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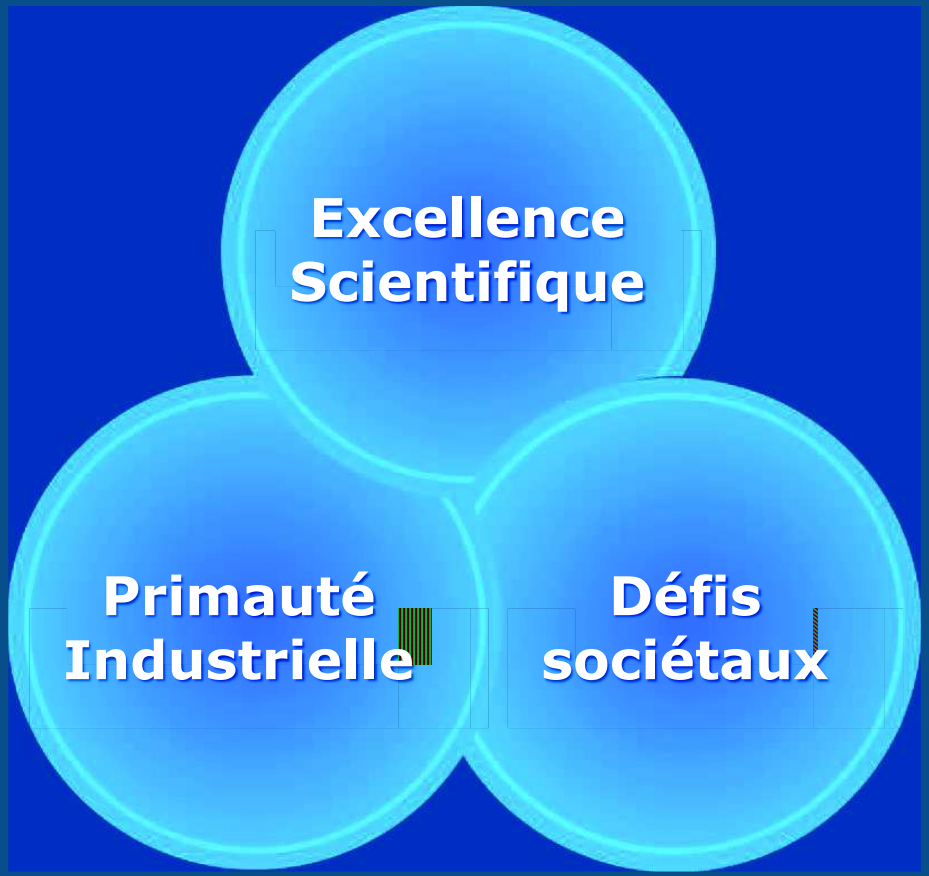
HORIZON 2020

