



European Commission

## Innovation Fund Programme



### Overview of ongoing projects in France

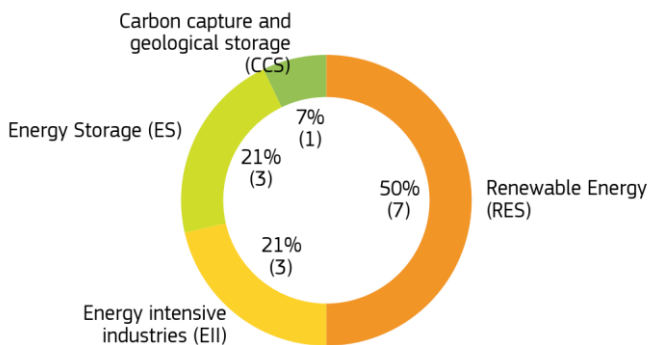
Funded by the revenue of the EU Emissions Trading System, the Innovation Fund's goal is to help businesses investing in innovative low-carbon technologies with significant GHG emissions reduction potential.

The Innovation Fund currently supports **14 projects** located in France, which will contribute to the decarbonisation of European industries with a total expected GHG emission reduction of **21.2 Mt CO<sub>2</sub> equivalent in the first 10 years of operation**.

The total **Innovation Fund grant in France is of EUR 504.3 million**, out of the **total relevant costs of EUR 839.6 million**, as defined in Art 5 of the Delegated Regulation 2019/856 on the Innovation Fund<sup>1</sup>.

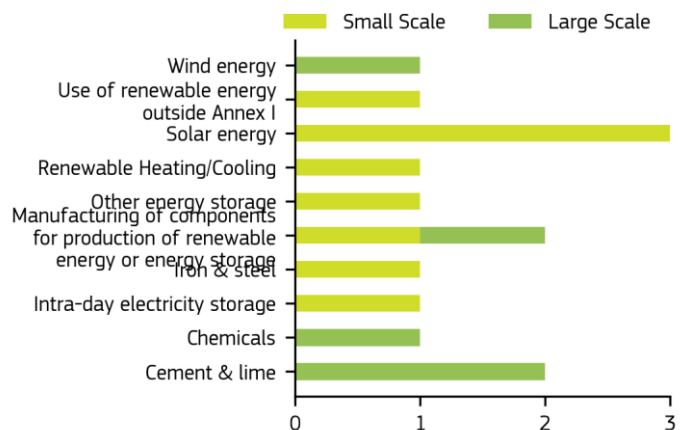
#### Projects per category

Number of projects and percentage of the total



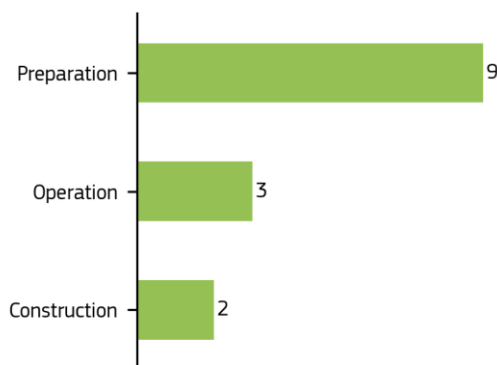
#### Projects per sector

Number of Small and Large-Scale projects



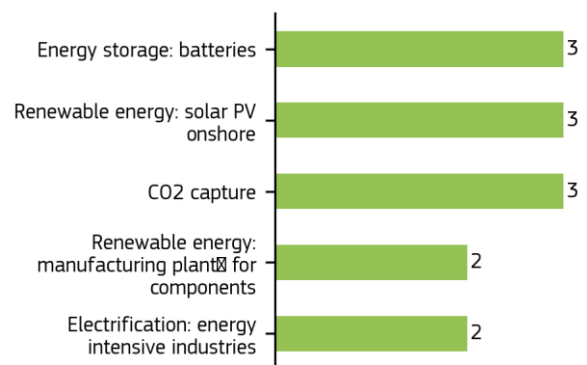
#### Projects per phase<sup>2</sup>

Number of projects



#### Top 5 technology pathways<sup>3</sup>

Number of projects



<sup>1</sup> OJ L 140, 28.5.2019, p. 9.

