

INNOVATION FUND SECOND CALL FOR LARGE-SCALE PROJECTS

LIST OF PROPOSALS PRE-SELECTED FOR A GRANTⁱ

No.	Project Acronym	Declared Sector	Location	Coordinator and Other Participants	Project Description ¹
1	HH Holland Hydrogen	Hydrogen	Netherlands	Rotterdam Hydrogen Company B.V. (NL) Shell Hydrogen Operations & Production B.V. (NL) Shell Nederland Raffinaderij B.V. (NL) Shell New Energies NL B.V (NL)	<ul style="list-style-type: none"> • Holland Hydrogen will foster the production, distribution and use of green hydrogen. • The project will supply a 400 MW electrolyser with Dutch offshore wind (200MW trial by 2025, 400MW by 2027). • The produced hydrogen will be supplied to the Pernis refinery via a new high capacity “open-access” 40 km pipeline to replace fossil derived hydrogen use in the production of road fuels. • Hydrogen will also be used to refuel heavy duty trucks across Belgium and the Netherlands. • Key innovations: breakthrough system scale; novel high current density electrolyser technology; learnings on contracting and operating an open access pipeline with intermittent hydrogen supplies; novel control systems for refineries with intermittent hydrogen supply and connections to use by-product oxygen and heat.
2	PULSE Pretreatment and Upgrading of Liquefied waste plastic to Scale up circular Economy	Chemicals	Finland	NESTE OYJ (FI)	<ul style="list-style-type: none"> • PULSE processes waste, residues and innovative raw materials into high-quality renewable fuels and sustainable raw materials for the polymers and chemicals industry. • The project chemically recycles plastics to combat the plastic waste challenge and to scale up the circular economy of plastics. The project target is to process over 1 Mt of waste plastics per annum from 2030 onwards. • PULSE will deploy a first-of-a-kind proprietary technology enabling the processing of large quantities of liquefied plastics waste into drop-in petrochemical feeds that can replace virgin fossil feeds, e.g.

¹ Based on the proposal’s abstract.

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					<p>naphtha, in the production of plastics and chemicals.</p> <ul style="list-style-type: none"> • Process integration into Neste's Porvoo refinery.
3	N2OWF Nordsee Two Offshore Windfarm Innovation Project	Wind energy	Germany	Nordsee Two GmbH (DE)	<ul style="list-style-type: none"> • N2OWF will construct and operate a 450 MW offshore windfarm. • The project will implement 15MW turbines, innovation in foundations (single piece monopiles, secondary steel concept, vibratory piling and green steel usage) and in hydrogen solutions (integration of a 4MW electrolyser on the offshore substation) in the German North Sea. • The integrated electrolyser will produce 337.5 t/y green hydrogen used for vessel fueling and emergency power. • The project supports the European SET plan by accelerating the increase in share of renewable energy and building an energy system that ensures affordable energy for all consumers by bringing down the Levelized Cost of Energy (LCOE), creating new opportunities for sustainable growth and green jobs in the EU.
4	FUREC Fuse, Reuse, Recycle	Hydrogen	Netherlands	RWE Generation NL B.V. (NL)	<ul style="list-style-type: none"> • FUREC will process non-recyclable solid waste streams and transform them primarily into hydrogen. • The process will first be deployed at Chemelot, Geleen, the Netherlands, a major chemicals cluster with excellent logistical connections for waste collection and potential for future carbon dioxide utilisation and storage. • The capacity of the FUREC project produces 54 kt per year of hydrogen and during the 10 year project duration over 3.6 million t CO₂eq is avoided versus current grey hydrogen production processes.
5	ReLieVe Recycling Li-ion Batteries for electric vehicles	Manufacturing	France	ERAMET SA (FR)	<ul style="list-style-type: none"> • ReLieVe offers an industrial scale response to Europe's major battery recycling and raw materials bottleneck. • The project will construct a Li-Ion recycling plant at the Dunkirk battery cluster for producing and refining black mass, providing access to a secondary source of battery raw material, located in Europe, with limited associated country or logistics risks.

