

# GeoAtlantic Project Conference

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University of Exeter.

‘Boosting local ecosystems for the use of geothermal  
energy in the Communities’

# Research and Innovation in the Energy sector

Dan Stefanica - European Heat Pump Association  
(EHPA)  
Brussels, Belgium

## What does EHPA do?

We are a membership (140 members) organization based in Brussels ([website](#))

**Mission** - In a fully decarbonised Europe, heat-pump technologies are the number one heating and cooling solution, being a core enabler for a renewable, sustainable and smart energy system.

**Vision** - Be a forward-looking association aiming at putting heat pumps at the centre of the energy system by communicating the benefits of heat pumps, providing relevant information and being a reference point and integrator to all stakeholders.

## How?

- Based around our Projects, Policy, Communications teams and Keymark secretariat
- Running a lot of online events lately (<https://twitter.com/helloheatpumps>)
- Publish a yearly Market Report on Heat Pumps

## Who is Dan Stefanica

- Project manager at EHPA – currently running 5 H2020 1 Interreg + 2 more H2020 from September and a EU Commission Tender
- Managing our [R&I Committee](#) and [HPCY award](#)
- Managing our activities around future funding (e.g. HE, LIFE, the Innovation Fund) and future project proposals

## Learning from our projects regarding R&I

- Nowadays a blend of technologies and processes are key (e.g. HPs and energy optimization software)
- Establishing correct SRIAs with experts in the field is crucial in informing policymakers
- Training of professionals (all along the value chain) and knowledge transfer to the user (as well as user feedback e.g. on UI) is crucial going forward

## A bit on R&I Funding

- Bad : Inefficient incentives, policies and legislation
  - Consumers not factoring in RE
  - Fossil fuel subsidies
  - Lack of green financing options
  - Energy-as-service not taking off
- Good : A lot of funding opportunities
  - HE, LIFE, Innovation Fund, EU Green Deal, Just Transition Fund
  - A lot of opportunities nowadays (e.g. strings attached to bailouts, public perception on R&D)

## So, what are some R&I examples?

Using our draft SRIA for the [Sec RHC](#) project and focusing on Buildings, Districts and Industries

# Focus on Buildings

1. Technologies and systems for cost-effective retrofitting of old buildings
  - not only the insulation of the building must be improved, but also the efficiency of the used technologies and the way they interact with each other
  - future-proof concepts should also address efficient cooling, which is expected to overtake the energy demand for heating in 2050 (IEA: the future of cooling)

# Focus on Buildings

2. Heat and cold storage technologies for new buildings and their system integration with RES
- making storage solutions more universal for different types of buildings, energy sources and climate conditions (kits approach and modular solutions)
  - reduce thermal losses during storage, especially for long-term solutions
  - optimise storage management with software

## Focus on Buildings

3. Super-smart buildings and energy architecture/design
  - smart use of the increasing number of data available (e.g. smartphones, wearables)
  - fully automated building management of energy systems as to optimise the energy use and power generating technologies
  - training of specialists to service and maintain system – easy remote monitoring platform (that the user can also access)

# Focus on Districts

1. Sector and energy carrier integration/optimisation
  - buildings, services (e.g. communication), transport (e.g. charging infrastructure), industry (e.g. heat producing) closely interact with each other and energy carriers/storage
  - transform intermittency of RES-wind/solar into predictable/controllable energy supply through high temperature thermal energy storage and supply backup through combined heat and power management.

## Focus on Districts

2. Substantially increase system flexibility through digitalisation on multiple time scales
  - development of algorithms for short term forecasting of heating/cooling and electricity demand/price, using innovative approaches, enabling a better estimation of variables
  - Integration/optimisation of power-to-heat (P2H) technologies (especially HPs) and combined heat and power (CHP) plants as to support and augment the electrical grid

## Focus on Districts

3. Technologies and processes that turn users into prosumers
  - development, test-implementation and optimization of local heating/cooling/electricity markets with user friend UI
  - co-creation end user engagement strategies focusing on participatory knowledge creation; consumer preferences & motivational patterns mapping; knowledge sharing.

# Focus on Industries

1. Development of new technologies integrating different RES to provide reliable and on demand energy to industrial processes

- new technologies to integrate the fluctuating RES like solar heat, PV, excess heat into continuous industrial processes are needed.

For examples heat integration can come from: (high temperature) solar collectors, heat pumps and thermal storage.

## Focus on Industries

2. Development and deployment of new hot/cold storage
  - thermal energy storage technologies that couple different parts of the process chain, moving thermal flows from one part to the other and reducing the amount of process waste heat
  - storage (molten salts, molten metals) to phase change (paraffines, salt hydrates, polymers, salts, metals) to sorption and hydration (zeolites, salt hydrates) to chemical reactions (metal oxides/hydroxides, chemical looping, other processes)

## Focus on Industries

3. Enhanced applications for AI and software solutions that increase the share of RES in industrial processes while reducing implementation risks and improving efficiency
- standardised and/or modular, easy to use software solutions rather than tailor made (expensive) ones
  - standardised interfaces and data flows (sensors – database – analysis (machine learning) – rapid reaction and improvement.

**Thank you for your attention!**

**What R&I actions do you find worth pursuing?**