<sup>2</sup> Preparation means the period before financial close is reached; construction means the period between financial close and entry into operation; operation means that the construction is finished and the project has already started production.

<sup>3</sup> Projects may employ several technological pathways, only the top 5 per country are kept in the graph.

## List of ongoing Innovation Fund projects in France

Acronym	Title	Sector	Start date	Project phase	Beneficiaries	Innovation Fund grant (EUR million)	Expected GHG emission avoidance (t CO2eq)
<b>Large Scale</b>						<b>474.7</b>	<b>20,508,742</b>
CalCC	First industrial scale carbon capture for lime production integrated with transport of CO2 to coastal hub and shipping to geological storage in the North Sea	Cement & lime	01/01/2023	Preparation	AL E&C   ALFI   Lhoist	125.2	5,842,974
K6	K6 Program	Cement & lime	01/04/2022	Preparation	AL E&C   EQIOM   ALFI   VDZ	153.4	8,118,812
NEXTFLOAT PLUS	Next Generation Integrated Floating Wind Optimized for Deep Waters	Wind energy	01/04/2023	Preparation	X1 WIND   TECHNIP FRANCE   NF SPV	13.4	35,675
ReLieVe	Recycling Li-ion Batteries for Electric Vehicles	Manufacturing of components for production of renewable energy or energy storage	01/04/2022	Preparation	ERAMET SA	67.6	4,186,037
eM-Rhone	electroMethanol-Rhône	Chemicals	01/01/2024	Preparation	Lafarge Ciments   Elyse Energy	115.2	2,325,243
<b>Small Scale</b>						<b>29.6</b>	<b>676,316</b>
AGRIVOLTAIC CANOPY	The Brouchy Agrivoltaic Canopy - An acceleration toward energy transition	Solar energy	01/09/2022	Operation	TSE   SPV Brouchy	2.8	6,982
EB UV	EB/UV curing without Gas	Iron & steel	01/10/2021	Operation	AMCF	2.4	35,365
EVVE	First European Large-Scale Vehicle-To-Grid Demonstrator for an efficient decarbonisation of the energy sector	Intra-day electricity storage	01/04/2021	Construction	EDF   DREEV	3.8	25,457
HELEXIO line	Demonstrating manufacturing for innovative BIPV roof components	Solar energy	01/10/2021	Construction	AMC	3.7	169,929
HyPush	Construction of a fuel cell pusher boat operating with two hydrogen fuel cells and a lithium battery designed for inland river navigation	Use of renewable energy outside Annex I	01/06/2023	Preparation	NGM	3.1	12,294
MITIGAT	Making sustainable energy from heat saving	Other energy storage	01/01/2024	Preparation	ECO-TECH CERAM	3.9	37,784
SHEEFT	Solar HELiup Energy for Flat rooftop	Manufacturing of components for production of renewable energy or energy storage	01/10/2023	Preparation	HELIUP	3.2	363,660
SUNAGRI Carbon Farm	Dynamic Agrivoltaic for Farm decarbonization and agriculture sustainability	Solar energy	01/06/2024	Preparation	Sun'R Groupe   Sun'Agri	4.3	12,039
WH	Water Horizon Renewable Energy Solution	Renewable Heating/Cooling	01/01/2022	Operation	TM   DECOSET   Water Horizon	2.5	12,806

