



Présentation du programme de travail 2024

Energie



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19/04/2023

Agenda



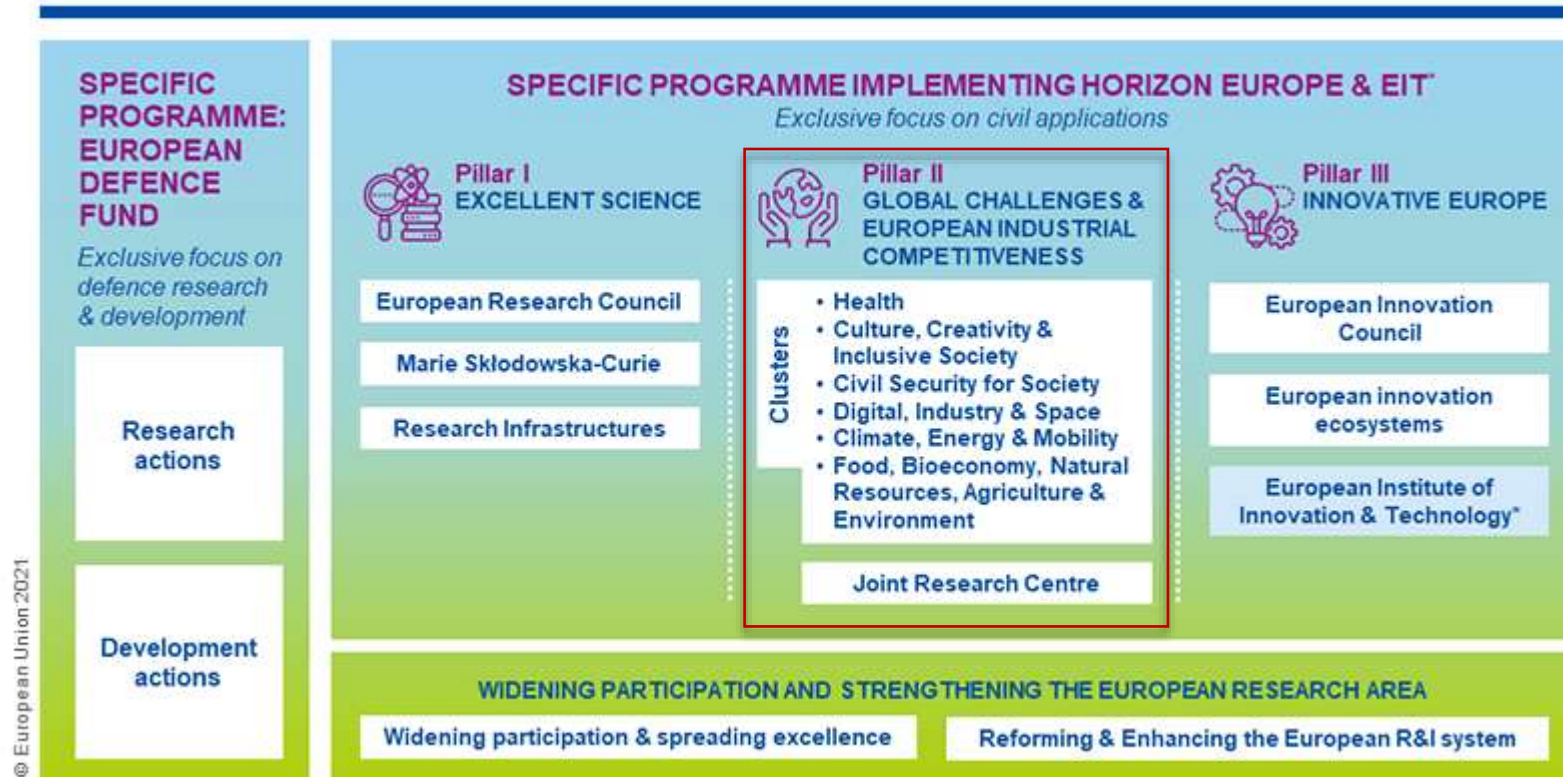
- ▶ Horizon Europe : qu'est-ce que c'est ?
- ▶ Présentation du programme de travail 2024
- ▶ Modalités pratiques
- ▶ Questions et réponses



Horizon Europe: le programme UE de R&I

- ▶ 95.5 milliards d'€ (2021-2027)
- ▶ Pour les entreprises, universités et acteurs publics dans leurs activités de **recherche et d'innovation**





HORIZON EUROPE



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme



Bon à savoir avant de se lancer

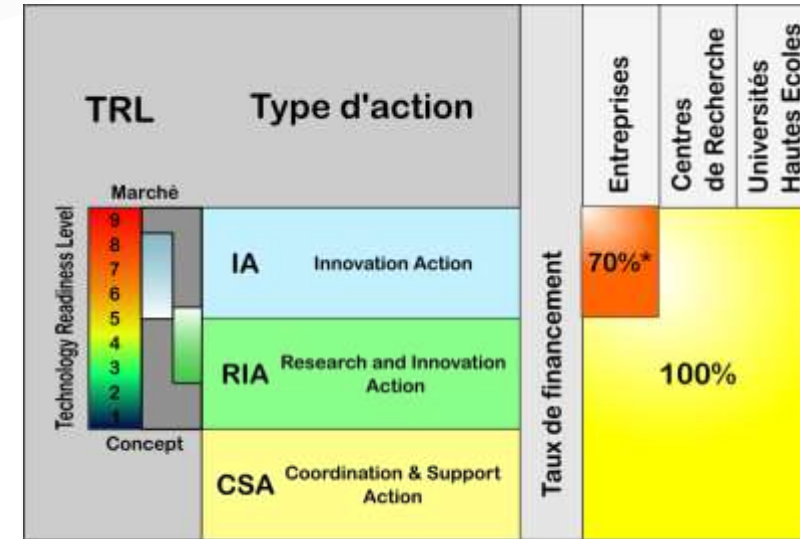
- ▶  Projets collaboratifs :
 - ▶ 3 entités ≠ issus de 3 pays ≠ (parfois exceptions)
 - ▶ 1 coordinateur, plusieurs partenaires
- ▶  Financement :
 - ▶ de 70 à 100%
- ▶  Pour qui ?
 - ▶ Toutes les entités juridiques : entreprises, universités, centres de recherche, administrations publiques – **y compris les start-ups !**
- ▶  Ouverture des appels à proposition :
 - ▶ de manière périodique
 - ▶ prochaines deadlines mars-avril 2023 > [outil « Appels ouverts et deadlines » du NCP-W](#)