Programme-cadre européen pour la recherche et innovation 2014-2020

Les priorités R&I à travers du programme H2020

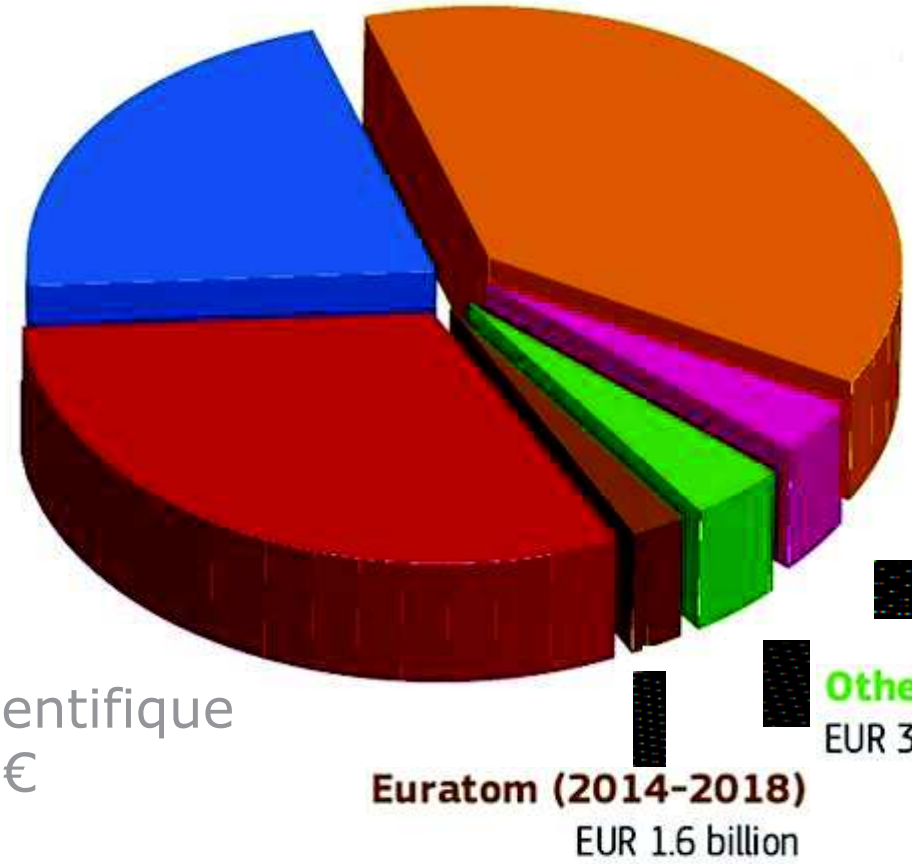
HORIZON 2020

Trois piliers



H2020 - Le budget de 77 milliards € sur 7 ans

Primauté
Industrielle
17 Milliards €



Défis sociétaux
29.7 Milliards €

Excellence Scientifique
24.4 Milliards €

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L'excellence scientifique (€ million)

Conseil européen de la recherche (ERC) Travaux de recherche exploratoire	**13 095**
Technologies futures et émergentes Coopération pluridisciplinaire sur les nouvelles et futures technologies	**2 585**
Actions Marie Skłodowska-Curie(MSCA) Développement de la carrière de chercheurs	**6 162**
Infrastructure de recherche *(aussi e-infrastructure)* Accès à l'infrastructure la plus à la pointe de la technologie	**2 390**

La primauté industrielle (€ million)

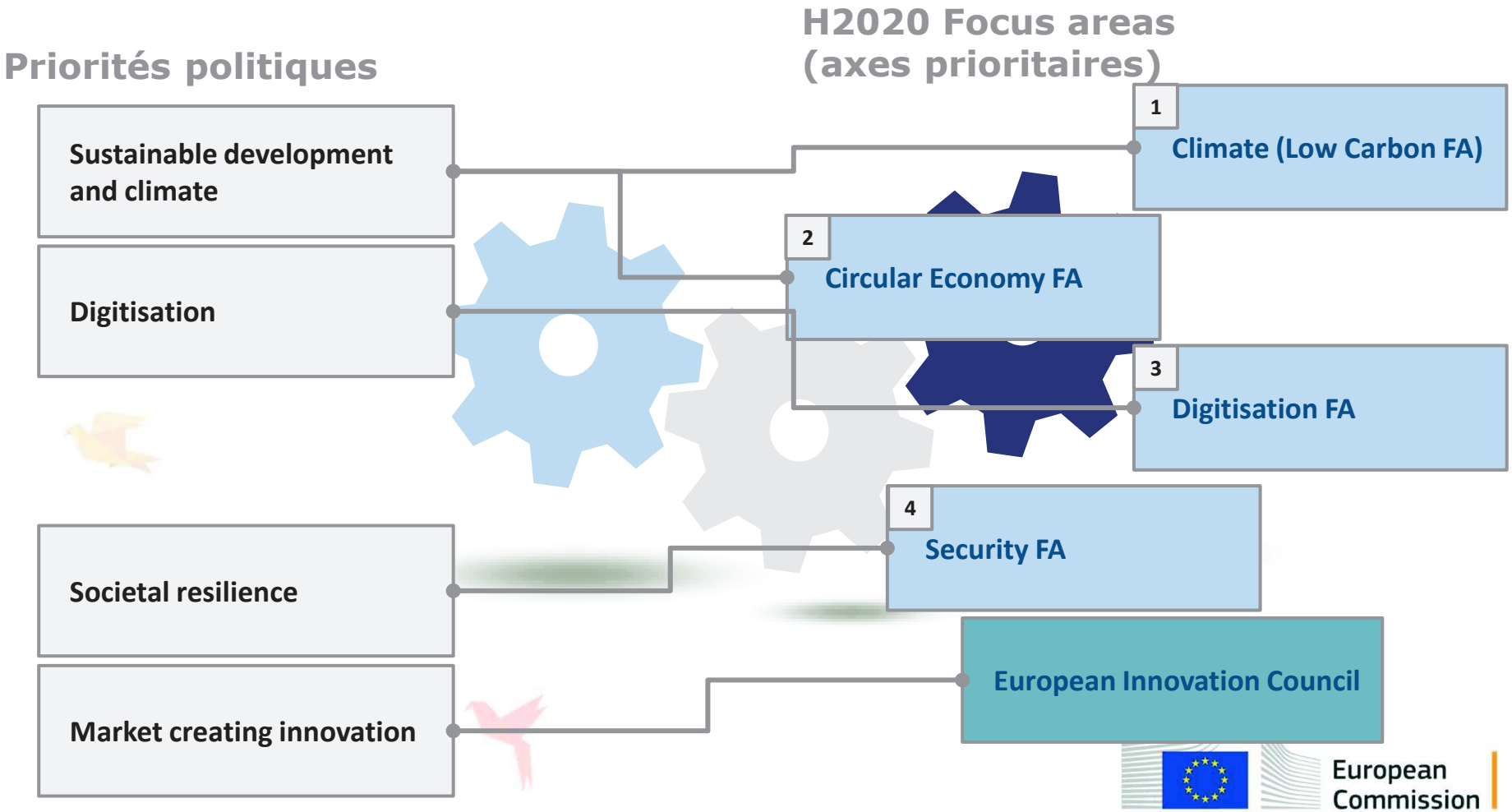
Le «leadership» en matière de technologies génériques et industrielles (LEITs) (**TIC,** nanotechnologies, matériaux, biotechnologie, industries de transformation (process industries)/ fabrication avancée (**NMBP**), aérospatiale)	**13 035**
Accès au financement des risques financement privé pour la R&I	**2 842**
PME innovantes Instrument PME- complétement 'bottom-up'	**589 + 20% de la contribution des Défis sociétaux+ Accès au financement des risques**