## Project overview

Acronym	Title	Description
AGRIVOLTAIC CANOPY	The Brouchy Agrivoltaic Canopy - An acceleration toward energy transition	<p>The Brouchy project will be an innovative agrivoltaic canopy to answer the critical dual need of the agricultural and energy sectors. The project aims to enhance agricultural production and develop new renewable energy capacities. Its breakthrough technical feature is a 5-metre-high shade house structure on steel cables, held in place by poles with a width of 27 metres, making it suitable for large field crops. The canopy's versatility will expand the market potential of agrivoltaics at a large scale, contributing to the decarbonisation of the energy mix and improve food security as it delivers 100% relative greenhouse gas emission reduction compared to the reference scenario.</p> <p>Due to size limitations, existing agrivoltaic solutions only target market gardening, viticulture, arboriculture or livestock. For the canopy targeting large field crops, technical structural resistance was the biggest challenge for this wide cable structure. The project's innovative characteristics include an independent control of each row of photovoltaic panels, which limits the effects of wind vibrations. The 2.9 megawatt-peak (MWp) canopy has a steel structure lighter than existing solutions and a limited ground footprint. With a height of 5 metres and a width of 27 metres, the system allows the normal working habits of the farmers to continue, including the use of any agricultural machinery. The project aims to avoid 6 982 tonnes of CO2 equivalent of greenhouse gas emissions during the first 10 years of operation.</p> <p>A large range of plant species is compatible with the set-up and the innovative technology can be adapted to offer more flexibility to the farmer's field management. Using a significant number of sensors, an automatic computer-controlled system will allow the state-of-the art panels to be oriented according to weather forecasts. This will allow the system to meet the specific needs of the crops whilst optimising energy production.</p> <p>Thanks to the partial and rotating shade that is provided by the canopy, the shading system will help to protect the crops against climate change and to reduce thermal, hydric and cold stress. The decrease in temperature resulting from the canopy will have a positive effect on photosynthetic activity. The objectives of the project are to quantify and analyse the improved plant yield and food quality as well as the decreased need for irrigation. The canopy can also be equipped with an intelligent irrigation system, to address a major challenge of water availability by providing optimal irrigation when necessary. The use of a tracking system with bifacial modules (capable of absorbing sunlight from the front and back) combined with the albedo effect (the ability of surfaces to reflect sunlight) will optimise the energy yield of the panels.</p> <p>The project aims to create a new versatile solution, that enables the development of the emerging agrivoltaics market on a large scale. Developing new renewable energy sources such as these will contribute to the decarbonisation of the European energy mix, which is currently dependent on fossil fuels.</p> <p>The project will bring direct economic benefits to farmers through improved profitability and additional revenue and to the communities through taxation. Finally, biodiversity is at the heart of the project and the canopy has been designed to ensure landscape integration in harmony with the environment and local species with multi-layered hedges.</p>
CalCC	First industrial scale carbon capture for lime production integrated with transport of CO2 to coastal hub and shipping to geological storage in the North Sea	<p>The CalCC project will showcase a pathway for decarbonisation in the lime industry. The project is capturing and permanently storing CO2 emitted during lime production at Lhoist Group's Réty site.</p> <p>This innovative project will cover the full CO2 value chain: capture, pipeline transport, liquefaction, shipping, and offshore geological storage.</p> <p>For the carbon capture aspect of the project, Air Liquide will build the first Cryocap™ FG unit in a lime plant at industrial scale. The Cryocap™ technology uses cryogenic temperatures to separate gases and creates a 99.99% pure CO2 stream needed for CO2 transport and geological storage. The project plans on achieving 87% relative greenhouse gas emission avoidance compared to the reference scenario.</p>
EB UV	EB/UV curing without Gas	<p>The ArcelorMittal coating plant in Contrisson (Grand Est region, France) wishes to launch project EB/UV curing without Gas in order to reduce its carbon footprint and to improve its energy performance and productivity by installing equipment on organic coil coating lines to ensure the cross linking of paints by electronic bombardment. This process, which is already industrial for other applications, will be used for the first time in Europe for curing paint on steel substrates. The innovative process was developed for 13 years together with Liege research centre, a long-term partner of ArcelorMittal.</p> <p>This innovative solution is intended to be first installed on the industrial line 3 as demonstrator and after extended to the two other coil coating lines at the Contrisson site and later to other coil coating lines of the ArcelorMittal group in Europe.</p> <p>This process enables the current paint to be replaced by a "green" product on a non-solvent base, thereby eliminating the need for a CO2-emitting and energy-intensive incineration system</p>
EVVE	First European Large-Scale Vehicle-To-Grid Demonstrator for an	<p>The EVVE project (First European Large-Scale Vehicle-To-Grid Demonstrator for an efficient decarbonisation of the energy sector), coordinated by EDF with the support of DREEV, aims to demonstrate the potential of the Vehicle-To-Grid (V2G) innovative technology to contribute significantly to the reduction of GHG emissions of the energy sector. EVVE implements over 10 years a Virtual Power Plant of 800 V2G bidirectional charging stations, using the Electric Vehicles (EV) energy storage capacities, reaching an aggregated capacity of up to</p>

