

# Boost the intra-Belgian energy cooperation

05/05 - 5 jaar Flux50



# 1 - TWEED in a nutshell

# Cluster TWEED, Renewable Energy – Wallonia & Brussels



- ❑ Created in 2008
- ❑ TWEED = 160 premium energy members (88% are companies) developing technologies in the Energy sectors to ensure a global Sustainable Development. + More than 400 players/technologies in our ecosystem
- ❑ #Networking #Support #Projects #Studies #ValueChain #Roadmap #Promotion #Information #International #Energy Marketplace,...
- ❑ Discover all the players - and hopefully your future partners - thanks to a structured navigation and a search engine, very easy to identify and contact an organization, : [www.rewallonia.be](http://www.rewallonia.be) !



Low-carbon mobility  
 Energy efficiency in buildings  
 Energy conversion and storage **Smart grids**  
 Energy efficiency in industry  
 Renewable energies mix  
**Microgrids**



# Cluster TWEED, Renewable Energy – Strategy in 5 axes



# Cluster TWEED

Cluster Energy & Water

=

Stimulation of  
6 ecosystems

=

Providing tools for  
achieving challenges

=

Making synergies  
together for projects



# Zoom in **Storage** Expertise in Wallonia, from Lab to market (examples)



Commission approves €3.2 billion support by seven Member States for project of common European interest for **battery value chain**

Raw and advanced materials	Cells and modules	Battery systems	Repurposing, recycling and reusing
BASF	ACC	BMW	BASF
Eneris	BMW	Endurance	Endurance
Kaliber	Endurance	Enef X	Elemental
Nanocyl	Eneris	Eneris	Eneris
Solvay	FAAM	Kattek	FAAM
Tetraforce	SEEL	SEEL	Fortum
Unicore	VARIA	SEEL	SEEL
		Unicore	Unicore

Recycling of batteries from EV's vehicles (96% recycled) : second life batteries (Comet Traitement)



Phosphate-based cathode materials (LiFePO4) for use in lithium-ion (Li-ion) rechargeable batteries (Prayon - BeLife)



Innovative plug-and-play 2,2 KWh residential storage solution (Orison & CET Energrid)

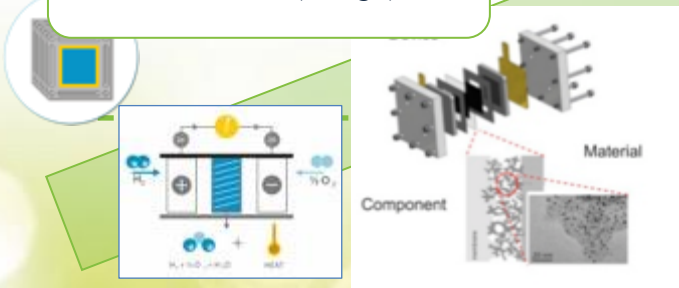


- TRL 9
- TRL 8
- TRL 7
- TRL 6
- TRL 5
- TRL 4
- TRL 3
- TRL 2
- TRL 1

Carbon nanotubes for containing Lithium Ion (Nanocyl, validated for IPCEI)



Fuel Cell Test bench (Uliège)



New type of Li-ion batteries applicable ("painting") on the surface (BatWal)



Thermal energy storage by thermochemical sorption reactions Lab Unit (Be-Sol, Umons)



H2 solid storage (Certech, porous materials lab)