Les défis sociétaux (€ million)

1. Santé, bien-être, vieillissement	**7 257**
2. Sécurité alimentaire, bio économie	**3 708**
3. **Energies*** sûres, propres, efficaces	**5 688**
4. Transports intelligents, verts, intégrés	**6 149**
5. Climat, environnement, matières premières	**2 956**
6. Sociétés inclusives et novatrices	**1 259**
7. Sociétés sûres	**1 613**

* Additional funding for nuclear safety and security from the Euratom Treaty activities (2014-2018)

Translating political drivers



Source: EU Commission

Axe prioritaire : 'Vers l'avenir bas-carbone, résistant aux changements climatiques'

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Axe prioritaire :
'Vers l'avenir bas- carbone, résistant aux changements climatiques', budget total (2018-20): 3 343 M €

- **Industrial technologies (LEIT-NMBP)**: topics in call 'Industrial Sustainability' (notably on **Energy Efficient Buildings** and **Clean Energy through Innovative Materials**), €271 million
- **Space (LEIT-Space)**: topics on **Earth Observation**, €82 million
- **Food security (SC2)**: some topics in calls '**Sustainable Food Security**', '**Blue Growth**' and '**Rural Renaissance**', €203 million
- **Energy (SC3)**: all topics in call '**Building a low-carbon, climate resilient future: secure, clean and efficient energy**', €1 953 million
- **Transport (SC4)**: all topics in call **'Green vehicles'** and some topics in call 'Mobility for Growth' (**'Low-carbon and sustainable transport'**), €408 million
- **Climate (SC5)**: all topics in call '**Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement**', €426 million

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

'Transition numérique dans le secteur de l'énergie' - priorités communes énergie & TIC dans

Focus Area (axe prioritaire) Digitalisation

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'Transition numérique dans le secteur de l'énergie' - priorités communes énergie & TIC dans H2020

- Défi: interopérabilité 'maison intelligente-réseau intelligent'

Appel:DT-ICT-10-2018-19 (IA): Interoperable smart homes and grids
Action pilote grand-échelle (30M€)
LEIT-ICT, Focus Area 'Digitalisation'
Clôture de soumission des propositions: 14 Novembre 2018

- Défi: méthodes et outils d'analyse de grandes quantités des données

Appel: DT-ICT-11-2019 (IA): Big data solutions for energy
Action pilot type 'test-beds' (10M€ par projet)
LEIT-ICT, Focus Area 'Digitalisation'
Clôture de soumission des propositions: 02 Avril 2019

- Défi: sécurité des systèmes informatiques dans les réseaux d'énergie

Appel: SU-DS04-2018-2020 (IA): Cybersecurity in the Electrical Power and Energy System: an armour against cyber and privacy attacks.
Défi sociétal 7, Focus Area 'Sécurity'
Clôture de soumission des propositions:23 August 2018

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Journées d'information

Energy Info Day- Smart and Efficient Energy, 25 Octobre 2017, Bruxelles, Commission européenne, bâtiment Charlemagne

https://ec.europa.eu/easme/en/horizon-2020-secure-clean-and-efficient-energy-info-day

