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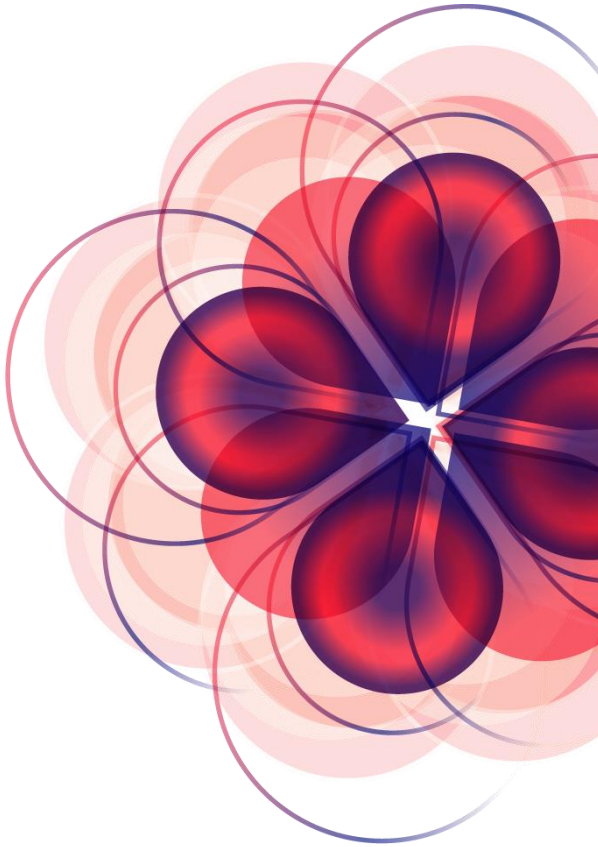
European Regional Development Fund
EUROPEAN UNION

Greener NWE
20 MAY 2021

# Breakout sessions

# Smart Energy Systems




***Sarah Davoren***

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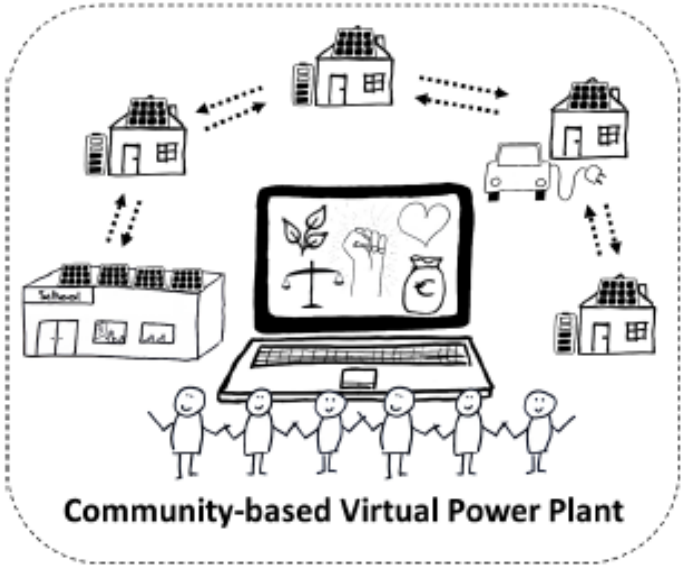
***Joint Secretariat***

# Smart energy systems in the 2014 - 2020 NWE programme




Source: cVPP project, MoRe Model (2020)

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7 AFFORDABLE AND CLEAN ENERGY

The European Green Deal

FIT FOR 55

## SMART ENERGY SYSTEMS

- Integration
- Energy carriers, infrastructures, consumption sectors
- Connected and flexible
- Sustainable
- Cost-efficient

**Interreg NWE 2014-2020**

- Priority 2 Low Carbon
- Specific Objective 2 & 3

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# NWE Facts and Figures

P2 Low Carbon / direct link

| PROJECTS | PARTNERS | € ERDF INVESTED |
|---|---|---|
| 10 | 210 | 73M |

## Programme Expected Results

**133,253 tonnes**
**Annual decrease of CO2 emissions**

**38 MW**
**Additional renewable energy production**

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## Electricity Grids / EMS
e.g., Clean MobilEnergy - iEMS

RED WoLF

## District Heating & Cooling
e.g., D2Grids – 5G DHC

HeatNet NWE

# Breakout sessions

## Rethink electricity Distribution Without Load Following (RED WoLF)

***Dr Giuseppe Colantuono, Leeds Beckett University, UK***

https://www.nweurope.eu/projects/project-search/red-wolf-rethink-electricity-distribution-without-load-following/

*Pilot houses in Montbeliard, France*

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# Challenge

- RED WoLF aims at reducing $CO_2$ emissions from NWE houses by storing Grid electricity when greener and by maximizing PV self-consumption

- NWE's housing emits significant $CO_2$ due to low amount of renewables on Grid, to PV seasonality, space heating demand and age of housing stock. French nuclear is low carbon but plants are aging; their replacement would require humongous investments