Acronym	Title	Description
	efficient decarbonisation of the energy sector	8,36MW, and enabling to reduce CO2 emissions by more than 25 000 tons. Located in France, EVVE delivers concrete proof of the V2G economic and environmental benefits, while generating value for all the stakeholders involved, in particular EV owners. Through remote control of the V2G chargers, EVVE is able to implement a smart management of EV batteries charging and discharging processes, based on electricity price and CO2 market signals, enabling to reduce electricity peak loads and provide ancillary services - such as frequency regulation - to the grid while ensuring EV users- mobility needs. EVVE is implemented in a very favourable technological context, as it will build on the return on experience of small-scale demo projects using the Japanese CHAdeMO standard for V2G, while benefitting from the emergence, from 2023, of the CCS (Combined Charging System) European V2G standard. EVVE aims at being a catalyser of V2G industrialization, giving proper signals to V2G value chain stakeholders, especially EV manufacturers, to pave the way for the massive deployment of large-scale V2G schemes in the EU. The financial support provided by the Innovation Fund will unlock EVVE's development and implementation, the very 1st large-scale commercial size demonstration of a technology so far proven at small-scale, enabling to de-risk the project.
HELEXIO line	Demonstrating manufacturing for innovative BIPV roof components	<p>The EC has defined strong commitment aiming at being ?climate neutral by 2050. Energy sector being the major contributor to EU GHG emissions (&gt; 75%), to achieve this ambition, one of the options is naturally to increase the us of Renewable energy by 32% by 2030.</p> <p>-&gt; technologies addressing the current market pain points (technical, economic, supply chain , or easiness to use/to maintain ) must be commercialized.</p> <p>In 2020, Solar electricity represented less than 5% of the EU electricity mix. This share could be largely optimized considering in particular the high potential of existing roof of buildings in terms of available (and necessary) surface to generate PV electricity.</p> <p>Currently the renovation non-industrial building pitched steel roof (representing a potential of 20,000 km2 per year, is currently poorly addressed due to the limits of the currently available technologies (mostly BAPV).</p> <p>Through the LIFE PHOSTER project, AMC has implemented a pilot line for innovative BIPV modules (TRL7) combining in one single component steel roof and PV module. This unique technology represents a real Game Changer addressing the key targeted market pain points (lightweight, low carbon footprint, flexible solutions adaptable to all type of roof, easy to implement), while being economically viable.</p> <p>The purpose of the HELEXIO Line project is thus to implement and demonstrate for the very first time a full-scale manufacturing (yearly production capacity up to 220,000 m2 of BIPV module). During 10 years of operations, the produced and implemented BIPV modules will lead to GHG emissions avoidance of 169,629 tons of CO2.</p> <p>To secure the actual implementation of the modules in non-residential buildings AMC already initiated discussions with various clients, and already reach preliminary agreements with a pioneer customer for a pioneer project for 2,000 m2 and a yearly potential of 200,000 m2 for the HELEXIO PV modules. Agreements with other clients are also under investigations.</p>
HyPush	Construction of a fuel cell pusher boat operating with two hydrogen fuel cells and a lithium battery designed for inland river navigation	<p>HyPush aims to introduce hydrogen technology to inland waterways by creating an innovative pusher vessel to move heavy barges in the Paris area. Powered by green hydrogen, this will fully decarbonise bulk transport on the Seine axis and immediately improve air quality.</p> <p>HyPush will also combine this innovative technology with a pioneering business model. The vessel will be supplied to an operator for ten years, remaining responsible for the technological components such as fuel cells and power electronics, and ensuring maintenance and monitoring. The project aims to achieve a 100% relative GHG emission avoidance during the first ten years of operation compared to the reference scenario.</p> <p>HyPush is composed of a propulsion system, combining a powerful buffer battery, a fuel cell and a newly developed energy management system. The pusher vessel will be subjected to high-intensity operations, performing double duty on most workdays, up to 17 hours continuously. During these days, the HyPush will alternate between river ports approximately 30 km apart, leaving reduced time for filling during operations.</p> <p>In terms of absolute greenhouse gas emissions, a total of 12 294 tonnes CO2equivalent will be avoided in the first ten years of operation. This is equivalent to the average annual greenhouse gas emissions (GHG) produced by 2 197 inhabitants in the European Union( Carbon Dioxide Information Analysis Center), or to 15 146 direct flights from Paris to New York (5 836 km) in economy class (according to Adème, the Agency for Ecological Transition. Calculation made for an airplane with more than 220 seats.).</p> <p>This project aims to demonstrate the relevance of hydrogen propulsion to decarbonise river navigation and the maritime sector. This vessel will serve as a pilot and will boost the green hydrogen mobility market in France, in particular through river navigation operations, which are key to reducing carbon emissions in this sector.</p> <p>More generally, as the demand for green hydrogen in the Paris area increases, the price of hydrogen will come down. This will make the use of green hydrogen more competitive by reducing the cost of operation for all mobility usages, including logistics and public transportation.</p> <p>The project will provide an important precedent and encourage operators and ship owners to initiate their decarbonisation path. Moreover, the hull and ancillary equipment of the vessel are identical to those of other conventional pusher vessels. This means that the HyPush energy system can be easily implemented on a standard platform, either by building new vessels of the same dimensions or by adapting existing vessels through a retrofit process.</p> <p>The replication potential of this project therefore means that the hydrogen propulsion technology can be transposed to many existing vessels. This can provide a durable decarbonisation solution for the important EU pusher fleet of 2 727 vessels, with 1 358 pushers and tugs in the Rhine fleet alone.</p>
K6	K6 Program	The K6 Program project aims to produce the first carbon neutral cement in Europe, becoming a flagship project for the cement industry worldwide and supporting the green transition of a hard-to-abate sector. The K6 Program will transform one of the oldest and strategic cement plants in Europe (located in the Hauts de France region in France) and making it the first large cement company in Europe to take such a large step towards carbon neutrality. The plant produces more than 800 000 tonnes of cement (0.05% of the total volume produced in France in 2019) and uses 145 000 tonnes of local waste material per year. It also provides nearly 400 direct and indirect jobs, and supplies construction materials to an