Légende

- RIA → **TYPE D'ACTION**
- € → **BUDGET / PROJET**
- 6 M€ → **BUDGET / PROJET**
- 🕒 → **DEADLINE**
- 29.09.21 → **DEADLINE**
- 📄 4 → **NB PROJETS FINANCÉS**
- 🌡️ 3-5 → **TRL TECHNOLOGY READINESS LEVEL**





ENERGY

- ▶ **Destination 1:** Climate Science and responses for the transformation towards climate neutrality
- ▶ **Destination 2:** Cross-sectoral solutions for the climate transition
- ▶ **Destination 3:** Sustainable, secure and competitive energy supply
- ▶ **Destination 4:** Efficient, sustainable and inclusive energy use



ENERGY

► Destination 2: Cross-sectoral solutions for the climate transition





HORIZON-CL5-2024-D2-01-04: Emerging energy technologies for a climate neutral Europe

RIA



1.5-2.5 M€



18 Apr
2024



5 PROJECTS



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4

Scope

Develop new bottom-up technological solution with breakthrough potential across all parts of energy sector value chain and energy in transport sector.

- Energy distribution and transmission, Long-term energy storage, novel generation/conversion methods.

Excluded:

- renewable technologies in call D3-1-49 and renewable H2 production
- batteries and long-term electricity storage (call D3-2-17) and flow batteries
- Material research

Minimise environmental impact and address barriers in development (social acceptability, socioeconomic and livelihood issues, ...)

Expected outcomes

- Demonstrate proof of concepts of high risk/high return technologies for transition to climate neutral economy by 2050 and beyond
- Assessment of environmental, social and economic benefits to contribute to EU R&I
- Contribution to establishing a solid long-term dependable innovation in Europe ...



ENERGY

► Destination 3: Sustainable, secure and competitive energy supply





HORIZON-CL5-2024-D3-01-02: Low-power PV

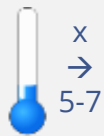
IA



3 M€

16 Jan
2024

2 PROJECTS



Scope

Photovoltaic energy harvesting in low light conditions (indoors, artificial or diffuse light) can be used to power sensors and other low-power electronics, combined with energy storage unit. Applications: domotics, remote monitoring, variable transmission applications and portable devices

- Validate novel and low-environmental impact PV materials, substrate and architectures, taking into account light intensity, spectrum and the application. PV system should be tailored to meet specific application power & energy requirements.

Proposals should include a clear definition of use case and life cycle considerations

Involving JRC can be sought (characterization, validation and certification). Pre-normative research. Test stability, lifetime and environmental issues, to be performed within European Solar Test Installation (ESTI) under ISO 17025 accreditation.

Expected outcomes

- Increase the potential of PV for low-power, low-irradiation applications (energy harvesting in low-light and/or artificial light conditions)





HORIZON-CL5-2024-D3-01-03: Demonstration of improved intermediate renewable energy carrier technologies for transport fuels

IA



10 M€

16 Jan
2024

2 PROJECTS



Scope

Demonstrate technologies (TRL5 already reached, pilot scale) for production of advanced intermediate bioenergy and synthetic renewable energy carriers from biogenic residues and wastes, microalgae, biogenic CO, CO₂ or nitrogen and renewable H₂ and all forms of renewable energy with reduced cost and GHG emissions, above the state of the art.

Finished quality should be suitable as intermediates to direct upgrade in existing infrastructures and/or purified and processed in existing chemical infrastructures

Proposals should include a clear definition of use case and life cycle considerations

Expected outcomes

- de-risking the technology, boost scale-up of flexible bioenergy & synthetic renewable energy carriers and contribute to their market uptake
- Respond to short- and medium- term need for renewable fuels in transport
- Increase renewable energy availability by providing new pathways of production, storage and use via renewable energy intermediates.





HORIZON-CL5-2024-D3-01-06: Innovative applications/integration of geothermal heating and cooling in industry

RIA



3 M€



16 Jan
2024



3 PROJECTS



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5

Scope

Explore new heating/cooling concepts for industry sector to decarbonize their production lines. Enable smart use of thermal grids: flexible supply of resources, adapted to different source temperature and varying demands. Position geothermal energy utilization (underground storage too) as a crucial pillar of energy transition of industry.

Consider cascading use of residual waste heat to neighbouring industries or built environment. Consider integration with heat pump systems, energy piles, energy sheet pile walls, use of alternative cycle working media.

These activities can be considered: industry, agriculture, underground thermal energy storage (UTES), innovative and multiple uses of geothermal energy + side-products, balneological systems, geothermal doublets.

Assess sustainability of heating/cooling applications. Negative impacts to the environment must be considered.

Expected outcomes

- Integration of geothermal heating/cooling in industry with high flexibility
- Increase industry, region, city and citizen trust and acceptability for geothermal energy





HORIZON-CL5-2024-D3-01-07: Development of hydropower equipment for improving techno-economic efficiency and equipment resilience in refurbishment situations

RIA



4 M€

16 Jan
2024

2 PROJECTS

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4-5

Scope

Develop hydropower equipment for improving techno-economic efficiency and equipment resilience in refurbishment situations of existing hydropower plants, outdated in terms of efficiency, power market interfacing, climate change adaptation or environmental sustainability (biodiversity).

- Equipment developed should not require substantial modification of hydraulic systems and implement circularity by design (low-friction and high resistance materials)
- Positively affect CAPEX&OPEX per KWh, be compliant with water quality and biodiversity improvement.
- Assess socio-economical impacts & environmental sustainability (incl. SDGs), circular economy impact on a life-cycle basis.