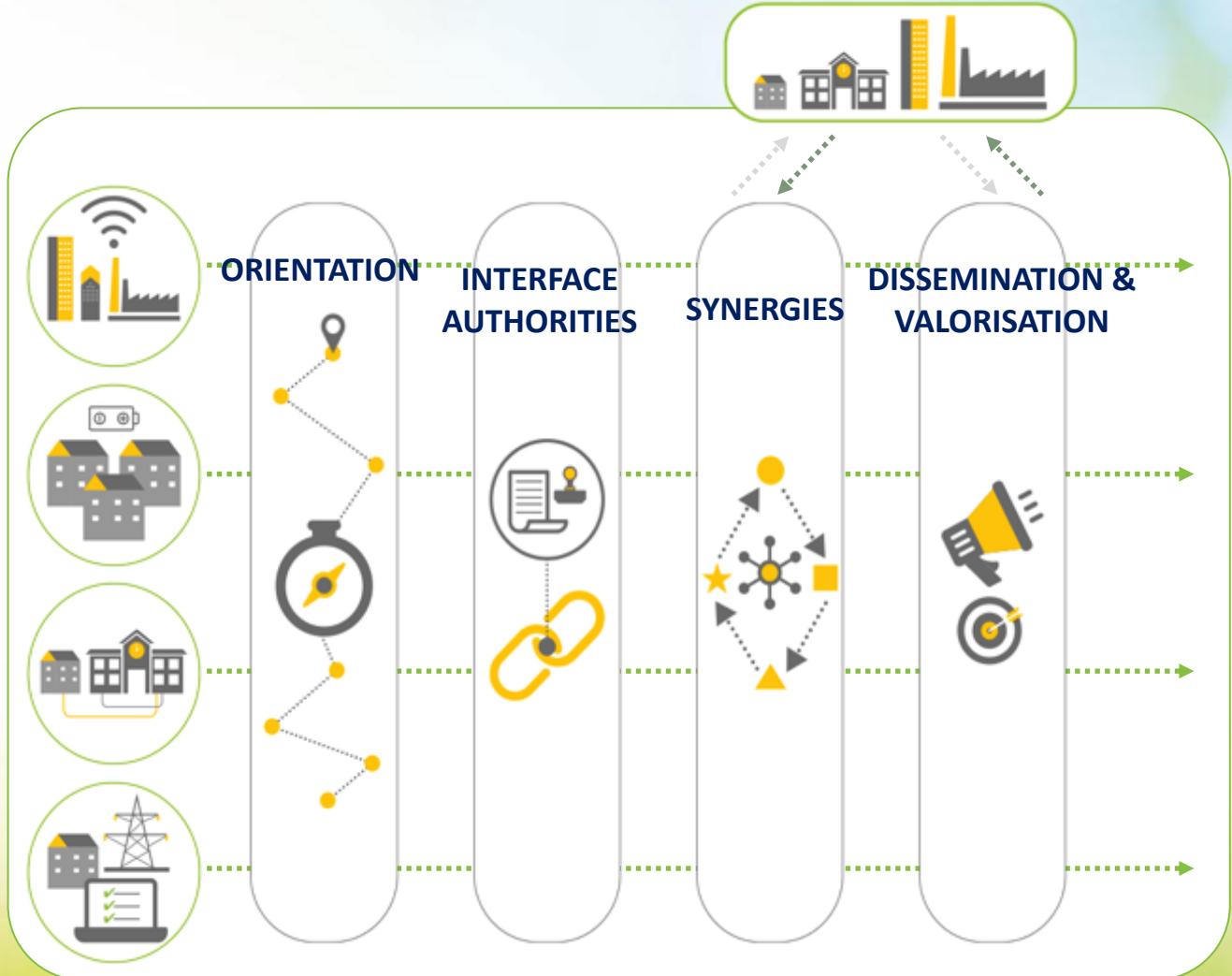
## 2 - Projects

# Creation of a REC/CEC ecosystem

CERACLE : transversal platform & Coordination



LEGISLATION  
 ↙      ↘  
 OFFER      DEMAND

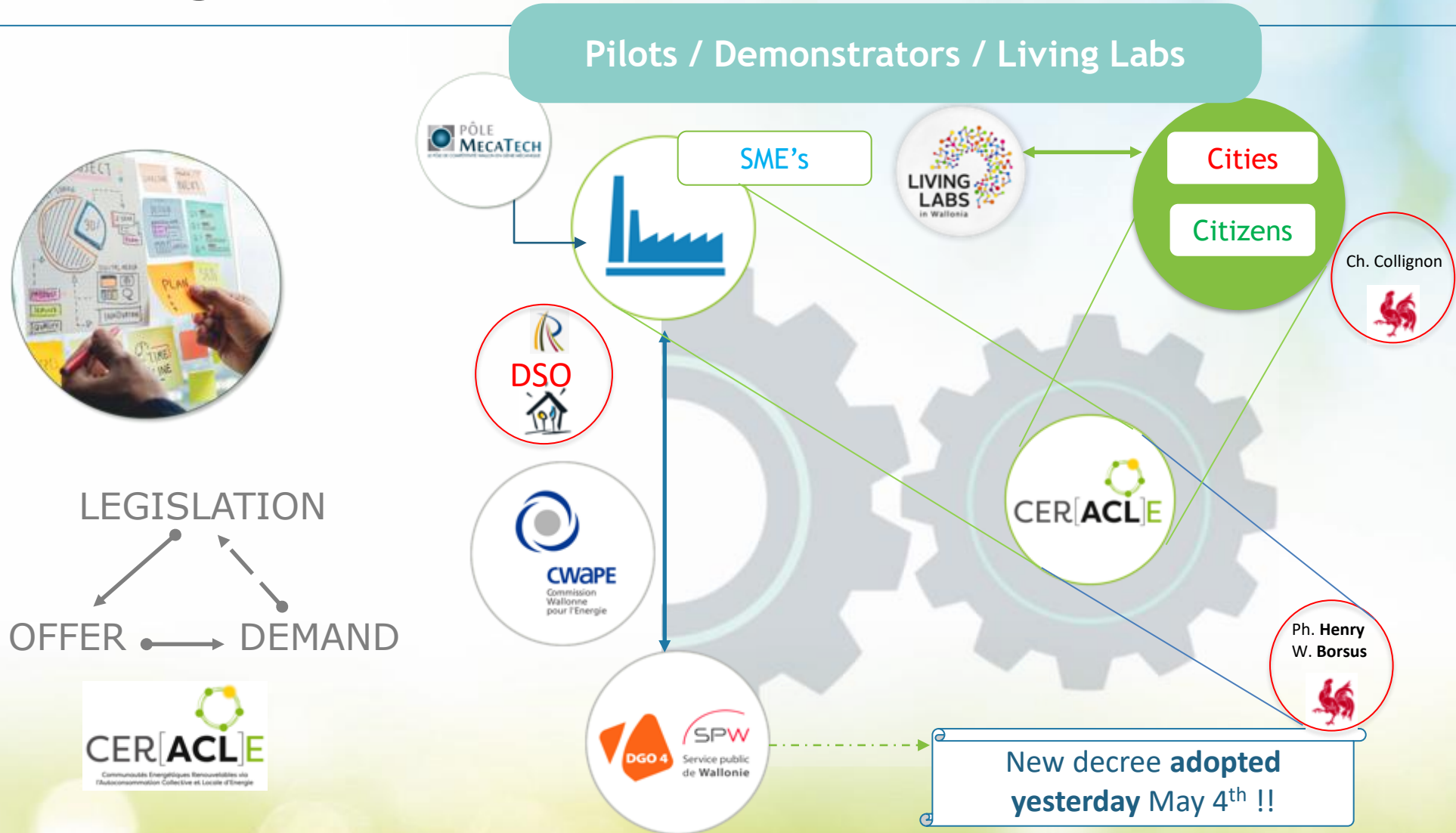




# Link with the **demand**



# Back to the **legals** : **feedback**

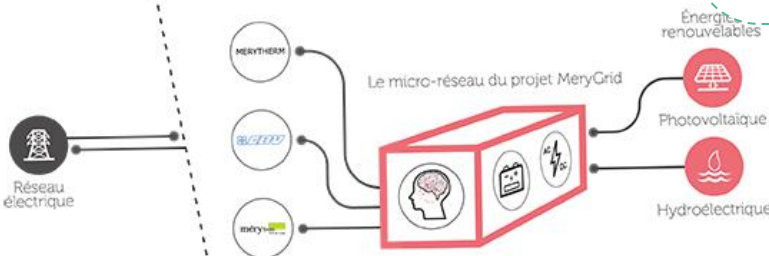


Focus SME's

# Merygrid

Microgrid between 3 SME's with battery & renewables

This Walloon pilot project has entered the operational phase. The aim is to test the benefits of local self-consumption at the Business Park scale, bringing together electricity-consuming companies, renewable (solar and hydro) production and a storage