Acronym	Title	Description
		extensive regional market that ranges from Dunkirk to Paris. The project will deploy a first-of-its-kind industrial-scale combination of an oxy-fuel kiln and carbon capture technology. The captured CO <sub>2</sub> , otherwise emitted to the atmosphere, will be finally stored in a permanent storage site in the North Sea (although this part of the technology chain falls outside the Innovation Fund project boundary, the storage location will most probably be located in Western Norway). The project will result in the avoidance of 8.1 Mt CO <sub>2</sub> e emissions over its first ten years of operation. The integration of the K6 Program project with the nearby Port of Dunkirk will foster the development of the port as a future European CO <sub>2</sub> hub.
MITIGAT	Making sustainable energy from heat saving	<p>The objective of the project is to implement a multi-energy smart grid that responds to the dual constraints of intermittent waste heat and intermittent renewable energies. This hub combines heat storage, renewable electricity conversion to heat, waste heat conversion into power, 15-Gigawatt hour (GWh) long energy storage capacity per annum, gas consumption reduction, and 100% greenhouse gas (GHG) emission avoidance. This solution will be the first-of-its-kind and will save approximately 4 000 tonnes a year of carbon dioxide (CO<sub>2</sub>) thanks to its modularity and standardisation, this solution can be replicated on several manufacturer sites.</p> <p>MITIGAT will be the culmination of a 10-year R&amp;D program, aimed at validating innovative technologies in real environment for industrial heat decarbonation. The use of heat storage and conversions technologies (from Power To Heat (PTH) and from Heat To Power (HTP)) make possible the creation of multi-energy micro-grids, where electricity and heat networks are coupled. This project goes beyond the state-of-the-art by coupling technologies that have already been validated, such as Rankine cycle (ORC) HTP machines and thermal storage solutions. The PTH solution has been proven at technology readiness level (TRL) 7. The hub itself has been tested at TRL level 6, and the current MITIGAT proposal will enable it to reach TRL 9. This final stage will enable the technology to be deployed throughout Europe and in every heavy industry plant, creating strong economic activity, improving energy recovery, reducing CO<sub>2</sub> emissions, and making better use of renewable energy. These solutions are designed for industries who consume substantial amounts of energy, particularly gas, to decarbonise their production facilities as cost-effectively as possible.</p> <p>MITIGAT aims to bring to market tools to decarbonise European industry and support its energy transition towards carbon neutrality, while also boosting its competitiveness. The outputs of the MITIGAT project aim to contribute to different policy areas such as, the Strategic Energy Technology (SET) Plan related to renewable energy, the Industrial Strategy for Europe, the EU's circular economy approach, and the Renewable Energy Directive (RED II).</p> <p>MITIGAT's breakthrough innovation will enable the development of a competitive, low-carbon industry that creates jobs in the Occitanie region (France). Furthermore, it will contribute to the region's resilience in the face of climate change mitigation, an improved quality of life and economy, and the ambition to becoming the first positive-energy region in Europe by 2050.</p>