Expected outcomes

- Keep availability of existing hydropower fleet and increase potential of hydropower market (European leadership, energy sustainability, availability and cost)





HORIZON-CL5-2024-D3-01-08: Demonstration of sustainable wave energy farms

IA



18-20 M€

16 Jan
2024

2 PROJECTS

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8

Scope

Demonstrate at least 4 sustainable wave energy farms (minimum 2.0MW installed/farm) in full operational conditions for long periods, connected to the electricity grid. Farms must be composed of arrays of devices of the same type.

- One farm at least is expected to operate during 2 years within the project, 8 further on.
- Define industrial design and manufacturing processes, incl. supply chains, circularity of raw materials, sustainability, scalability, installations methods, transport, operation & maintenance, ...
- Demonstrate the technology at sea while respecting existing regulatory framework. Present an environmental monitoring plan, open-source and shared with EMODNET and the IEA OES environmental task.
- Clearly describe go/no-go conditions
- Contribute to BRIDGE initiative (2% of funding) and “Alliance for Internet of Things Innovation” (AIOTI) and other relevant initiatives.

Expected outcomes

- De-risk wave energy technology, increase availability and market confidence, increase knowledge and collect (public) data from pilot structures



HORIZON-CL5-2024-D3-01-10: Next generation of renewable energy technologies

RIA



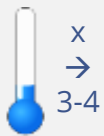
3 M€



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2024



9 PROJECTS



Scope

Develop new high-risk/high-return technologies for game changing renewable energy (e.g.: catalyst development, dedicated energy storage systems, integration of renewable energy technology into single energy generation system, heating&cooling systems, fuels production systems, solar driven chemical processes, hybrid electricity generation solutions between different renewable energy sources, direct utilization of renewable energy sources.)

Are excluded: hydrogen from electrolysers, fuel cells, material research covered under cluster 4 topics, batteries as covered in destination 2

Validate concepts up to TRL3-4, robust methodologies, consider transfer of developments in other sectors than energy.

Consider: lower environmental impact, better resource efficiency, socio-economical questions and regulatory framework. Assess impacts on a life-cycle basis.

Comparison with current commercial renewable energies/technologies.

Expected outcomes

- Accelerate transition to net-zero greenhouse gas emissions EU economy by 2050, with breakthrough and game changing research, reinforce long-term EU innovation.





HORIZON-CL5-2024-D3-01-11: AI Testing and Experimentation Facility (TEF) for the energy sector – bringing technology to the market

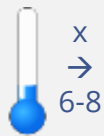
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5 M€

16 Jan
2024

3 PROJECTS



Scope

Develop large-scale reference testing and experimentation facilities (TEFs) dedicated to solve issues/improve solutions related to the energy sector through AI-based technologies.

Build on existing infrastructures & facilities, be open to all players: technology providers and end-users (co-creation). AI-TEF should bridge the gap between lab and market (in-depth AI testing before deployment).

AI-TEF should focus on testing AI-base technologies already validated in lab.

AI-TEF should optimise AI-based solutions for a greener, smarter, more resilient and flexible energy system (response to energy shocks, cyber-attacks, micro-grids development, ...), making use of digital twins of electricity grid at local level. Optimise energy grid distribution by integration of both (decentralized) supply and demand-side, data coming from buildings, local storage, electrical vehicles, ...

Expected outcomes

- Provide large-scale reference testing & experimentation facilities for AI-based technologies applied to the energy sector, at national or local level, for all European sites, as a long-term investment, with a self-sustainable business model.





HORIZON-CL5-2024-D3-01-12: Energy Management Systems for flexibility services

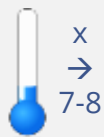
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5 M€

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2024

2 PROJECTS



Scope

Develop solution to aggregate flexibility from different users and energy management systems to develop interoperable solutions to optimize energy management systems and valorise flexibility in markets and balancing/congestion management services.

- Demonstrate with flexibility services on clusters of smart building and smart industries. Cooperate with TSOs and DSOs
- Include at least 3 different energy management systems for industry, 5 for buildings, with different technology providers (and different protocols, standards, ..)
- Include at least 2 aggregators to ensure standard-based solutions and avoid proprietary solutions.
- Include at least 1 home appliance producer in case of buildings (test data exchange)
- Contribute to BRIDGE initiative (2% of funding) and “Alliance for Internet of Things Innovation” (AIOTI) and other relevant initiatives.

Expected outcomes

- Contribute to better flexibility services on energy market through aggregation





HORIZON-CL5-2024-D3-01-13: DC and AC/DC hybrid transmission and distribution systems

RIA



~ 6 M€



16 Jan
2024



2 PROJECTS



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4-5

Scope

Implement activities in (1), practically demonstrate (2):

1) R&I, methodologies and tools of following sub-topics (can be mixed):

- DC-AC/DC hybrid systems design & planning: AC/DC transnational hybrid power system (eg: HVDC offshore systems, multi-vendor multi-energy integration, transient & dynamics, security, ...)

- AC and DC Grid forming capability: Functional requirements and demonstration of grid forming capabilities (eg: HV AC/DC: offshore, MV/LV AC/DC: islanded operations, HVDC, MVDC, LVDC grid forming capabilities, ...)

- DC distribution & microgrids: modelling systems including different topologies (RED, Evs, storage and loads, planning design of intermediate MVDC between HVDC and AC/DC LV local distribution networks)

2) Demonstrate with at least 3 different pilots in different EU MS/AC (collaboration with Mediterranean Region encouraged)

Expected outcomes

- Demonstrate top-down system orchestration throughout the future pan-European AC/DC hybrid system architecture and technological field demonstrations, develop collaborations between key stakeholders



HORIZON-CL5-2024-D3-01-16: Demonstration of innovative pumped storage equipment and tools in combination with innovative storage management systems

Scope

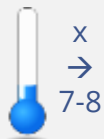
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8 M€

16 Jan
2024

1 PROJECT



Demonstrate innovative pumped storage equipment and digital tools linking the mechanical storage with innovative storage management systems. Hybridisation with storage technologies to fully exploit potential of pumped hydro storage can be involved. Solutions should deliver innovative hydropower technologies adapted to unconventional storage schemes (e.g.: low-head location or former coal mines, harsher conditions (salt water) while minimizing CAPEX,OPEX and improving life time and circularity of components. Digital tools implied in Storage Management System should consider current developments in energy storage, markets, variable renewable production, effect on climate change and novel approaches to energy.