unit. The energy management system (EMS) that manages the optimization of the micro-network should allow a saving of 15% on the energy bill.

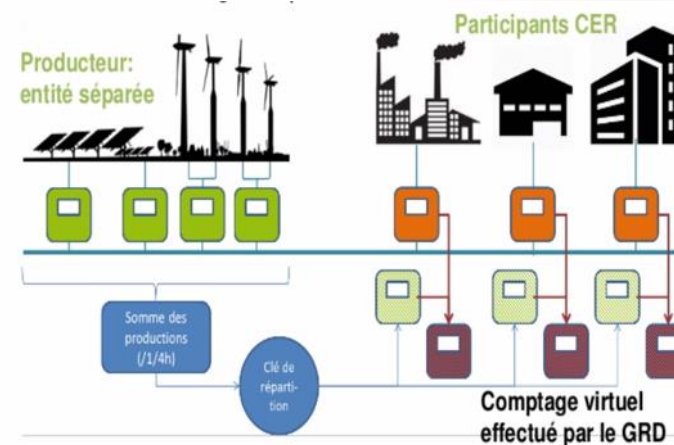


Focus SME's

# E-Cloud

Open MicroGrid at Business Park Level

E-Cloud project targets SMEs and companies located in Business Parks. The purpose of this project is to develop and optimize "open micro-grids" in industrial parks. This allows different companies located in the same zone to benefit from local and collective self-consumption and from a reduction of their electricity cost (from 8 to 14%), as a consequence

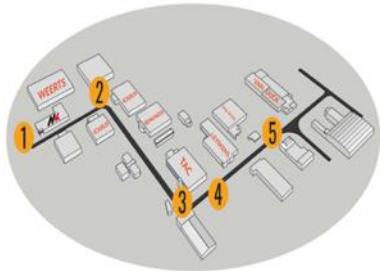


Focus SME's

# MiraCCle

DC MicroGrid at Business Park Level

MiraCCle project aim si to design and implement a pilot DC microgrid in the industrial park between 7 SME's.

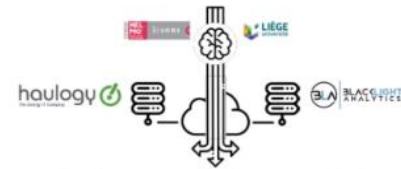


Focus SME's

# IntegCER

Renewable Energy Community at Business Park Level

The aim of the INTEG CER project is the development of software tools specific for REC's : REC Sizing Optimisation, REC Integration in energy markets, operational management.



Focus industry



Large Industrial Microgrid & Energy Storage Pilot Plan



Miris

MiRIS Project investigates energy storage (Li-Ion, NaS, Flow batteries), PV, and microgrid integration and optimization in a industrial environment.