Le dernier moment pour s'inscrire!:

https://h2020-energy-info-days.b2match.io/

ICT Proposers' Day 2017, Budapest 9-10 Novembre 2017

Inscriptions:

https://ec.europa.eu/digital-single-market/events/cf/ict-proposers-day-2017/register.cfm

Les présentations seront **enregistrées** et **diffusées en web-streaming**

Le projet du programme LEIT- ICT a été publié et sera adopté le 27/10:

https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/h2020-leit-ict-2018-2020_pre_publication.pdf


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Programme NMBP:
• Energy-Efficient Buildings (Low carbon Focus Area)
• SPIRE (Circular Economy Focus Area)
• Clean energy through innovative materials (Low carbon Focus Area)
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Programme NMBP 2018-2020
Appels: Industries durables
Comprenant:

- ***Efficacité énergétique des bâtiments***

Energy-Efficient Buildings (Low carbon Focus Area)

- ***Les industries de transformation (de type process) durables grâce à l'efficacité d'énergie et de ressources***

SPIRE Sustainable Process Industries through Resource and Energy Efficiency (Circular Economy Focus Area)

- ***Matériaux innovants pour l'énergie propre***

Clean energy through innovative materials (Low carbon Focus Area)

Le projet du Programme a été publié et sera adopté le 27/10:
https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/h2020-leit-nmbp-2018-2020_pre-publ.pdf

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Industrial Innovation Information Days
Brussels 3-4 October 2017

WEBSTREAMING LINKS :

Plenary Session – 09:30 – 12:30
https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-plenary-session-day-1

SPIRE and Catalysing the Circular Economy
3/10/2017: https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-spire-and-catalysing-the-circular-economy-day1-0a;
4/10/2017: https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-spire-and-catalysing-the-circular-economy-day2-0a

Energy-efficient Buildings
3/10/2017: https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-energy-efficient-buildings-day1-1a;
4/10/2017:
https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-energy-efficient-buildings-day2-1a

Clean energy through innovative materials
https://webcast.ec.europa.eu/industrial-innovation-info-days-2017-clean-energy-through-innovative-materials-day1-0d;

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Programme NMBP
Efficacité énergétique des bâtiments
Energy-Efficient Buildings (EeB)
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Les objectifs du PPP EeB

- **R&I pour l'intégration et la démonstration des technologies innovantes:**

Matériaux et composants; systèmes de production, de distribution et de stockage de la chaleur/refroidissement; sources d'énergie renouvelables installés au niveau du bâtiment; TIC pour la gestion d'énergie dans le bâtiment; les outils de simulation, modélisation et prévision.

- **Redynamiser le business dans le bâtiment:**
  - **En assurant le meilleur usage des technologies innovantes, fiables et abordables;**
  - **En créant l'industrie de bâtiment de pointe pour améliorer sa compétitivité**

Les appels 2018:

LC-EeB 02: Modélisation des Informations (ou données) du Bâtiment (BIM) adaptée à la rénovation énergétique (RIA)

LC-EeB 06: Construction durable et abordable, du projet jusqu'à la fin de vie en application des TIC (IA 50%)

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme- EeB

Topic LC-EeB-02-2018: Building information modelling adapted to efficient renovation

Project Officer:

Dominique Planchon - Unit D2

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LC-EeB 02: BIM adaptée à la rénovation énergétique

Le défi : assurer la comptabilité d'outils permettant la collecte des données des bâtiments existants et l'exploitation des données de différentes sources

RIA
TRL 4 - 6

5 à 7 M€

Le périmètre de l'action :

Le développement/harmonisation des formats d'échange de données

La modélisation de l'énergie dans le bâtiment doit prendre en compte les paramètres internes ainsi que les données de l'environnement et du système d'information géographique

La possibilité de coupler le BIM avec d'autres modélisation (acoustique, d'évaluation économique de différents scénarios de rénovations)

La possibilité de développer les application permettant l'alimentation par des données des occupants

Coopération avec les organismes de normalisation

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme - EeB

Topic LC-EeB-06-2018: ICT enabled, sustainable and affordable residential building construction, design to end of life

Project Officer :

Monica Spinu - Unit D2

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LC-EeB 06: Construction durable et abordable, du projet jusqu'à la fin de vie en application des TIC

Le défi : intégrer les TIC dans l'ensemble du processus de construction afin de réduire l'écart de performance prévue/réelle

IA (50%)
TRL 5 - 7

6 à 8 M€

Le périmètre de l'action :

Développer le processus de construction numérisé et industrialisé pour combiner intelligemment des matériaux et composants

Evaluer l'ensemble du cycle de vie pour assurer que le bâtiment soit durable dans la phase de sa construction et opération/maintenance