Highest standards of environmental sustainability should be followed, Citizens and communities should be involved.

Expected outcomes

- Increase availability of hydropower storage and solutions, and EU leadership
- Enhanced sustainability of innovative hydropower storage technologies, reduced cost and improved efficiency.



HORIZON-CL5-2024-D3-01-17: Development and integration of advanced software tools in SCADA systems for High, Medium and Low voltage AC/DC hybrid systems ▶

Scope

IA



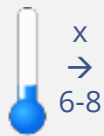
~ 6 M€



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2 PROJECTS



Implement activities in (1), practically demonstrate (2), recommendation (3):

1) Develop methodologies, technologies, algorithms, software tools for 3 activities on following sectors:

- Stability compatibility analysis between AC/DC (stability, grid forming) from multiterminal HVDC systems, analysis and control of mixed hybrid AC/DC grids, scalable and flexible framework for multivendor hybrid AC/DC systems, vendor independent hybrid DC/AC network SCADA, stability estimation, power, safety and reliability monitoring, cyber security and resilience.

2) Demonstrate with at least 2 different pilots in different EU MS/AC

3) Recommendations for changes in grid codes, to ease deployment and exploitation

Expected outcomes

- Demonstrate operational stability of hybrid AC/DC multiterminal power systems



HORIZON-CL5-2024-D3-02-01: Digital tools for CSP and solar thermal plants

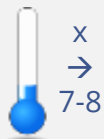
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3 M€

21 Jan
2025

2 PROJECTS



Scope

Innovative applications of digital tools and/or application of innovative digital tools in CSP, concentrated solar thermal heat and/or cold and/or non-concentrated solar thermal heat/cold plants. Any type of application (component control, self-diagnostic, digital twins, ancillary services to power systems, ...)

Bring and demonstrate measurable benefits of the digital tools in terms of operation, maintenance and flexibility of the plant.

Where applicable, the digital tools should support night baseload generation from thermal energy storage.

Where applicable, a demonstration of the tools should span for at least 6 months covering all possible direct solar incidence.

Expected outcomes

- Improved performance of installations (CSP or (non-)concentrated solar thermal heat/cold plants, reduced operation and maintenance cost of installations
- reinforced role of CSP in the power market, reduced GHG emissions
- achievement of CSP targets in the Strategic Energy Technology Plan



HORIZON-CL5-2024-D3-02-02: Development of next generation synthetic renewable fuel technologies

Partnership



RIA



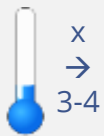
4 M€



21 Jan
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3 PROJECTS



Scope

Development of next generation technologies for the production of novel synthetic renewable liquid and gaseous fuels from CO₂ and/or renewable carbon, nitrogen, hydrogen or their compounds, from renewable energy. Synergies from other renewable energy technologies possible. Focus on high conversion & process efficiency, and carbon neutrality from the overall production. Improve competitiveness and GHG emissions in the process.

Production pathways from renewable H₂ or renewable H₂ ionic compounds or all form of renewable energy are in scope. Consider use in fuel cells for electricity production.

Assess sustainability and GHG emissions basing on a Life Cycle Analysis.

Collaborate with Clean Hydrogen Joint Undertaking when relevant, with participation to the TRUST database and hydrogen observatory

Expected outcomes

- Increase availability of disruptive emerging synthetic renewable fuel technologies
- Accelerate the readiness of cost-effective and highly performing synthetic renewable fuels
- Reinforce European scientific basis & European technology export potential



HORIZON-CL5-2024-D3-02-03: Development of smart concepts of integrated energy driven bio-refineries for co-production of advanced biofuels, bio-chemicals and biomaterials

Scope

RIA



3.5 M€



21 Jan
2025



2 PROJECTS



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Development of zero-waste, carbon neutral/negative emission energy efficient biorefinery concepts, for enabling the production of low-cost next generation advanced biofuels, through co-production of added value bio-based products and bioenergy (e.g.: conversion through highly-circular processes of biogenic waste, algae, aquatic biomass through chemical, biochemical, thermochemical, ... processes) .

Assess feedstock cost supply at regional and local level and get support from enabling technologies (digitalisation) to help mobilising the feeds.

Assess socio-economic and environmental sustainability, circularity on a Life Cycle Analysis basis. Evaluate economic feasibility and scale-up

Cost of the advanced biofuels should be on par with marketed biofuels or be competitive to the fossil fuels equivalents.

Cooperation with Mission Innovation countries expected.

Expected outcomes

- Expand the portfolio of cost-effective advanced biofuels through energy-driven refineries. Optimise resources' efficiency, reduce cost and derisk the production
- Reinforce European scientific basis & European technology export potential

Cooperation



link with topics:
HORIZON-CL6-
2023-
ZEROPOLLUTION



Wallonie
recherche
SPW





HORIZON-CL5-2024-D3-02-04: Critical technologies for the future ocean energy farms

RIA



4 M€



21 Jan
2025



2 PROJECTS



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Scope

Develop projects in at least one of these scopes (with DNSH environmental principle):

1-New sustainable materials resistant to heavy loads and corrosion, and bio-fouling management (polymers, composites, concrete, hybrid material combinations, ...). Demonstrate potential benefits. Advance the design of mooring and connection of electrical power systems, to lower installation costs, maintenance and scale-up.