# Objective

***The project aims at reducing 240 tonnes/yr of $CO_2$ from ~90 Pilot houses in UK, Ireland and France.***

*Enterprises are collaborating with universities to achieve this goal; NWE installers have engaged beyond expectations.*

*RED WoLF summer-school is engaging students worldwide after a successful presence in EMCI summer-school in 2020*

*https://www.sos-uk.org/post/join-our-student-challenge-summer-school-with-red-wolf*

*High impact scientific publications; impact worldwide in energy usage optimization.*

# Results

- 43 Pilot houses have been installed and are working in simplified mode
- By end of project, we will install other ~50 houses; the full RED WoLF IoT control strategy will be implemented
- Integration of engineers/installers with transnational electricity systems and university researchers has gone beyond expectations
- Tendering procedures a bit too long for projects a few years long

# Pushing results one step further

- Extend our energy system, and parts of it (algorithm and IoT controls) to a commercial setting
- We got Capitalization Call. Two new Pilots will extend our energy system to academic/training centers
- Complete the controller implementation in existing housing Pilots. Then, integrate our system with other technologies/devices. Extend the system to other climates (AC) and to developing countries.

# Partnership

- The main added value are the priorities set by the Programme, which provides a common ground for Partners to cooperate. The challenge is for every PP to find their own path in a way useful for the project.

- The long time required for Pilot investments makes further collaboration appealing; the project duration also naturally select PPs who work well together. Brexit my hamper future cooperation between UK and continental PPs

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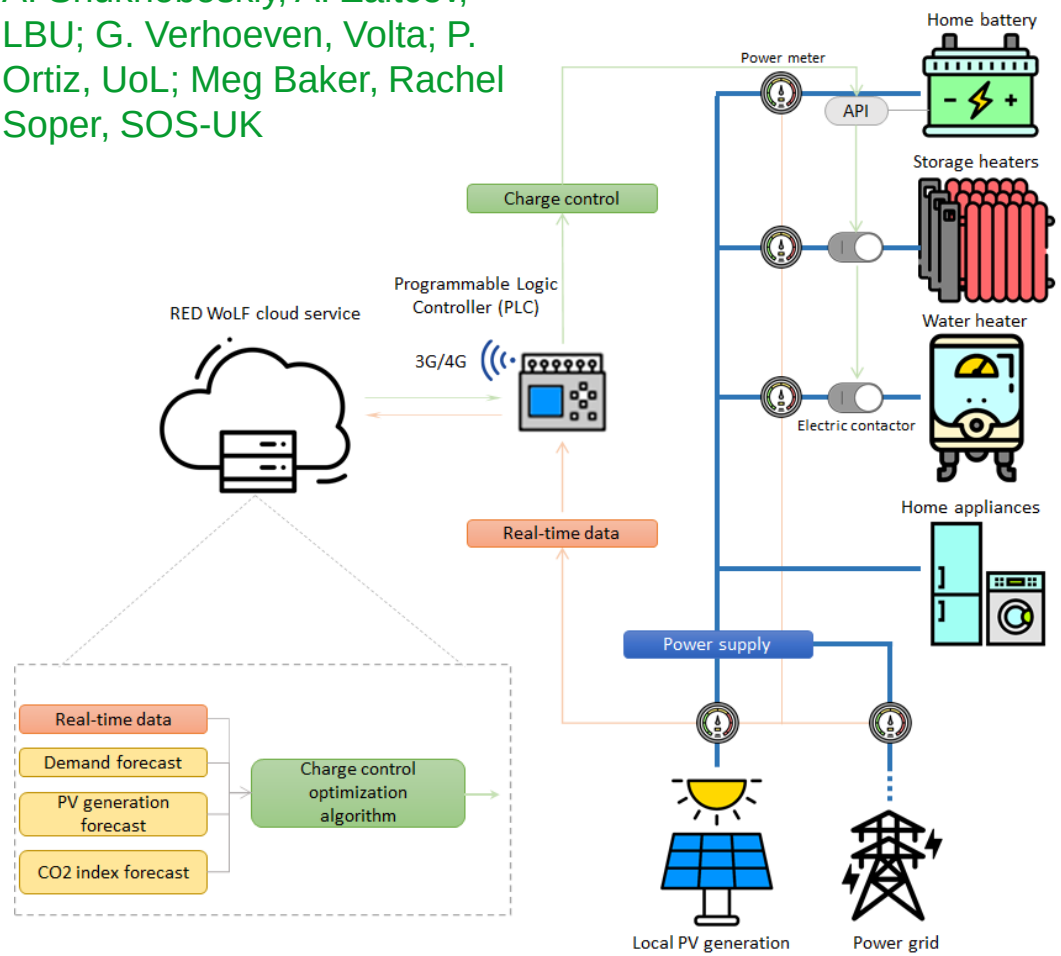
input also from S. Kubler, UoL; A. Shukhoboskiy, A. Zaitcev, LBU; G. Verhoeven, Volta; P. Ortiz, UoL; Meg Baker, Rachel Soper, SOS-UK

# Scheme of the RED WoLF system & IoT controls




Cloud server installed & configured in IT Sligo (IE). Equipment (batteries, PV, thermal storage) installed in 3 Pilots. PLC will transmit data & instructions back & forth from Pilot houses to server.