NEXTFLOAT PLUS	Next Generation Integrated Floating Wind Optimized for Deep Waters	<p>The NEXTFLOAT+ project will deploy a breakthrough Floating Offshore Wind (FOW) technology that will revolutionise the offshore energy industry by reducing costs and facilitating technology scale up. The project will bring together a disruptive and structurally efficient floating wind platform, a two-bladed downwind turbine, an innovative Single-Point-Mooring system, and marine environment regeneration technology. This combination of technologies will supply green electricity to approximately 4 400 households in France (considering a yearly average electricity consumption per household is around 4 679 kilowatt hours (kWh)). The expected relative greenhouse gas emission reduction is 99.59% compared to the reference scenario.</p> <p>The project goes beyond the state of the art through its multi-faceted approach to innovation. By combining a tripod-like structure with a Tension Leg Platform (TLP) mooring and a downwind turbine, the PivotBuoy® technology creates a structure that passively weathervanes with the wind direction and reduces the steel weight up to 49% when compared to traditional technologies. The design significantly brings down capital and operational expenditure, and creates a reliable and efficient system that is easier to install and maintain. In addition, the Single Point TLP reduces the seabed occupation, while the Bio-Boosting systems recovers the affected natural environment, ensuring coexistence with fisheries and natural habitats. These technologies will reduce the Levelized Cost of Energy (LCOE) to €62-106/megawatt hour (MWh) by 2030 and will avoid over 35 600 tons of CO<sub>2</sub> equivalent emissions over the first ten years of operation.</p> <p>The initiative aligns with key European policy areas, notably in achieving climate neutrality through scaling up the use of renewable energy. The NEXTFLOAT+ project is aligned with the European Union's Strategy on offshore renewable energy and with the European Green Deal aiming at climate neutrality by 2050.</p> <p>The NEXTFLOAT+ project will also have significant implications for local and regional economies. The project represents the next step towards the industrialization of offshore wind, which is key for the ramp up of local supply chains. The scalability of the project's design also allows for both efficiency gains and cost reductions, providing a foundation for further deployment and broad economic benefits.</p>
ReLieVe	Recycling Li-ion Batteries for Electric Vehicles	<p>The ReLieVe (Recycling of Li-ion Batteries for electric Vehicles) project aims to create an innovative end-to-end European-based integrated solution for the closed loop recycling of 50 000 tons of end-of-life lithium-ion batteries and production waste from battery manufacturing processes per year. The key project innovations consist in combining low impact mechanical pretreatment with innovative hydrometallurgical refining to produce new battery grade salts.</p> <p>From 2027, when it is scheduled to become operational, the ReLieVe plant will produce high quality recycled metal salts for the production of new batteries in Europe, which is expected to achieve 100% relative greenhouse gas emission avoidance compared to the reference scenario.</p>
SHEEFT	Solar HELIup Energy for Flat rooftop	<p>The objective of the SHEEFT project is to contribute to the large-scale, decentralised deployment of low-carbon energy production systems throughout Europe. The technology consists of a lightweight solar panel designed for existing large building rooftops (commercial, industrial, logistic, and public) with low-bearing capacities. The project focuses on the industrial manufacturing of photovoltaic (PV) panels with a production capacity of 100 Megawatt peaks (MWp) per year. The potential for relative greenhouse gas (GHG) emission avoidance during the 10 years after entry into operation is calculated to be 100% compared to the reference scenario.</p> <p>This unique technology is based on the conservation of ultra-thin glass (&lt; 1 millimetre (mm)) in the PV panel. It involves an innovative installation concept via the direct bonding of the</p>