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EeB- Appels 2019

- LC- EeB 01 L'intégration des matériaux intelligents dans les bâtiment tertiaires (IA)

- LC- EeB 03 Les innovations dans le domaine des maisons à énergie positive (IA)

- LC- EeB 05 Les systèmes de stockage d'énergie intégrés dans les bâtiments résidentiels (IA)

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme EeB

Topic LC-EeB-01-2019:

Integration of energy smart materials in non-residential buildings

Project Officer

Olga Rio - Unit D3

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LC-EEB-01-2019: L'intégration des matériaux intelligents dans les bâtiment tertiaires

Périmètre de l'action:

- Développement des composants légers assurant la gestion active ou passive de l'énergie
  - ✓ *Réduction des coût de maintenance*
  - ✓ *Adaptation aux différentes conditions climatiques ; recyclage/réutilisation en fin de vie*
  - ✓ *Basé sur des ressources renouvelables/naturels,*
  - ✓ *Respectant les principes de durabilité (International Reference Life Cycle Data System Handbook)*
  - ✓ *Applicables dans la construction neuve et dans la rénovation*
  - ✓ *Permettant l'installation sans modification/surcharge des structures existantes*
  - ✓ *Démontrer le grand potentiel de réplication et industrialisation.*
- modélisation & méthodes d'évaluation de la performance à long-term

Impacts:

- ✓ *≥ 25% propriétés d'isolation;*
- ✓ *≥ 10% capacité de stockage d'énergie;*
- ✓ *≥10% étanchéité eau/air ;*
- ✓ *≤15% coût*

4-6 M€

IA (70%)
TRL 5-7

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme- EeB

Topic LC-EeB-03-2019: New developments in plus energy houses

Project Officer

Carlos SARAIVA MARTINS - Unit D2

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LC-EeB-03-2019: Les innovations dans le domaine des maisons à énergie positive

Périmètre:

Développer d'avantage le concept des maisons à énergie positive (qui produisent plus d'énergie qu'elles n'en consomment).

L'énergie peut être stocker ou envoyer dans le réseau.

Démonstrations dans des immeubles dans 4 zones climatiques (Méditerranéenne, Océanique, Continentale et Nordique)

- La haute performance énergétique prévue dans le projet
- L'utilisation de nouveaux matériaux
- L'intégration avec le système énergétique
- La collecte et l'analyse des données
- Standardisation
- Financement

6- 8 M€

IA (70%) TRL 5 -7

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme - EeB

Topic LC-EeB-05-2019: Integrated storage systems for residential buildings

Project Officer

José Riesgo - Unit D2

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LC- EeB 05 Les systèmes de stockage d'énergie intégrés dans les bâtiments résidentiels (IA)

Objective :

- Développer les solution de stockage à court/moyen terme (thermochimique)
- Meilleure intégration avec les énergie renouvelables

Périmètre :

- Réduire pertes de l'énergie thermique, chutes de pression, améliorer l'échange thermique entre les matériaux de stockage et le fluide caloporteur.
- matériaux à haute densité de stockage d'énergie (< 100°C, X 10 eau)
- innovation dans les composants (échangeur)
- facilité de maintenance, coût réduit
- démonstration à petite échelle (faisabilité technique/économique).
- Adapté au bâtiment, évolutif, compact

IA (70%) TRL 5 -7

6- 8 M€

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Deadlines 2018– 2019 / Budget

Topic	Budget 2018	Budget 2019	Deadlines
LC-EeB 02-2018			31 Oct.17- 22 Feb. 2018
LC-EeB 06-2018	Total 35,0		31 Oct.17- 22 Feb. 2018
LC-SC3-EE-1	*9,0*	*12,0*	*25 Jan.18 - 4 Sept.18* *24 Jan.19 - 3 Sept.19*
LC-SC3-EE-5		*10,0*	*24 Jan.19 - 3 Sept.19*
LC-EeB 01-2019			16 Oct.18 - 21 Feb. 2019
LC-EeB 03-2019			16 Oct.18 - 21 Feb. 2019
LC-EeB 05-2019		Total 53,5	16 Oct.18 - 21 Feb. 2019
LC-SC3-EE-4		*10,0*	*24 Jan.19 – 3 Sept.19*


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NMBP Programme – SPIRE
SUSTAINABLE PROCESS INDUSTRY
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Les industries de transformation durables par l'efficacité en énergie et en ressources (Sustainable Process Industries through Resource and Energy Efficiency SPIRE cPPP)

- Les industries de transformation* représentent la base manufacturière en Europe: 20% en termes de l'emploi et du chiffre d'affaires

*industrie chimique, céramique, de ciment, de minéraux, de métaux non-ferreux, d'acier, de biens d'équipement et génie industrielle.