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					<ul style="list-style-type: none"> The facility is a first-of-the-kind black mass recycling unit and will have a total treatment capacity of 50,000 tonnes of modules or scrap per year.
6	C2B Carbon2Business	Cement and lime	Germany	Holcim Deutschland GmbH (DE)	<ul style="list-style-type: none"> Carbon2Business will deploy a second generation oxyfuel carbon capture process at Holcim's Lägerdorf cement plant in Germany, capturing over 1 million t CO₂eq annually and provide it as a raw material for further processing into synthetic methanol. The capture technology will substitute combustion air with pure oxygen resulting in a CO₂-rich flue gas, which is dried, pressurized and purified in a subsequent Carbon Processing Unit and can fully eliminate the need for gas recirculation. For the CO₂ use, the oxyfuel cement plant will be integrated into the HySCALE100 project (pre-selected IPCEI hydrogen project in Germany, IPCEI Project Nr. 35) which will erect a 500 MW (first stage) and 2 GW (scale up) electrolyzer and a large-scale methanol synthesis plant as well as methanol to olefin route in the region.
7	BIOZIN Conversion of waste and residue BIOMass from Norwegian forestry and sawmills to advanced low carbon fuels for Zero emission transportation INdustry	Refineries	Norway	Biozin Holding AS (NO), Bergene Holm AS (NO), NORSKE SHELL AS (NO)	<ul style="list-style-type: none"> The BIOZIN project will build and operate the world's first commercial-scale drop-in biofuel production facility in Åmli, Norway. Shell's proprietary IH2 technology will convert forestry waste and offcuts from the sawmill industry alongside other waste into advanced second-generation biofuels (drop-in) and biochar (by-product). The BIOZIN plant will enable recovering up to 80% of the carbon present in the solid waste (26% conversion yield on mass basis) in light-hydrocarbon liquids that can be used as drop-in fuels. Biochar is the IH2 process' by-product, which will be burned to self-power the IH2 process (~16MW). The project contributes to sustainable forestry in Southern Norway, safeguarding raw material supply and creating an estimated 400 jobs along the value chain.

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8	RISE Rec Innovation at Sarreguemines Enterprise	Manufacturing	France	REC Solar Pte. Ltd. (Singapore), COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES (FR), REC Solar France (FR)	<ul style="list-style-type: none"> RISE will build a 2 GW per year PV module manufacturing plant in the north of France, producing innovative heterojunction (HJT) based technology (REC Revo). >22.5% module efficiency, up to 26% by 2030, 90% bifaciality, G12 wafer size, new generation equipment with high capability & throughput with 95% automation throughout the whole manufacturing line, compatibility with next generation tandem-cells technologies (e.g. HJT-Perovskite) Levellised Cost of Electricity (LCOE) reduction compared to Mono PERC (Passivated Emitter & Rear Cell) for the utility segment with 30-year operation time. LCOE reduction of 5-10%, depending on country and climate in Europe. Sustainable manufacturing through recycled Silicon Kerf, thinner Si, wafer and renewable powered factory.
9	ANRAV ANRAV-CCUS, an innovative stakeholder supported CCUS value-chain to realize the first CCUS-cluster in Eastern Europe, supporting the Balkan region to reach it's climate goals by 2030	Cement and lime	Bulgaria	Devnya Cement JSC (BG), PETROCELTIC BULGARIA EOOD (BG)	<ul style="list-style-type: none"> ANRAV has the ambition to be the first full-chain CCUS project in Eastern Europe, linking CO₂ capture facilities at the Devnya cement plant in Bulgaria, through an onshore and offshore pipeline system with offshore permanent storage in a depleted gas field in the Black Sea. The project will realise an economically feasible CCUS-cluster for Bulgaria and its adjacent regions in Romania and Greece, leveraging on the identified potential of CO₂ storage in the Galata depleted offshore gas field.
10	Coda Terminal Coda by Carbfix - a highly scalable, cost effective CO2 mineral storage hub	Other	Iceland	CARBFIX OHF (IS), Dan-Unity CO2 A/S (DK)	<ul style="list-style-type: none"> Coda Terminal will build a highly scalable onshore carbon mineral storage terminal with an estimated storage capacity of 880 million tonnes of CO₂. With an estimated storage cost of 13 €/tCO₂, the Coda Terminal will drastically reduce the cost and risks of CO₂ storage while also unlocking the >100,000 Gt global storage capacity of basalts. The