2-Instruments for condition monitoring and predictive maintenance. Collaborate with existing work on off-shore wind technologies, and share results

3-AI technologies application on simulations on ocean energy systems. Use of big data, machine learning on data streams, digital twins on model design (installation, operation, decommissioning, ...)

Expected outcomes

- Increase knowledge and performance of the ocean energy technologies
- Reduce the LCOE





HORIZON-CL5-2024-D3-02-05: PV-integrated electric mobility applications

Scope

Integrate PV for improved features of electric mobility, not only for emissions reduction but also aesthetics and user experience.

1- Vehicle Integrated PV (VIPV) Integrate different cell, interconnection and encapsulation technologies (with high efficiency under bad lighting conditions), with flexible design (shape, curvature, aesthetics, ...) and antifouling properties to bring significant part of the vehicle energy under various climatic conditions. Consider environmental friendliness, safety/repair/maintenance, life-time/resistance/reliability questions.

Multidisciplinary consortium, including at least one vehicle manufacturer.

2- Demonstrate PV Charging Stations able to provide a significant part of the charging demand despite the PV intermittence while best use of public energy grid.

Plans for exploitation, business case, upscaling and deployment and results dissemination.

EC JRC can be involved. Tests shall be performed within European Solar Test Installations (ESTI) (ISO17025 standards).

Expected outcomes

- New market opportunities for VIPV
- Reduce usage of electric grid, increased vehicle range, better efficiency and climate neutrality

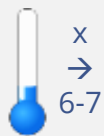
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7 M€

21 Jan
2025

2 PROJECTS





HORIZON-CL5-2024-D3-02-06: Innovative, Community-Integrated PV systems

IA



5 M€

21 Jan
2025

2 PROJECTS



Scope

Demonstrate a community-aggregated system with a portfolio of producers+users. → support energy democracy, reduce energy poverty, expand cooperative solutions (P2P).

- planning, plant optimization tools, advanced criteria to increase yield and economical performance of PV systems in the built environment.
- collective solutions (self-consumption schemes, integration with storage, interaction with electric mobility, ...) → flexibility
- Effective and secure protocols and communication (reliability, cybersecurity) (use of smart power electronics, sensors and intelligent sensors)

Expected outcomes

- Increase profitability and penetration of PV systems in renewable energy communities
- Engage citizens actively in the clean energy transition, especially through uptake of energy cooperatives and decentralized platforms.





HORIZON-CL5-2024-D3-02-08: Minimisation of environmental, and optimisation of socio-economic impacts in the deployment, operation and decommissioning of offshore wind farms

RIA



5 M€



21 Jan
2025



2 PROJECTS



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Scope

Develop and promote use of modelling tools and holistic assessment of impact of wind installations on environment and on local communities and integrate results in for deployment and decommissioning of offshore wind farms.

- Action 1: Develop planning tools to minimize overall life-cycle impact of floating and fixed-bottom wind farms (noise, visual impact, environmental effects). Use environmental impact studies' data, inventory data of the components from industry. Develop easy to customize tool, delivering simple and measurable criteria assessment data.
- Action 2: Develop innovative and cost-effective solutions (processes, planning tools, supply chains, construction materials, ...) for all phases of the life-cycle of offshore wind farms, especially for the installation, construction and decommissioning phases, to reduce as much as possible environmental impact during these phases.

Expected outcomes

- Enhanced sustainability of offshore wind farms and large-scale production sites
- Improved understanding of impacts of windfarms throughout their lifetime and innovative/cost-effective solutions for installation/decommissioning of wind farms minimising their environmental impact.





HORIZON-CL5-2024-D3-02-09: Demonstrations of innovative floating wind concepts

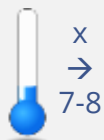
IA



15 M€

21 Jan
2025

2 PROJECTS



Scope

Accelerate cost-effective construction and deployment of floating wind farms throughout Europe and lower their overall cost.

- Design all the aspects of a full floating system and its execution. (space needed in ports, supply chain, ...)
- Demonstrate innovative floating platforms in real conditions (12-24 months) with a horizontal axis wind turbine (4MW+) or vertical axis (2MW+). Collect operational data, while connected to the grid. Develop and implement pilot projects.

Environmental regulatory framework should be followed. Define a clear go/no-go based on techno-economic assessment, engineering plans, KPIs, ... Demonstrate practical implementation (permits, certification, schedule).

Exploitation plans and dissemination plans of results.

Contribute to BRIDGE initiative (2% budget) and to AIOTI (Alliance for Internet of Things Innovation) or other relevant activities

Expected outcomes

- Increased knowledge about all aspects of floating wind farms. Improved technologies.
- Demonstrated technologies, reduced LCoE. Better skills and value chain about EU offshore wind turbines.



HORIZON-CL5-2024-D3-02-10: Market Uptake Measures of renewable energy systems

CSA



2 M€



21 Jan
2025



4 PROJECTS



Scope

Develop solutions to foster uptake of renewable energy systems, either for the entire market or focusing on a specific energy sector (electricity, heating, cooling, renewable fuels). Proposal can be specific to a geographical region or (peri-)urban area. Issues related to acceptability, ecologic/economic/social aspects are to be addressed.

Local challenges can be addressed but needs potential to wider reapplication. Solutions are expected to be long-term. Relevant stakeholders must be involved (public authorities, communities, market actors, SSH actors, ...)

Expected outcomes

- Facilitated wider uptake of renewable energy systems (industry/residential sectors) for increased share of renewable in the 2030 and beyond consumption
- Open-source validated tools and methodologies for policy makers & stakeholders for developing RES and analysing market dynamics
- Improve social acceptability of renewable energy facilities and installations
- Contribute to market development and respective financial frameworks able to bring large shares or renewable in the energy market.





HORIZON-CL5-2024-D3-02-11: CCU for the production of fuels

Scope

Development of energy-efficient, environmentally/economically viable CO₂ conversion technologies, including energy storage and/or displacement of fossil fuels that allows for upscaling in the short to medium term.