- Les industries de transformation dans l'Ue dépendent fortement des matières première et de l'énergie → industries lourdes et énergivores: l'efficacité de ressources contribue à la fois à la compétitivité et au développement durable.
- Objectifs principaux : optimiser le procédé industriel en réduisant la consommation de l'énergie et des ressources, minimiser les pertes
- Contribution à l'économie circulaire et à la lutte contre le changement climatique.

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme - SPIRE

Topic CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources

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CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources

Specific Challenge:

- Non-conventional energy sources (e.g. microwave, plasma) as well as electrochemical and photochemical processes have been applied to process intensification showing, mostly at lab scale, potential for significant improvements in process performance (e.g. selectivity, crystal nucleation, productivity). Nonetheless, this domains remains still mostly untapped in terms of wide industrial deployment.
- Need for processing paradigms that allow real time monitoring and control of the transformations.
- Need for intensified technologies that are electricity powered and therefore suitable for integration in a renewable energy grid.
- Need for flexible processes that can better follow market demand and enable leaner production paradigms.
- Need for technologies with potential for downscaling (e.g. transition batch to continuous processing).

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TRL
From 4 to 6

IA 70%

CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources

Scope:

Development of technologies applying non-conventional energy sources to processes of high industrial interest.

- Potential for integration in a renewable electricity grid, and consider the inherent limitations (energy supply fluctuation),
- Improve significantly resource and energy efficiency,
- Improve flexibility, working at variable throughputs without major losses in the overall process performance (critical in fluctuating operations),
- Main focus on continuous processes, possibility to enable the transitions batch to continuous,
- If/where relevant, containerised and/or mobile technologies could be considered,
- LCA to substantiate the environmental benefits is expected,
- Replicability and scalability should be proved.

European Commission

EUR from 6 to 10 millions

CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources

Expected impact:

- Allowing for a -30% to +30% energy input within RES fluctuations timeframes, without significant losses in specific energy efficiency,
- Improvement in energy efficiency of 30%,
- Improvement in resource efficiency of 30%,
- Decrease in CO2 emissions by 40% (without considering the electricity generation and at steady state),
- Decreased OPEX and CAPEX by 15%,
- Effective dissemination of major innovation outcomes, through the development of learning resources with potential for integration in learning programs (e.g. existing curricula, undergraduate level, etc.).

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme- SPIRE

Topic CE-SPIRE-04-2019: Efficient integrated downstream processes

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CE-SPIRE-04-2019: Efficient integrated downstream processes

Specific Challenge:

- Downstream processing represents on average 50-60% of the total capital (CAPEX) and operating costs (OPEX) and they can account for up to 45% of the process energy in industrial operations.

- Energy and cost intensive downstream processing operations are often linked to the inefficiencies in the upstream process (e.g. low conversion, formation of co-products, by-products and/or impurities).

- Hybrid approaches (e.g. chemical + biochemical steps) can provide major advantages in terms of upstream process performance (high selectivity, milder process conditions). However, their industrial application is still relatively limited.

- Better integration of upstream and downstream unit operations can lead to significant resource and energy efficiency gains in the process industry.

European Commission

TRL
From 5 to 7

IA 70%

CE-SPIRE-04-2019: Efficient integrated downstream processes

Scope:

Development of economic and industrially viable intensified process technologies providing a deeper integration of upstream and downstream operations.

- Multistep upstream processes, potentially hybrid approaches (e.g. chemo and bio catalytic) and PATs,
- Complex downstream operations, integrating different separation techniques and purification steps,
- Consider modularity and flexibility, as well as potential for transition from batch to continuous operations,
- Increased in safety, productivity, purity and quality of products, as well as resource and energy efficiency while lowering the process environmental footprint, production costs and time to market,
- DEMOs must be included. In real industrial settings (added-value),
- Integration current industrial landscape and replicability to be considered.

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EUR from 10 to 14 millions

CE-SPIRE-04-2019: Efficient integrated downstream processes

Expected impact:

- 20% decrease in greenhouse gas emissions,
- Increased in resource and energy efficiency by at least 20%,
- Novel modular and scalable integrated (upstream-downstream) pilot line technologies with 10% decrease in CAPEX and OPEX,
- Effective dissemination of major innovation outcomes, through the development of learning resources with potential for integration in learning programs (e.g. existing curricula, undergraduate level, etc.).