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					<p>Coda Terminal concept builds on the Carbfix technology, where captured CO₂ is dissolved in water and injected into basalt formations.</p> <ul style="list-style-type: none"> Dan-Unity CO₂, the first company solely dedicated to maritime transport of CO₂, will manage transportation to the Coda Terminal. Innovative solutions in low-pressure tank design and propulsion ensure a minimal transportation carbon footprint. Depending on the maritime distances, costs range from 24-34 €/tCO₂ with an optional premium of 6-9 €/tCO₂ for green fuel, which the project can source.
11	<p>AIR</p> <p>Production of sustainable methanol as raw material for chemical products by first-of-a-kind Carbon Capture and Utilization process integrated with world scale electrolysis unit</p>	Chemicals	Sweden	Perstorp Oxo AB (SE), FORTUM SVERIGE AB (SE), Sydkraft AB (SE)	<ul style="list-style-type: none"> Project Air will create a first-of-a-kind, large-scale, commercial and sustainable methanol plant using a Carbon Capture and Utilisation process for converting CO₂, residue streams, renewable hydrogen and biogas to methanol. By combining proven technologies in new innovative ways and integrating those into an existing chemical production plant, Perstorp will be the first chemical producer to use this integrated production concept and the first chemical producer to replace all fossil methanol for its European production plants (200,000 tons annually) with sustainable methanol, thus offering sustainable and affordable products downstream in the value chain. Perstorp will build the methanol plant, Fortum and Uniper will supply renewable hydrogen from a new electrolysis plant.
12	<p>HySkies</p> <p>HySkies: A partnership to develop Sustainable Aviation Fuel</p>	Refineries	Sweden	Shell New Energies NL B.V (NL), VATTENFALL AB (SE), LANZATECH INC (US)	<ul style="list-style-type: none"> HySkies will build a large-scale synthetic sustainable aviation fuel production facility in Sweden. The specific project objectives are: To realise and commission an electrolyser plant integrated in an operational environment. To install and operate a CO₂ capture facility at a Waste-to-Energy plant. To realise a synthetic sustainable aviation fuel facility on a large scale, producing sustainable aviation fuel as primary product.

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					<ul style="list-style-type: none"> To demonstrate the technical and economic viability of the integrated system of electrolysis, carbon capture, Gas Fermentation and Alcohol-to-Jet processes. To validate the techno-economic and environmental performance of the system and maximise impact and awareness through adequate exploitation, dissemination and communication.
13	ELYgator Kick-starting a renewable hydrogen value chain for industry and mobility: highly integrated, flexible large-scale 200MW water electrolyser producing renewable hydrogen and oxygen.	Hydrogen	Netherlands	Air Liquide Industrie (NL)	<ul style="list-style-type: none"> ELYgator 200 MW electrolysis project in Terneuzen (Netherlands) will produce 15,500 tonnes of renewable hydrogen per year. The goal of the project is to demonstrate an innovative and highly flexible large-scale electrolyser, fully sourced with renewable energy and fully integrated in the cross-border industrial basin. Flexible electrolyser dispatch will follow wind and solar power production. Thus, the plant will use more electricity when more is produced. This prevents grid congestion and contributes to grid stability, paving the way for more renewable power in electrical grids. The renewable hydrogen produced will be fully traceable along the supply chain, regulation-compliant and fuel cell-ready to supply hard-to-abate sectors in both industry and mobility.
14	NorthSTOR PLUS NorthSTOR+: Industrialising Green Optimised Li-ion Battery Systems for ESS	Manufacturing	Poland	NORTHVOLT POLAND SP. Z O.O. (PL), NORTHVOLT BATTERY SYSTEMS AB (SE)	<ul style="list-style-type: none"> NorthSTOR+ will deliver a manufacturing plant of innovative technology components providing short-term electricity storage by means of an electrochemical battery system. The “Voltainer” features a larger form-factor and more energy-dense High Nickel NMC cells than incumbent technologies. It is superior to state-of-the-art in terms of performance, safety, costs, modularity and flexibility, connectivity, traceability and life-cycle environmental impact. The estimated net benefit for the end-customer is a cost reduction of 16,9-18,8% per kWh. >90% of value of components and equipment will be sourced from European supply chain. The project will be delivered by Northvolt