Acronym	Title	Description
		<p>panel to a waterproofing membrane. The proposed solution, perfectly adapted to flat rooftops, leads to a 60% weight reduction of the solar system compared to conventional solutions, without degrading its performance and reliability. According to EU PV market forecasts and based on SHEEFT's project business plan, this project will lead to an estimated electricity production of 3.76 terawatt-hours (TWh) over the first ten years of operation.</p> <p>Currently, a large part of existing building rooftops cannot be addressed with conventional solar solutions due to their low-bearing weight capacities. Thanks to its innovation based on the engineering of stacking specific materials, the HELIUP STYKON® panel offers increased resistance to hail and excellent robustness during installation, which meets the real-life constraints of the building sector. The technology was developed in interaction with major companies specialised in the waterproofing and construction sectors to meet the right product market fit. The high market demand from the industrial, commercial, and logistical sectors, is due to an urgent need to improve the energy efficiency of their buildings.</p> <p>By delivering a premium PV system manufacturing segment in the EU value chain, this project is in line with major EU policy objectives. This lightweight, high-performance technology implements circular economy principles, ultimately promoting a competitive &amp; sustainable production of electricity inside the EU. Additionally, the proposed solution unlocks access to newly viable surfaces for PV implementation through a process that has a low environmental impact. Therefore, it is advantageous for public support, and it also has the potential for market entry in the utility-scale sector.</p> <p>The project will lead to the creation of 100 direct jobs and 150 indirect jobs. HELIUP aims to build partnerships with solar installers and building companies to create local ecosystems dedicated to increasing value creation and economy resilience. The second phase (outside the Innovation Fund project), starting in 2026, will involve building industrial units 5 to 10 times larger than the previous ones in Europe, while running further optimisation in production costs.</p>
SUNAGRI Carbon Farm	Dynamic Agrivoltaic for Farm decarbonization and agriculture sustainability	<p>The Sun'Agri Carbon Farm project strives to deploy an agrivoltaic farm of the future which aims to protect agricultural production from climate change, and allow the farm to be self-sufficient and sustainable, targeting fair and green agriculture while providing an additional source of income for farmers through the resale of surplus energy generated. The Sun'Agri dynamic agrivoltaic solution operates on 2 levels: a lower level dedicated to agricultural crops (the system's main product), and an upper level dedicated to electricity production. The Carbon Farm system consists of a dynamic agrivoltaic structure that covers an area of 6 Hectares (ha) with 3 types of Mediterranean open-field and greenhouse crops (grapevine, fruit trees and vegetables). The projections of the project result in relative greenhouse gas (GHG) emissions reduction of 100% compared to the reference scenario.</p> <p>The Carbon Farm project goes beyond the state-of-the-art by developing a global solution for farm sustainability through crop protection and enhancing economic performance of Mediterranean farms. The innovations include dynamic bifacial Photovoltaic (PV) panels, intelligent cultivation operations through the direct use of solar power and decision-support tools to optimise inputs and cultivation itineraries, and the integration of Artificial Intelligence (AI) based models to optimise both energy and crop production.</p> <p>Climate change is increasingly affecting agriculture. Agrivoltaics at the plot level are a first step towards climate change adaptation, but they are no longer enough. This Carbon Farm project seeks to fulfil the goals set by the European Green Deal and the climate change adaptation strategies in the Mediterranean basin and to influence the European Union's energy, agricultural, and financial policies. Thanks to its bifacial PV panels and intelligent shade control, the Carbon Farm system can protect crops against climate change and generate energy, thus reducing electricity poverty and enabling electricity to be used in rural areas far from the grid.</p> <p>This innovative solution can create new vocations and jobs in agriculture, reduce the use of fossil fuels and regenerate the agriculture sector. Better crop yields also lead to the economic feasibility of the project. The project, either directly along the project duration, or because of its outcomes, will create direct and indirect jobs along the entire agrivoltaics value chain. This Carbon farm project will also generate key scientific information concerning the influence of specific climate/growing conditions and intervention measures on the physiology, stress, health, and product quality/yield of several crops, as well as on the global health of the associated ecosystem.</p>
WH	Water Horizon Renewable Energy Solution	<p>Water Horizon is a start-up based in Toulouse, France, created in 2017. It develops innovative thermal storage technology (thermal battery). Water Horizon's vision is to value the heat lost by industries (waste heat). Water Horizon recovers the waste heat and stores it in its battery. Once the battery is charged, it is transported to distribute the stored energy to a distant consumer as renewable energy (heat and cold).</p> <p>WH's project aims to perform a commercial demonstration of its Mobile Thermal Battery. WH will recover waste heat from an incinerator (in Toulouse), and will bring this stored energy to a sport complex 20 kilometres away to heat a swimming pool and cool an ice-rink. WH thermal battery will substitute a gas boiler and a heat pump to deliver renewable heat and cold.</p> <p>The objective of this demonstration is to prove the technical and economic viability of WH technology as well as the relevance of the thermal recovery model with the GHG emission avoidance potential in substituting a gas boiler and a heat pump. To meet this goal, WH need to scale-up its technology from a 10kW prototype to a 1MW demonstrator (industrial full-scale thermal battery)</p> <p>WH is now ready to scale-up its technology with a dedicated team and strategic partners. Furthermore, the necessary actors involved have already expressed their intents and support for the project. Water Horizon applications and its objectives in the renewable heating and cooling fits perfectly with the Small Scale Project programme expectations.</p> <p>WH offers to large energy consumers, a unique renewable supply of hot or cold energy, enabling to reconcile industry and the environment without any additional cost.</p>
eM-Rhone	electroMethanol-Rhône	The eM-Rhône project will integrate several technologies for large-scale e-methanol production beyond the current state of the art. The project will combine renewable hydrogen

