Partner Meeting	13/4/2021
	Internal Life3R intro	13/6/2021
	Start2021 conference (Association of Hungarian Building Engineers)	9/6/2021

- ✓ **Technical publications** have been already planned: NTUA and MAT4NRG are the leading entities for the planned publications during the project (demonstration phase 2021-2023). These will mainly be resulted from the laboratory tests of the prototype unit(s). A relative time estimate is that the first one will be produced in the 2<sup>nd</sup> half of 2022 and the remaining three during 2023.
- ✓ **Networking actions:** Daikin participated in ISH 2021 (Frankfurt), the world's leading trade fair for HVAC and Water, which was held virtually (due to Covid-19) from 22 to 26 March. During this (digital) event, a number of presentations were given by Daikin executives, including one on the circular economy of used refrigerants and how the Life Re tradeables project will play a key role in promoting this approach. In particular, more than 200 participants had the opportunity to gain insights into the innovative aspects of the proposed concept.

In addition, the most important local networking actions carried out until 31/12/2021 in the 3 demo countries (SK, HU, CZ) are listed in **Table 12**:



Table 12: Overview of local networking actions carried out during the 1<sup>st</sup> reporting period (1/7/2020 - 31/12/2021).

Demo country	Networking actions	Date
<b>Slovakia (SK)</b>	Dealer meeting	13/5/2021
<b>Czech Republic (CZ)</b>	Environmentally friendly solutions: Reuse of materials	8/9/2021
	Circular Economy Talks: Not only CEO's agenda	13/10/2021
	Exhibition for installers – Retradeables	11/11/2021
	Meetings with sales colleagues in area – installer companies	09–11/2021
	Ministries (Industry, Environment)	ongoing
	State environmental fund of the CZ – Working group on the Circular economy and Subsidies	ongoing
	AVTČ – General meeting + Board of heat pump association	10/2021
	KOZE – Board of renewables association	11/2021
	APPLIA – Meetings with other companies	12/2021
	INCIEN – Meetings with other companies	11/2021
	INCIEN – Meeting with BRNO city about sustainability	11/2021
<b>Hungary (HU)</b>	MAHÖSZ (HP Assoc)	16/12/2021
	Min ItM & Authority NKVH	13/9/2021
	HKVSZ (installer org. in HU)	15/6/2021
	Onboarding of HU installer	26/3/2021
	Climalife onboarding	22/9/2021
	Linde onboarding	18/3/2021
	Vrec-ko	16/12/2021





- ✓ **Training campaign:** the goal of the training campaign is to reach out the installers and other stakeholders that involve in the sampling, analysing and characterization process. The successful attendance and completion of a course by an installer will assure that the methodology and the Good Practice Guidelines (GPG) have been comprehended.
  - Due to COVID 19 restrictions, the training campaign (at the current stage) was agreed to consist only of webinars and to skip the live presentations.
  - Online training – webinars – will be offered in each country. A platform supports the entire activity by developing a proper Learning Management online offering.
  - During the next reporting period, at least 50 participants per training event in each demo country.
  - Deliverable "Training campaign structure and material" has been completed.

## Conclusions

The 1<sup>st</sup> progress report clearly indicates the early stage of the LIFE Retradeables project, given that only a few months have passed since the start of the demos. In this regard, the short period of time that the Retradeables platform has been up and running is considered to be the main reason for the low levels of participation of F-gas stakeholders (mainly Daikin's partners), coming from the 3 demonstration countries (SK, HU, CZ).

Nevertheless, the number of registrations on the online marketplace platform will significantly raise in the coming months thanks to the communication and dissemination actions to be carried out in conjunction with the launch of the training campaign in Q2 2022. Based on the estimates set out in the respective tables in the report, the marketplace platform will be fully rolled out before the end of 2022 leading to the achievement of the annual targets.

Furthermore, the prototypes are planned to be completely developed and tested by early 2023, thus enabling the implementation of the entire 3R ECOSYSTEM. This is intended to incorporate 3 key components: i. a Self-certification platform with reliable F-gas declaration schemes for composition/recovery/recycling; ii. F-gas identification and recycling IOT equipment (i.e., prototype unit with IOT functionalities); iii. an online marketplace platform ("Retradeables" marketplace) to provide transparency and data on acting parties, refrigerant volumes & types and running prices, too.

Overall, the project roadmap remains the same as in the Grant Agreement, aiming at a first real live version of the 3R ECOSYSTEM to be validated with the intention to be upgraded again until the end of the demos (06/2023). Based on the current replication plan, the final version to be produced will then be scaled up to a total of 13 countries (6 EU countries and 7 non-EU countries).