Multi Users

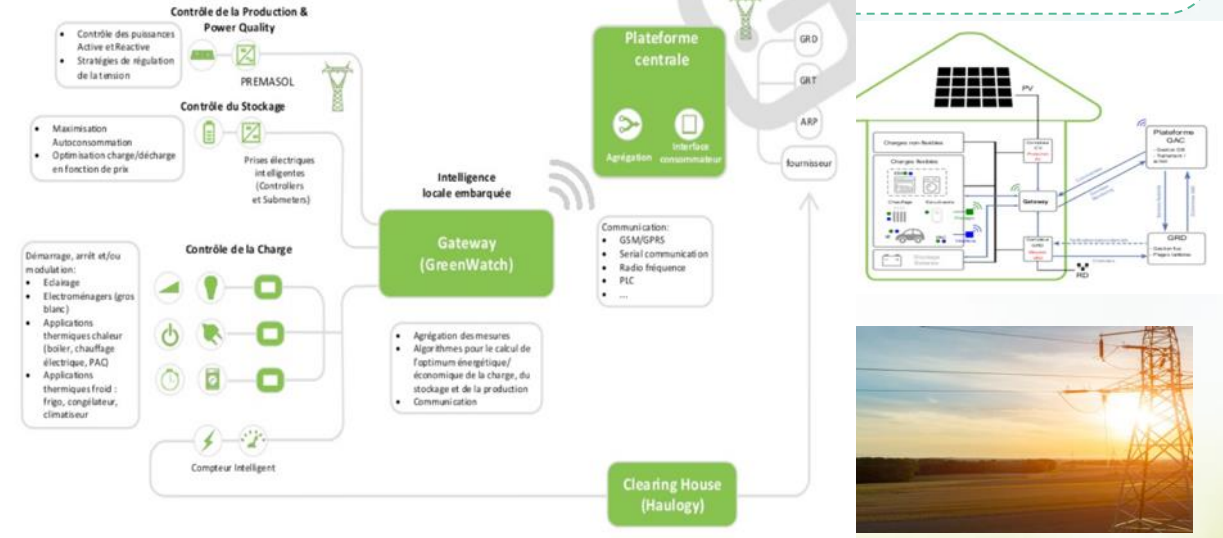


Aggregate & Demand Side Management



GAC / Smart ACC

GAC project want to mobilize the flexibility of demand. In order to establish this new system, a new actor – aggregator – is created. His role? To aggregate / federate a large number of consumers ready to make their flexibility available. SmartACC project go one step further mixing residential and SME's flexibility.



Mobility

RemobHub



100% Green enterprises

Business Case via optimised combinaison of production, storage and utilisation of RE for electrical shared mobility (bikes, VE, utility)



Multi Users

Hospigreen



REC with Tournai hospital, WTG & PV

Only one regulator exception in 2021 : 10 sites connected, with special grid tarif for 2,3 MW shared RE



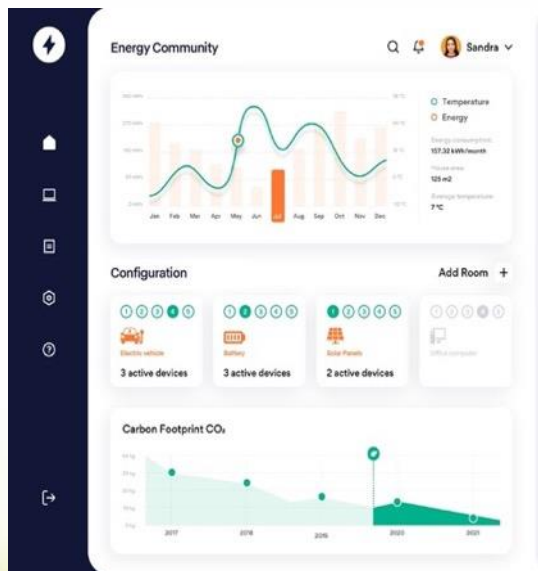
Homes & SME

LECaaS



Global tools for REC

Digital Twin & optimization algorithms of REC and digital platform of management



Focus Bruxelles

Greenbizz.Energy



REC in a business park in Brussels

First Brussels Capital City Industrial renewable energy community with 40 businesses involved in Greenbizz and 500 MWh of solar PV to share between residents.