Ambitious but achievable targets for energy requirements in the process (inc. catalytic conversion), production costs and yields. Results will be monitored in the implementation. Include the CO₂ mitigation calculation from Innovation Fund GHG emissions avoidance calculation methodology.

Societal readiness of the technologies must be considered with relevant stakeholders (authorities, civil society organisations, SSH actors, ...)

- Exploitation/deployment plans, business cases and dissemination plans of results.

Join EU CCUs knowledge sharing network. If relevant, collaborate with Clean Hydrogen Undertaking.

Expected outcomes

- Promotion of CO₂ capture as fossil fuels replacement and seasonal energy storage.
- Improved technology to lower the energy required in the conversion process
- New markets for developed solutions. Integration of the CO₂ capture to industry (symbiosis)

IA



7 M€

21 Jan
2025

2 PROJECTS

4-5
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6-7



HORIZON-CL5-2024-D3-02-12: DACCS and BECCS for CO2 removal/negative emissions

DACCS: Direct Air Carbon Capture and Storage
BECCS: BioEnergy Carbon Capture and Storage

IA



5-7 M€



21 Jan
2025



3 PROJECTS



Scope

Further development of those technologies to fight climate change. The potential technologies require major breakthroughs (enhanced oil recovery not considered).

Societal readiness of the technologies must be considered with relevant stakeholders (authorities, civil society organisations, SSH actors, ...)

- Exploitation plans, business cases and dissemination plans of results.

Exchanges with EU ETS Innovation Fund and EU Catalyst partnership, Mission Innovation countries, Carbon Dioxide Removal Mission, EU CCUs knowledge sharing network

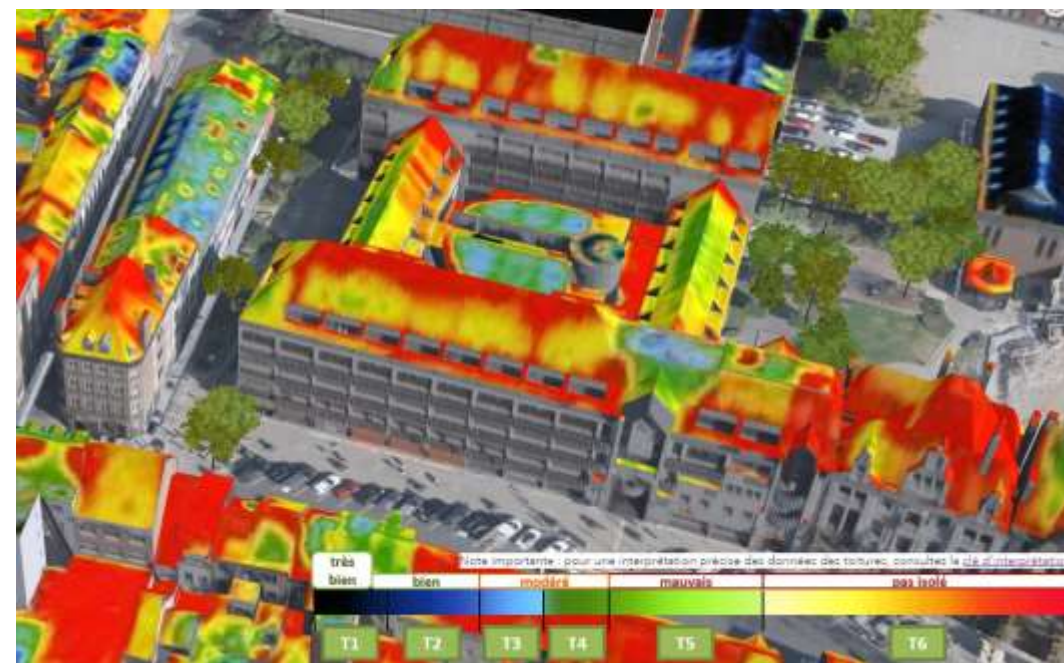
Expected outcomes

- Improve materials/develop new materials for DACCS & BECCS
- Address barriers to incorporation of DACCS/BECCS in existing CCUs concepts
- Make DACCS/BECCS technologies viable for EU carbon neutrality, increase TRL and reduce cost of the technological options.



ENERGY

► **Destination 4:** Efficient, sustainable and inclusive energy use





HORIZON-CL5-2024-D4-01-01: Low-disruptive renovation processes using integration of prefabricated solutions for energy-efficient buildings

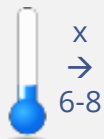
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~5 M€

18 Apr
2024

2 PROJECTS



Scope

Low-disruptive renovation processes, using quick&easy to apply prefabricated modules can increase renovation rate in the European building stock. Renovation process should cover the whole process from the design, manufacturing, installation, compliance checking and end-of-life.

- Develop renovation processes for NZEB performance through prefabricated modules.
- Reduce quality gaps between off-site manufacturing and on-site deployment
- Reduce annoyances from installation and unavailability of the buildings.
- At least 3 demonstrations with different building categories (residential/tertiary) and various building typologies

Expected outcomes

- Reduce on-site construction activities to 1-2 days/building unit, cost reduction: -25% vs conventional techniques.
- Significant reduction of noise/dust/waste & disturbances
- Improved indoor air quality, comfort
- Reduced impact on environment. Better resilience to disruptive events.





HORIZON-CL5-2024-D4-01-02: Smart grid-ready buildings

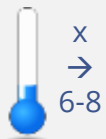
IA



~5 M€

18 Apr
2024

2 PROJECTS



Scope

Improve interoperability of buildings with energy carriers (electric grid, heating networks, ...) and non-energy services (mobility,...).

- Develop: interfaces Building-networks (electricity, heating, H₂, ...), synergies between on-site energy storage&on-site renewable sources, data exchange, energy balancing, storage, generation. All with best user-friendliness and comfort to end-users.
- At least 3 pilots in 3 different countries, involve local market (SMEs). Demonstrate economic viability for all actors involved.
- Contribute to BRIDGE initiative (2% budget) and to AIOTI (Alliance for Internet of Things Innovation) or other relevant activities

Expected outcomes

- Improved integration of building to the energy grid (incl. mobility services), flexibility and resilience (storage at building level, ...).





