EVOLVE

Place, Time and Value study for Blue Energy across Europe

EVOLVE: Partner Capabilities

THE UNIVERSITY of EDINBURGH
School of Engineering

Policy and Innovation Group

http://www.policyandinnovationedinburgh.org/

Supported by:

OCEAN ENERGY ERA-NET COFUND

Scottish Enterprise

Swedish Energy Agency

FCT Fundação para a Ciência e a Tecnologia

aquatera environmental services and products

WavEC Offshore Renewables

RISE

ORBITAL MARINE POWER

CORPOWER OCEAN

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Electric Power Systems unit-RISE

- *Research unit within the Research Institute of Sweden*
- *Services:*
  - Techno and Socio-Economic Assessment
  - Life Cycle Evaluation
  - Array Optimization Analysis
  - Technology Roadmaps
  - Consultancy
- *Team leader: Henry Jeffrey*

''The group analyses the dynamics of innovation in energy systems, especially the relationships between policy, investment and innovation.''

Policy and Innovation Group – Role in EVOLVE

The University of Edinburgh's Policy and Innovation group are:

- *EVOLVE project technical manager*
- *Work package leader for WP5 – Detailed Economic Energy Modelling*
- *Task leaders for:*
  - *T3.4 – Demand and Supply*
  - *T6.2 – Consolidation of key project technical results*
  - *T7.3 – Scientific dissemination*
- *Contributors to all EVOLVE WPs*

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The EVOLVE Project

Key question: Can blue energy make an effective contribution to European energy systems and markets, with particular reference to where, what, when, how and at what price?

Spatial modelling:

- 250m RADMAPP model of north-west Europe
  - Resource, demand, grid
  - Technical feasibility, cost of delivery, access to markets

Power systems modelling:

- Country-scale studies (GB, IE, PT)
  - Hourly economic dispatch of net zero deployment up to 2050
  - Marginal electricity prices, balancing costs, system security indices
- Microgrid studies (GB, PT)
  - 100% renewable systems
  - Supply-demand matching, storage requirements, system cost

aquatera
environmental services and products

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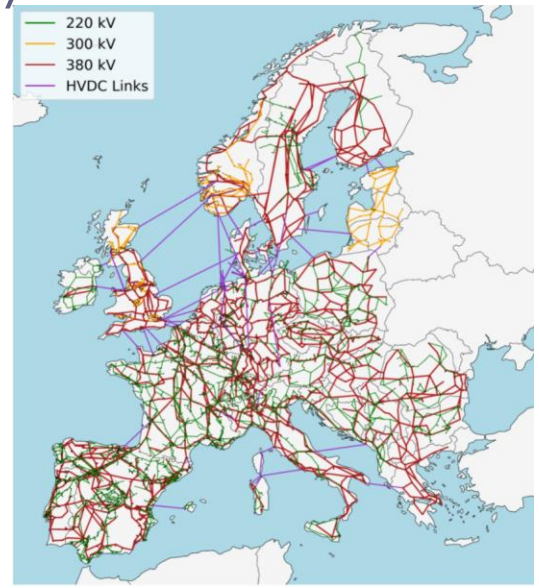
EVOLVE WP5 modelling - PyPSA

- PyPSA – Python for Power System Analysis
- Free, open source software
- Maintained by Energy System modelling group at Karlsruhe Institute of Technology
- Over 100 citations
- Featured in many prominent journals and conferences



Energy 160 (2018) 720–739

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Synergies of sector coupling and transmission reinforcement in a cost-optimised, highly renewable European energy system

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Energy Economics 72 (2018) 376–392

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Expansion planning of the North Sea offshore grid: Simulation of integrated governance constraints

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Electric Power Systems Research 158 (2018) 126–135

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Electric Power Systems Research

journal homepage: www.elsevier.com/locate/epsr

Linear optimal power flow using cycle flows

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