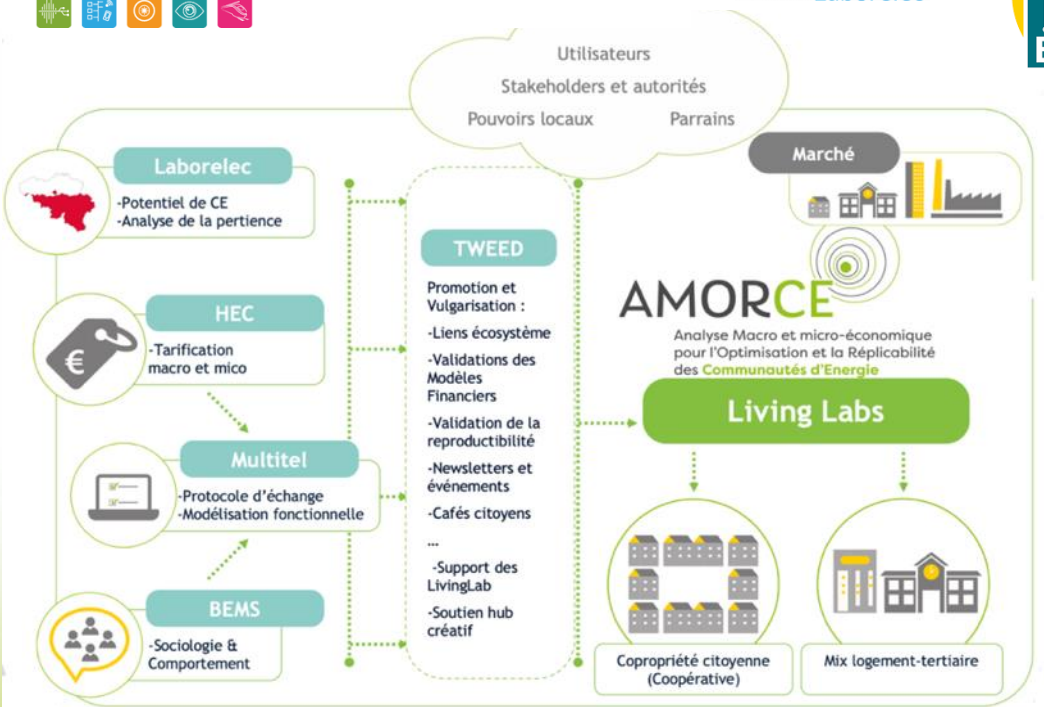
Transversal

# Amorce



Transversal analysis based on 2 Luikse Living Lab CER

- Topic studied :
- Potential of CER in Belgium
  - Sociology of acceptance
  - Open protocol and models
  - Tariffication (micro & macro)



Transversal



Living Labs in Verviers and Liège

Studies on social inclusions and news opportunities for user trough CER applications