# Breakout sessions

# HeatNet NWE – Transition strategies for delivering low carbon district heat


## *Declan Mc Cormac*


https://guidetodistrictheating.eu

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# Challenge

- Heating and Cooling accounts for approx. half of EU energy consumption – 72% is generated from fossil fuels ( 84% in 2016)
- In the North, Central and Eastern EU District Heating and Cooling accounts for 50% of the market.
- In NWE EU it is on average only **5%** of the market

# Opportunities in NWE

- Reduced CO2 Heat and Cooling targets in EU
- 39.3Ej heat losses in the EU – massive potential
- Corporations increasingly proactive in EE and RE solutions for both their energy supply and waste heat ( Data center's, industrial processes etc)

# Objective of HeatNet NWE

*‘ To develop transferable guidance on how to build and finance DHC projects’*

Focus of the project is **not** technological

- To improve the conditions for DHC in NWE by examining the financial, regulatory and organizational barriers of DHC and distilling the findings into a guide for district heating in NWE.

# Structure of HeatNet NWE

- Work packages structured around examining local conditions ( or lack of!) for DHC
- 6 Investment pilots
- Continuous evaluation of local policy, stakeholders and investment roll out
- Peer to peer exchange ( expert partners to learner partners)
- 6 Transition roadmaps
- All findings assembled into an online platform
- €11.5m budget
- 13 partners from 5 countries

# Targets:

- Contribute to a 4,000t CO2e increase in savings of DHC systems in partner local regions

- 3,000 additional dwellings connected to DHC system

- HeatNet guide to developing DHC -
- €1m ( non commercial) leveraged

- We have surpassed all these targets, final figures will be available in August. The guide is live at **https://guidetodistrictheating.eu/**

# What next?

- Investment partners have already started work on extensions to the DHC network based on the transition roadmaps and HeatNet NWE experience
- The HeatNet platform will stay live and be continuously updated
- Stakeholder networks will be maintained for future opportunities

# Was Interreg Needed?

Yes!

- Part funding for investments vital as they struggle to compete against fossil fuels ( Gas)
- Peer to peer exchange – Expert partners guiding learner partners
- Site visits for decision makers
- Paid for work on transition roadmaps that are vital for future planning
- Allowed comparison of policy between regions

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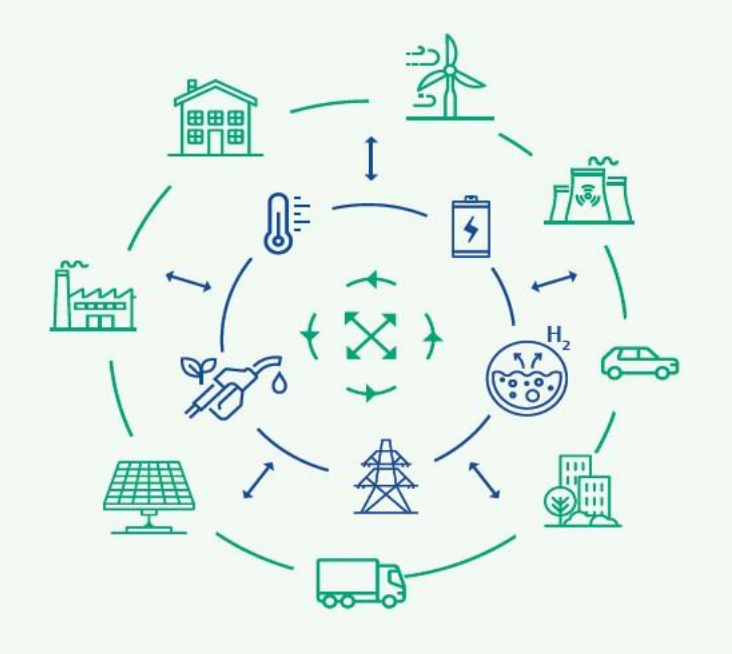


Source: Factsheet EU Energy Systems Integration Strategy (July 2020)

# How will the theme be covered in 2021-2027 ?

# Priority 2

## Smart and just energy transition

**Energy efficiency**

**Renewable energy**

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# NWE challenges

**Low energy performance** in buildings and transport

**Hampered effectiveness** of energy storage systems

**Low deployment** of decentralised energy production and/or smart energy systems

Significant **unexploited potential** for improving the renewable energy production and consumption mix

## How to exploit the potential in NWE?
## How to deploy solutions more widely?

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# Types of activities

- Joint strategies and action plans implemented
- Pilot actions up-scaled/replicated
- Capacity building and awareness raising

# Expected impact by projects

## Increased capacity of NWE communities in energy efficiency and/or the renewable energy solutions

- Increased awareness (from citizens to businesses)
- Energy transition embedded into territorial strategies and local initiatives
- Increased capacity of stakeholders to translate energy efficiency principles into policies, services, products and actions
- More and innovative technologies, solutions, products and services