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme - SPIRE

CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials

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CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials

Specific Challenge:

- Plastic materials are everywhere in our society, they are used in all sorts of applications (e.g. packaging) because of their properties and price.
- The use of complex hybrid plastic materials is also increasing significantly, for example lightweight polymer composites to substitute metals.
- Their wide use brings about problems linked to the huge amount of plastic waste generated, and not sufficiently recycled.
- The redesign of plastics and advanced recycling processes is essential to recycle and reprocess plastic waste into valuable products avoiding landfill.
- A major challenge lies in the development of appropriate process technologies, able to process heterogeneous plastic waste material (at least in part) for the production of added value products and process streams to support the establishment of a circular economy.

European Commission

TRL
From 5 to 7

IA 70%

CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials

Scope:

Processes for the production of recyclable materials containing plastics.

- Improved energy and resource efficiency, and lower environmental footprint compared to the current state of the art proved by LCA. LCC is expected to prove the economic viability,
- Integration with the relevant value chains. Meaning securing the supply of raw material streams and the involvement of the relevant actors,
- Flexibility in the utilisation of heterogeneous plastic waste (incl. composites) as input, to allow the recycling and the re-processing into added value products (excluding fuels). Bio-based raw materials are also in scope,
- Best valorisation of all components (e.g. fillers or fibres from composites),
- Consider issues related to the quality of the raw materials (Primary/ secondary) -heterogeneity of plastic waste, further additives- and of the yielded streams,
- Non-technological hurdles, such as regulations and standards, and economic indicators (e.g. CAPEX and OPEX),
- DEMOs in real industrial settings are expected.

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EUR from 6 to 8 millions

CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials

Expected impact:

- More efficient and sustainable process and processing technologies utilising plastic waste as starting material for the production of added value products such as recyclable plastic materials (e.g. composites) and chemicals (excluding fuels),
- The technologies proposed should provide a decreased utilisation of primary fossil resources in the process industry of at least 30 %,
- The concepts proposed should provide a decrease in CO2 emissions of at least 20%,
- The concept should utilise at least 70% of waste material including at least 40% of plastic waste,
- Effective dissemination of major innovation outcomes, through the development of learning resources with potential for integration in learning programs (e.g. existing curricula, undergraduate level, etc.).

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme -SPIRE

Topic CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries

Cristina FERNÁNDEZ-RAMOS, UNIT D2

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CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries

Specific Challenge:

- Energy intensive industries to achieve sustainable production processes and unit operations which can be adapted to highly fluctuating energy supply
- Energy and resource flexibility by means of process optimisation of energy streams, heat recovery and raw materials flows with variable properties
- Integration among sectors at regional level for the optimisation of production system as a whole. Reduce emissions and environmental impact, while maintaining competitiveness and job security.

European Commission

CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries

IA
100- 50%

TRL
5-7

Scope (1/2):

Value chain optimisation in the design phase

In particular, proposals are expected to develop:

- Technologies allowing flexibility for raw materials. Consider quality of the main products and by-products for valorisation;
- Novel advanced energy systems, could include new combustion and gasification techniques applied to the highly resource and energy intensive industries have to be developed;
- How the use of sustainable electrical energy sources, or heat recovery, could enhance energy efficiency and cope with a fluctuating energy input.
- Significant impact on the sustainability profile of the process and/or the final products

European Commission

CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries

IA
100- 50%

TRL
5-7

Scope (2/2):

Proposals need to consider the following elements:

- A significant reduction, valorisation, re-use and recycling of by-products and waste streams (solid, liquids and gaseous);
- System, process modelling and integration (up and down-stream) improving energy and raw materials efficiency and flexibility, and minimising the impact on the environment of the whole value chain. Taking also into consideration optimisation at a plant/system level. The activities have to be supported by a quantitative Life Cycle Assessment.
- Multiple demonstrators, including retrofitting of industrial installations,
- Relevant regulations (waste).
- Structural and regional funds /smart specialisation strategies strongly encouraged.

European Commission

CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries

EUR (8-12 millions)

Expected impact:

- Cost reduction of the process of at least 10% (flexible scheme in raw materials, including secondary raw materials, process and product quality specifications)
- Improved process efficiency by at least 15% (re-utilisation of energy and/or material process streams);
- CO_2 emissions reduction by at least 5% and reduction of the environmental impact by at least 15% in terms of the main key performance indicators;
- Dissemination of major innovation outcomes (learning resources with flexible usability).
- Relevant indicators and metrics, with baseline values, clearly stated

European Commission

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme - SPIRE

Topic CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

Cristina FERNÁNDEZ-RAMOS, UNIT D2

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CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

Specific Challenge:

- Long lifetime of the equipment in the process industry for adequate viability (>30 years)
- Challenges:
  - Keeping facilities up to date both from technological and regulatory point of view (e.g., zero waste, circular economy).
  - Increased variety of inputs, need for higher energy efficiency