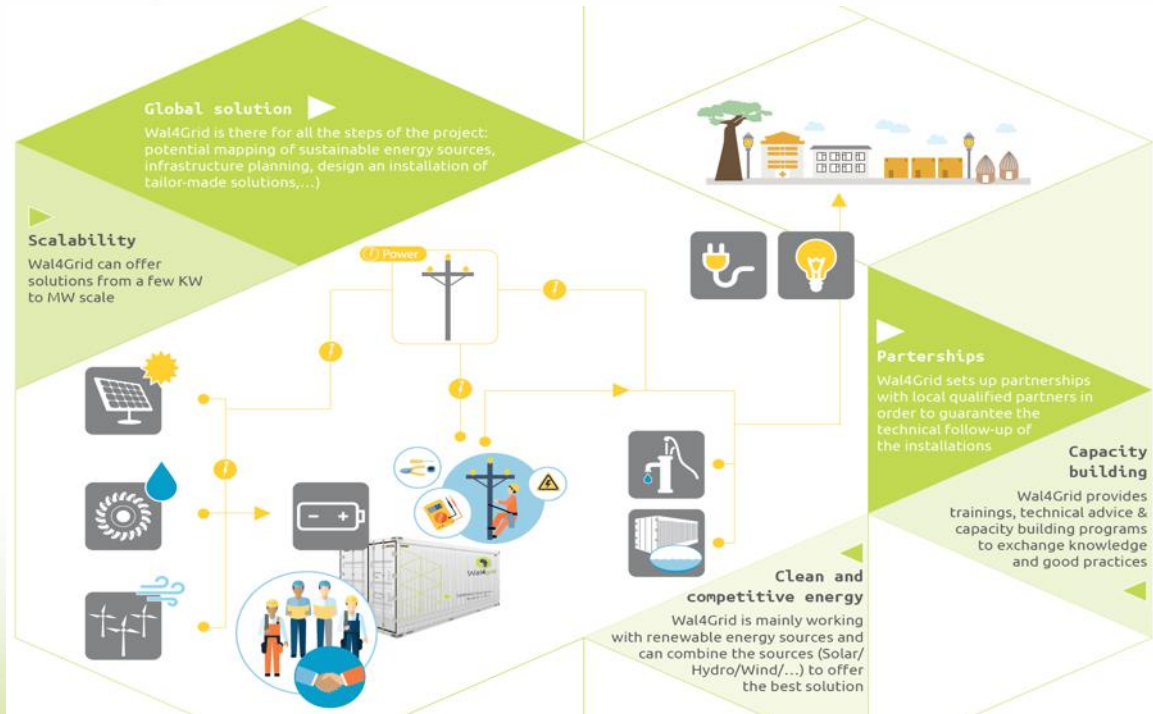


Focus International

# Wal4Grid

Microgrids for Africa

Sustainable Energy Solutions for MicroGrids in Africa

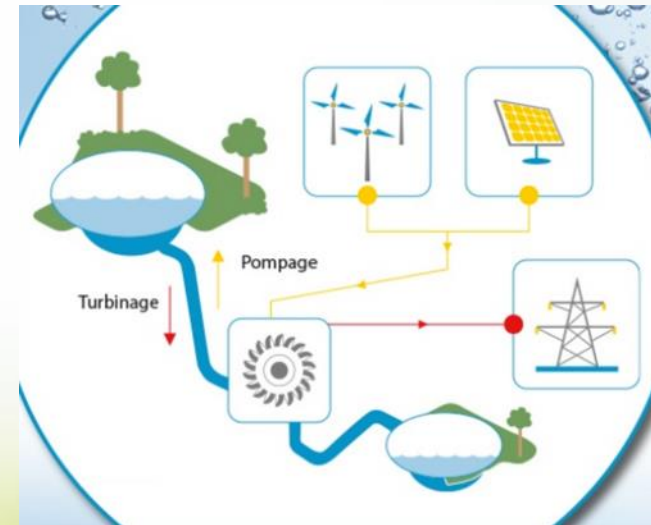


# Short-Term Hours

PEPS

Mini pumped hydro storage (PEPS) in Wallonia

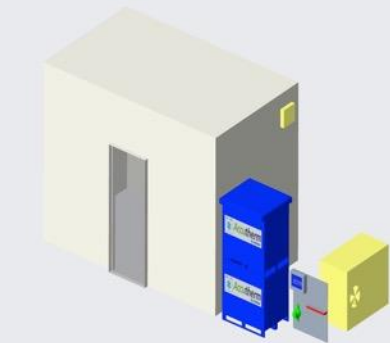
Innovative concept of mini pumped hydro storage (PEPS) with pre-sized components in mines and quarries, coupled with renewables on sites : modular concept, easily reproducible, piloted and monitored remotely in a 4.0 approach of operations and maintenance. Target a production time of 2 to 4 hours depending on the space available and a range of 1 MW to 5 MW



# Short-Term Hours - Days

# Accutherm

STORAGE OF (COLD) THERMAL ENERGY WITH REFRIGERATION INSTALLATIONS



ACCUTHERM aims to use integrated phase change materials within a complete cold storage system with the final objective of proposing an advantageous alternative to electric batteries that maximises the use of renewable forms of energy (intermittent by definition). ACCUTHERM allows for the shifting of peak energy consumption to times when energy is far less in demand and therefore cheaper: 90% of energy needs are concentrated within a period of 8 hours out of 24