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					Systems Poland sp zoo and Northvolt Systems AB and implemented in Gdansk and Tczew, Poland, and Stockholm.
15	IONFibre First-of-its-kind commercial plant producing new sustainable textile fibres applying novel green chemistry	Chemicals	Finland	METSA SPRING OY (FI)	<ul style="list-style-type: none"> • IonFibre will produce a new fibre to substitute existing textile fibres both in apparel and technical textile applications. • In comparison to the reference product, polyester fibre, the Kuura textile fibre saves 93% of greenhouse gas emissions. • Unlike in the commercial state-of-the-art solutions, the Kuura textile fibre production is integrated to a Metsä Group bioproduct mill, enabling the use of never-dried pulp made wood sourced from sustainably managed Finnish forests, and resulting in savings in electricity, heat and costs as well as improvements in the dissolution process. • The use of paper-grade pulp instead of dissolving pulp, like in current man-made cellulosic fibres (MMCF) plants, gives 28% higher efficiency from wood to product and allows for better scalability due to higher volumes of available raw material.
16	GO4ECOPLANET KUJAWY GO4ECOPLANET	Cement and lime	Poland	Lafarge Cement S.A. (PL)	<ul style="list-style-type: none"> • The GO4ECOPLANET project aims to create an end-to-end CCS chain starting from CO₂ capture and liquefaction at the Kujawy cement plant, transporting LCO₂ by train to the Gdansk terminal and shipping the LCO₂ to the offshore storage sites. • Air Liquide will act as technological provider bringing Cryocap technology adapted to direct capture of flue gas. <p>GO4ECOPLANET's objectives are to:</p> <ul style="list-style-type: none"> • be the first CO₂ negative cement plant; • kick off strategic decarbonisation infrastructure projects in the east of Europe as a first mover; • demonstrate an innovative and efficient electric-based carbon capture concept in a brownfield cement plant; • showcase a highly scalable CCS chain, replicable in cement plants to ensure EU's leadership in low-carbon cement.
17	CalCC	Cement and lime	France	Chaux et Dolomies du Boulonnais (FR),	<ul style="list-style-type: none"> • The CalCC project will capture the CO₂ emissions coming from exhaust gases, produced during the lime production (calcination)

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	First industrial-scale carbon capture for lime production integrated with shared pipeline transport of dense phase CO ₂ to coastal hub for shipping to geological storage in the North Sea			AIR LIQUIDE FRANCE INDUSTRIE (FR)	<p>process with Air Liquide’s Cryocap technology and storing them permanently offshore in geological formations.</p> <ul style="list-style-type: none"> • The proposed CCS project will cover the full CO₂ value chain from capture to geological storage passing through steps of shared pipeline CO₂ transport in dense phase, liquefaction and shipping. • Annually, around 610 kt-CO₂ will be permanently stored. This project will thus be an anchor project for the Hauts-de-France region and will pave the way for the development of a CO₂ Hub in the Dunkirk area. • The project innovates beyond the state-of-the-art through carbon capture for lime production, CO₂ transport, and synergies between hard-to-abate steel, cement and lime industries.

ⁱ The information provided is subject to the conclusion of an individual grant agreement between the project applicant and CINEA.