Acronym	Title	Description
		<p>production, carbon capture from an existing cement plant, and e-methanol synthesis. It aims to demonstrate an optimised synergy between these three mature building blocks to produce e-methanol. This will translate into a 99% relative greenhouse gas (GHG) emission avoidance compared to the reference scenario of methanol production from natural gas. In practice, 27 kilotonnes per year (kt/y) of renewable hydrogen are planned to be produced using 170 megawatt (MW) Proton exchange membrane (PEM) electrolysers, powered with renewable energy. The electrolysers will combine different power purchase agreements that ensure additionality and traceability of the renewable power, while providing flexibility of electrolysis for the e-methanol plant. In order to ensure a continuous e-methanol production, the project will store hydrogen both in gaseous form and, innovatively, in solid state using metal hydrides.</p> <p>Meanwhile, full-scale carbon capture is planned to be implemented at the Le Teil Blanc cement plant of Larfage Cement, capturing 195 kt/y of concentrated CO<sub>2</sub> through an innovative cryogenic technology. As a result, the plant will synthesise 138 kt/year of e-methanol using the renewable hydrogen and the captured CO<sub>2</sub>. Innovative monitoring of these building blocks will enable complete synergy and provide a competitive and green solution to the chemical market. This solution is expected to result in 2.3 million tonnes of CO<sub>2</sub> equivalent of greenhouse gases avoided over the first ten years of operation.</p> <p>Strategically, the project will contribute to the Renewable Energy Directive and the REPowerEU communication in its goal to roll out renewables, reach a domestic production of renewable hydrogen of 10 million tonnes a year by 2030, and reduce fossil fuel consumption in industry and transport.</p> <p>The eM-Rhône project will provide the chemical industry and local off-takers with a sustainable low-carbon substitute for fossil fuels. It will thus have a strong impact on the Rhône basin region, creating more than 300 qualified jobs. The investment will further benefit local economy, promoting regional collaboration and supporting the competitiveness of the cement and chemicals industry. The project also has significant scalability potential to double its e-methanol production capacity through the creation of economies of scale and synergies in the context of the wider eM-France Elyse Energy program.</p>