HORIZON-CL5-2024-D4-02-01: Industrialisation of sustainable and circular deep renovation workflows

IA



~5 M€

18 Apr
2024

2 PROJECTS

x
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6-8

Scope

Increased building renovation rate & depth require new workflows.

- Innovative approaches for industrial deep circular renovation covering the whole workflow (design, off-site prefabrication, installation, maintenance, operation and end of life). Select most efficient techniques for fast and broad deployment throughout Europe
- Involve any innovative/existing process/technology (materials, digital tools, ...) with NZEB energy performance, indoor comfort and attractive cost for owners/investors.
- Demonstrate seamless integration with digital tools (BIM, digital twins, ...)
- At least 3 demonstrators with different building typologies
- Contribute to Build4People (partners & network of innovation clusters)

Expected outcomes

- Near zero-energy performance renovation processes, high construction quality
- Renovation with reduction of at least 30% waste, 25% cost, 30% work (1-2days/building)
- New innovative business models, increased renovation rate
- Improved comfort, indoor air quality

Partnership



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SPW





HORIZON-CL5-2024-D4-02-03: BIM-based processes and digital twins for facilitating and optimising circular energy renovation

IA



~5 M€

21 Jan
2025

2 PROJECTS

x
→
6-8

Partnership



Scope

- Better energy efficiency and sustainability in building sector, through solutions based on **B**uilding **I**nformation **M**odelling and Digital Twins supporting the full building life cycle.
- Support optimal, reversible, adaptable designs for energy efficiency, circularity, sustainability. Allow to track building materials for cost-effective deconstruction&reuse.
- Integrate monitoring data (sensors, IoT) into interoperable digital twin to optimize building performance monitoring, management and preventive maintenance.
- Ease of use and cost effectiveness especially for SMEs
- At least 2 demonstrations on sets of real-life residential/no-residential building construction and renovation projects. At least 2 countries with different climate conditions. Involve local & regional value chains (SMEs)
- Contribute to Build4People (partners & network of innovation clusters)

Expected outcomes

- Reduced buildings construction & renovation costs/increased material reuse&recycling
- Better data interoperability with existing BIM & Digital Twins, broader applications, in particular for SMEs
- Better building performance (sustainability, energy use, comfort, ...)



HORIZON-CL5-2024-D4-02-04: Design for adaptability, re-use and deconstruction of buildings, in line with the principles of circular economy

Scope

- Validate construction/renovation techniques based on integration of innovative tools, products, techniques, processes and methods, facilitating deconstruction&reuse.
- Adaptability/reversibility to changing uses
- Improve reuse of construction elements/products from existing buildings, facilitate recycling otherwise
- Develop building elements/products able to disassemble/reuse, including CO2-storing materials, long-lived biobased, innovative lower emission materials/aggregates. All building components. Rooted in local/regional value chains in a participative approach.
- At least 2 demonstrations on real-life residential/no-residential environments. At least 2 countries with different climate conditions. Involve local & regional value chains (SMEs)
- Deliver guidance, recommendations for regulations/standardisation. Strong dissemination plan
- Contribute to Build4People (partners & network of innovation clusters)

Expected outcomes

- Improve adaptability of buildings to new uses, extend their service life, reuse/recycling
- Increase awareness on best practices for design for adaptability, reuse and deconstruction

RIA



4 M€



21 Jan
2025



2 PROJECTS



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5-6

Partnership



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HORIZON-CL5-2024-D4-02-05: Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

Scope

- European building stock needs to be climate-neutral, resilient to climate change and adaptable to societal changes & needs. Every actors needs to communicate together.
- Develop digital solutions to facilitate participative design and planning through visualization (VR/AR), analysis and engagement with data from users & citizens.
- Develop digital solutions to analyse and model various scenarii of building renovation. Analyse impacts on energy use, citizen health/wellbeeing, provision for electric mobility, impacts on climate and environment, ...
- Address climate neutrality/resilience aspects, build on existing tools and recognized standards, Engage citizens, Facilitate data exchange and take into account minorities and vulnerable persons.
- At least 3 demonstrations on real-life urban development projects
- Contribute to Build4People partnership +New European Bauhaus Community

Expected outcomes

- Greater engagement of ends users and citizens of the impacted urban context
- Greater engagement/respect of users/citizens, acceptability & uptake of energetic renovation
- Enhanced climate change adaptation & resilience in built environment.