# Short-Term Hours - Days

# Industore

Energy Storage/Flexibility Potential for Industry



InduStore has quantified and leveraged the potential of energy flexibility in industrial sites, using advanced analytic methods such as optimization. By reducing energy costs and providing new sources of profit, InduStore allows industrial sites to increase their competitiveness. 5 types of levers are taken into account (Load Shedding, Load Shifting, Load Rescheduling, Fuel Switching, CHP)



InduStore targets a **global optimization approach** for energy flexibility

<b>Flexibility Levers</b>	Load Shedding	Load Shifting	Load Rescheduling	Fuel Switching	CHP
<b>Temporal Horizon</b>	Weekly	Daily	Intra-day	Real-time	
<b>Flexible Processes</b>	Discrete process	Continuous Process	Utilities	CHP	
<b>Valorization approach</b>	Price-based Demand Response	Incentive-based Demand Response			

# Long-Term Days - Weeks

## H2 Coop Storage

Energy Community with hybrid storage (H2)

Development of tools enabling the deployment and management of a multi-energy Renewable Energy Community with hybrid storage community



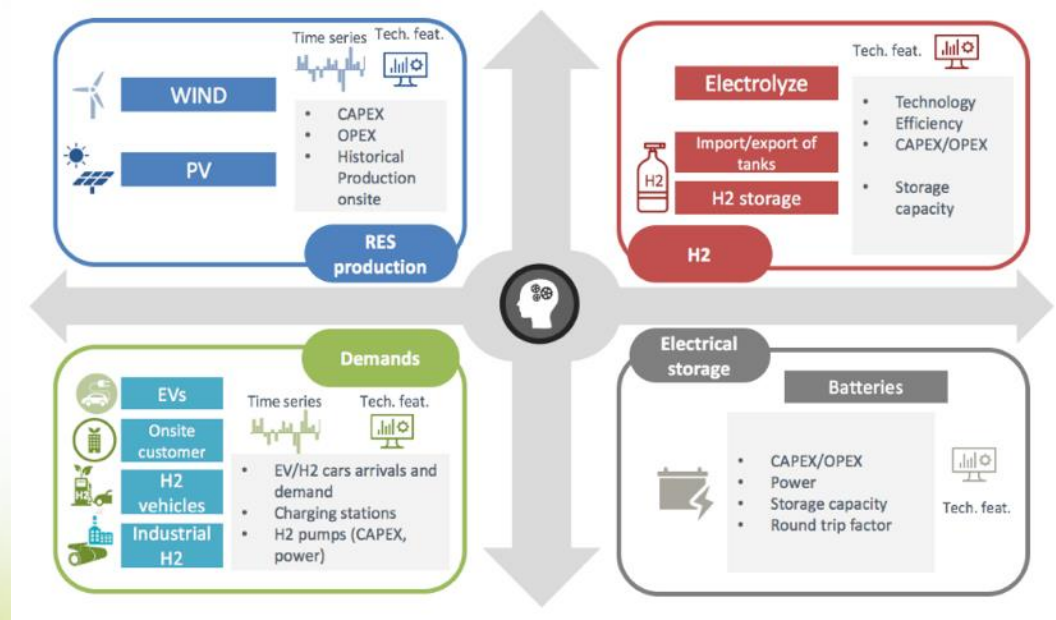
# Long-Term Days - Weeks

## Interests

Integrated refuelling stations with EV & H2



INTERESTS aims the creation of an optimization tool allowing the definition, the sizing and the management of "integrated stations" of production, storage and consumption (refuelling) of renewable energy (electricity / hydrogen)



# 3 - Opportunities



# Flanders – Brussels – Wallony

Energietransitiefonds



25M€ tot - Flex / Grid

## BEL-COO



500 k€/project



# Networking





[www.clustertweed.be](http://www.clustertweed.be)

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