European Commission

CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

IA
100-50%

TRL
5-7

Scope (1/2):

Proposals need to cover the following:

- Simulation models and decision support tools, including the detection of inefficiencies (flexibility to use feedstock of variable composition, energy efficiency and product quality)
- The development of tools and methodologies to streamline and support retrofitting;
- Find the most efficient operational input conditions to optimise the performances;
- Develop indicators to modify input variables and its potential of replication across the industry;

European Commission

CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

IA
100-50%

TRL
5-7

Scope (2/2):

- Adapt equipment → larger number and more diverse feedstock→ transition to variability in quality, quantity and price of feedstock
- Demonstrate the feasibility and suitability at industrial scale in different process industries covering both the technology and the process control
- Cooperation with other projects; user involvement; accessibility and reusability of data

European Commission

CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

Expected impact:

EUR (8-12 millions)

- ↑Resource and energy efficiency >20%;
- ↓ GHG emissions > 30%;
- ↓ Fossil resources > 20%;
- ↓OPEX by 30%; ↑productivity by 20%;
- Dissemination of major innovation outcomes (learning resources with flexible usability).

Relevant indicators and metrics, with baseline values, clearly stated

European Commission

European Commission

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Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme- SPIRE

Topic CE-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants

Istvan RITZ, UNIT D2

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CE-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants

Specific Challenge:

Shortage in raw materials, increased energy prices and environmental constraints require the European process industry to improve its performance and flexibility and there are unexploited opportunities for digitising a large range of enterprises of very different size in the process industry.

Digitisation endows the production system with capabilities for analysis. This should enable the autonomous operation of the system based on embedded cognitive reasoning, while relying on high-level supervisory control.

As a consequence, changes in the production process need to be detected and the system needs to be able to respond to these dynamic fluctuations, by adapting the production to stay within the target ranges of production costs and rate, as well as those of and sustainability parameters.

A fully up-to-date interactive and self-learning process control integrated with management tools is essential to obtain an optimal efficiency, while maintaining adequate flexibility of the system in regard to changing feedstock, energy sources and product demand.

European Commission

CE-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants

TRL 5-7

Scope:

- Improvement of online monitoring and innovative control technologies in terms of process performance and flexibility, maintenance needs and product quality;
- Digital retrofitting of existing assets, integration towards and holistic optimisation of operations, data-analytics, real-time capability, use role-specific representation of information, feedback control & detect deviations and adjust operations immediately decision support (e.g. advanced process control, reactive scheduling);
- Several among the following concepts: apply low-cost sensors for on-line assessment of product quality and integration into process control; robust optimisation methods to distributed targeted process monitoring; simulation methods for the analysis, characterisation and study of systems for enhanced operations and decision-making combination of various forms of data with cognitive insight to optimise and enhance resources;

IA 70%

Replicability and scalability of the concepts should be considered appropriately.

European Commission

CE-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants

EUR (6-8 millions)

Expected impact:

- Increased production performance, energy and resource consumption, or waste or by-products production will be significantly improved by more than 20%.
- Project outcomes should demonstrate a positive environmental impact, by reducing CO2 emissions compared to the state of the art and in the scale relevant for the different applications
- Show potential for improved performance in cognitive production plants
- Effective dissemination of major innovation outcomes to the current next generation of employees of the SPIRE sectors, through the development, by education/training experts, of learning resources with flexible usability. These should be ready to be easily integrated in existing curricula and modules for undergraduate level and lifelong learning programs.

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

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Deadlines 2018– 2019 / Indicative Budgets

Topic	Budget 2018 (M€)	Budget 2019 (M€)	Deadlines
CE-SPIRE-02-2018 CE-SPIRE-03-2018 CE-SPIRE-10-2018	Total: 97.5		31 Oct.17- 22 Feb. 2018
CE-SPIRE-04-2019 CE-SPIRE-05-2019		Total: 65.8	16 Oct.18- 21 Feb. 2019
DT-SPIRE-06-2019		32.9	16 Oct.18- 21 Feb. 2019

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Matériaux innovant pour l'énergie propre – Appels 2018 et 2019

- LC-NMBP-27-2019: Améliorer les technologies de matériaux pour les batteries stationnaires (applications hors l'automobile)
- LC-NMBP-29-2019: Matériaux pour le stockage d'énergie autre que les batteries
- LC-NMBP-30-2018: Matériaux pour les batteries de futures véhicules électriques de haute performance
- LC-NMBP-32-2019: Matériaux, systèmes et structures intelligentes pour captage d'énergie de l'environemment

European Commission

Merci

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