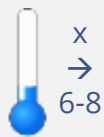
IA



5 M€

21 Jan
2025

2 PROJECTS



Partnership



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NOS SERVICES



Informer

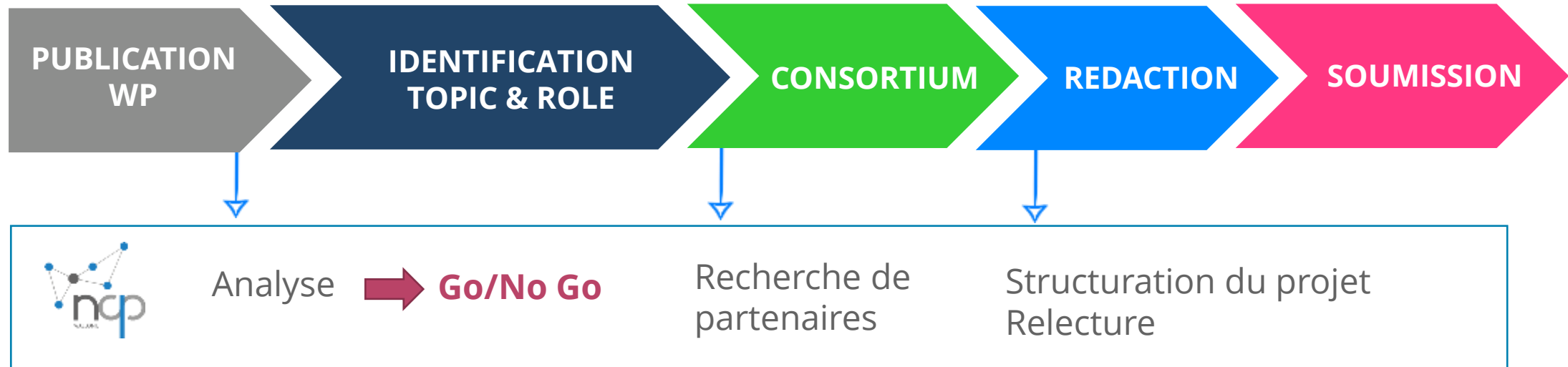


Accompagner



Connecter

Etapes pour rédiger un projet UE



Trouver l'appel/le topic adéquat

- ▶ Info-days de la Commission européenne;
- ▶ [Outil en ligne 'Appels ouverts et deadlines'](#);
- ▶ Workshops & Newsletters du NCP Wallonie;
- ▶ **Contactez nos conseillers !**



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Thematic categories: Health, Industry, Investments (EIC - EIC - EIC), Mobility, Security

Profile card for **Jean-Jacques Lemaire**, Responsable de ce secteur, with contact information: COORDONATEUR, 0478 20 20 20, j.lemaire@ncp-wallonie.be

Les appels d'offre ouverts pour 2023-2024

Liste des appels ouverts Mobility 2023-2024

Topic ID	Topic + lien	Type d'appel	Deadline	Conseiller	Sec Stage
HORIZON-CLS-2023-05-01-18	Advanced transport emissions reducing networks	Cluster 5	26/04/2023	Jean-Jacques Lemaire	
HORIZON-JTI-CLEANH2-2023-01-07	Hydrogen use by an industrial cluster via a local pipeline network	Clean Hydrogen Partnership	18/04/2023	Thomas Chabouat	
HORIZON-JTI-CLEANH2-2023-02-01	Large-scale demonstration of underground hydrogen storage	Clean Hydrogen Partnership	18/04/2023	Thomas	
HORIZON-JTI-CLEANH2-2023-02-03	Pre-formative research about the conceivability of transmission (on and) steel with hydrogen and development of reduction techniques	Clean Hydrogen Partnership			
HORIZON-JTI-CLEANH2-2023-02-03	Multi-materials overview for LH2 storage tanks	Clean Hydrogen Partnership			
HORIZON-JTI-CLEANH2-2023-02-04	Demonstration of high pressure (500-700 bar) supply chain	Clean Hydrogen Partnership			
HORIZON-JTI-CLEANH2-2023-02-05	Demonstration of LH2 HRG for Heavy Duty applications	Clean Hydrogen Partnership			
HORIZON-JTI-CLEANH2-2023-03-01	Real environment demonstration of Non-Road Mobile Machinery (NRMM)	Clean Hydrogen Partnership			
HORIZON-JTI-CLEANH2-2023-03-02	Development of a large fuel cell stack for marine applications	Clean Hydrogen Partnership	18/04/2023	Thomas Chabouat	
HORIZON-JTI-CLEANH2-2023-03-03	Ultra-low NOx combustion system for aviation	Clean Hydrogen Partnership	18/04/2023	Thomas Chabouat	
HORIZON-JTI-CLEANH2-2023-04-01	Development and validation of high power and energy dense fuel cell systems ready to use on industrial scale in hydrogen	Clean Hydrogen Partnership	18/04/2023	Thomas Chabouat	
HORIZON-JTI-CLEANH2-2023-04-02	Research on fundamental combustion issues: flame velocity and structure, pathways of emissions formation for hydrogen and suitable blends of hydrogen, including ammonia	Clean Hydrogen Partnership	18/04/2023	Thomas Chabouat	
HORIZON-JTI-	Retrofiting of existing industrial sector natural gas furnaces/boilers	Clean	18/04/2023	Thomas	

Funding & tender opportunities

Horizon Europe - Research and Innovation - Horizon Europe - Horizon Europe - Horizon Europe

Project: Demonstration of high pressure (500-700 bar) supply chain

Topic ID: HORIZON-JTI-CLEANH2-2023-02-04

Programme: Horizon Europe Research Programme (H2020)

Call: HORIZON-JTI-CLEANH2-2023-02-04



Start of work: 18/04/2023, 18 September 2023

Deadline (first single step): 31 January 2023

Deadline (last): 14 April 2023 (13:00 Brussels time)



Chercher des partenaires

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Diffuser son profil

One Page Expertise

Organisation

Topic

Contribution au projet/valeur ajoutée



ONE PAGE EXPERTISE DESCRIPTION

The aim of this document is to introduce your organisation to potential project leaders. Since there are hundreds of such descriptions circulating throughout Europe, please keep it short, concise and precise so potential project coordinators can quickly assess if your contribution would be useful. This document does not aim to provide an extensive overview of your activities, but to show in a few words your added value relevant to a specific topic or group of topics. **Please fill in one form per field or research/expertise.**

INFORMATION ABOUT THE EXPERT

ORGANISATION	
ADDRESS	
TYPE OF PARTNER	SME, University, Research Centre, Large Company, Public Administration, Association, other
WEBSITE	
CONTACT PERSON	
EMAIL	
TELEPHONE	
POSITION	
DATE OF PUBLICATION	

EXPERTISE OVERVIEW

TOPIC(S) OF INTEREST:
Topic(s) code and title – maximum 3 different topics

HEADLINE:
1 line general description of your general expertise

POTENTIAL CONTRIBUTION:
Please describe here the specific knowledge, technology or other contribution that your organisation could provide to add value to a project. You are encouraged to include references to relevant publications, patents or former projects, in particular European projects (FP7, H2020 or others).

Please take into account that this document will be the base to convince a key player to invite you in his consortium:

- highlight your strengths:
- be persuasive



Questions ?

Questions?

Réponses



Merci pour votre attention

Retrouvez-nous sur ncpwallonie.be

Jean-Jacques Lemaire : jean-jacques.lemaire@ncpwallonie.be



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