



# *From Islands to Continents: Scaling MAESHA's Flexibility Lessons*

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 957843 (MAESHA). This output reflects only the author's view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

# Who am I?

Aleksei Mashlakov, PhD  
Research & Innovation Manager  
Energised Futures, powered by Centrica

- Second-generation electrical engineer with expertise in energy informatics.
- PhD from LUT University, Finland, developing solutions to enable large-scale participation of small-scale energy resources in energy markets and grid ancillary services.
- Joined Centrica in 2022 and now lead research activities in energy flexibility and markets within Energised Futures.



# Who we are

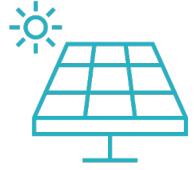
## 4 EnergisedFutures

*Powered by* **centrica**

A new in-house research and innovation incubator launched to accelerate a new energy future and catalyse Centrica's purpose to energise a greener, fairer future.



# We have 6 pillars (today...)



## flexibility

how smart tech and consumer behaviours can change supply and demand



## markets

how to better value, settle, balance, and regulate energy



## automation

how to optimise device control at scale



## connectivity

how to reliably connect properties and new devices



## accessibility

how to ensure the future of greener and fairer energy is inclusive of all



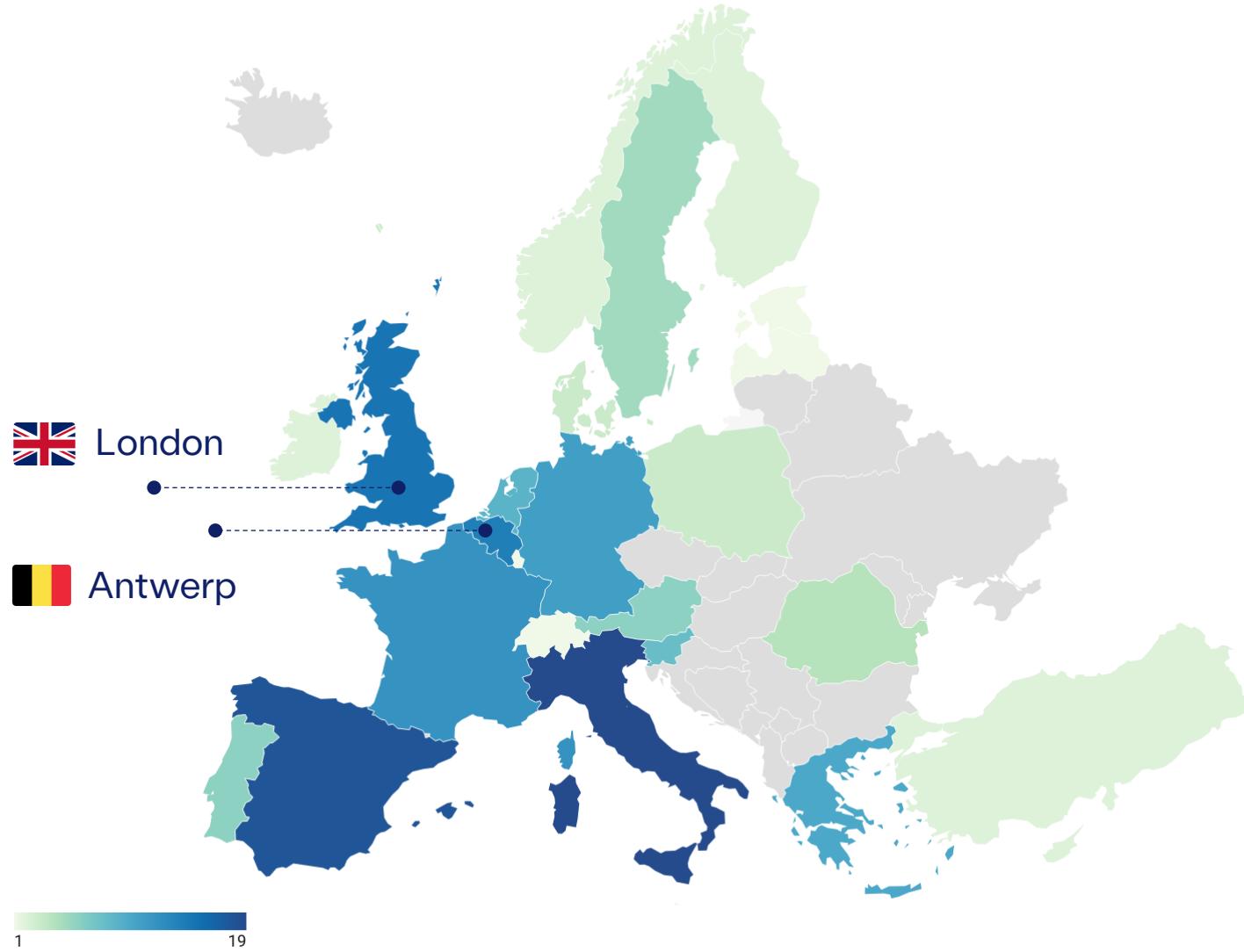
## engagement

how to positively impact perceptions and adoption of new energy solutions

# **Focused on R&D**



Today we have projects and partner networks all across Europe



R&I Projects



Bright



iDSR - IREF



Optimise Prime



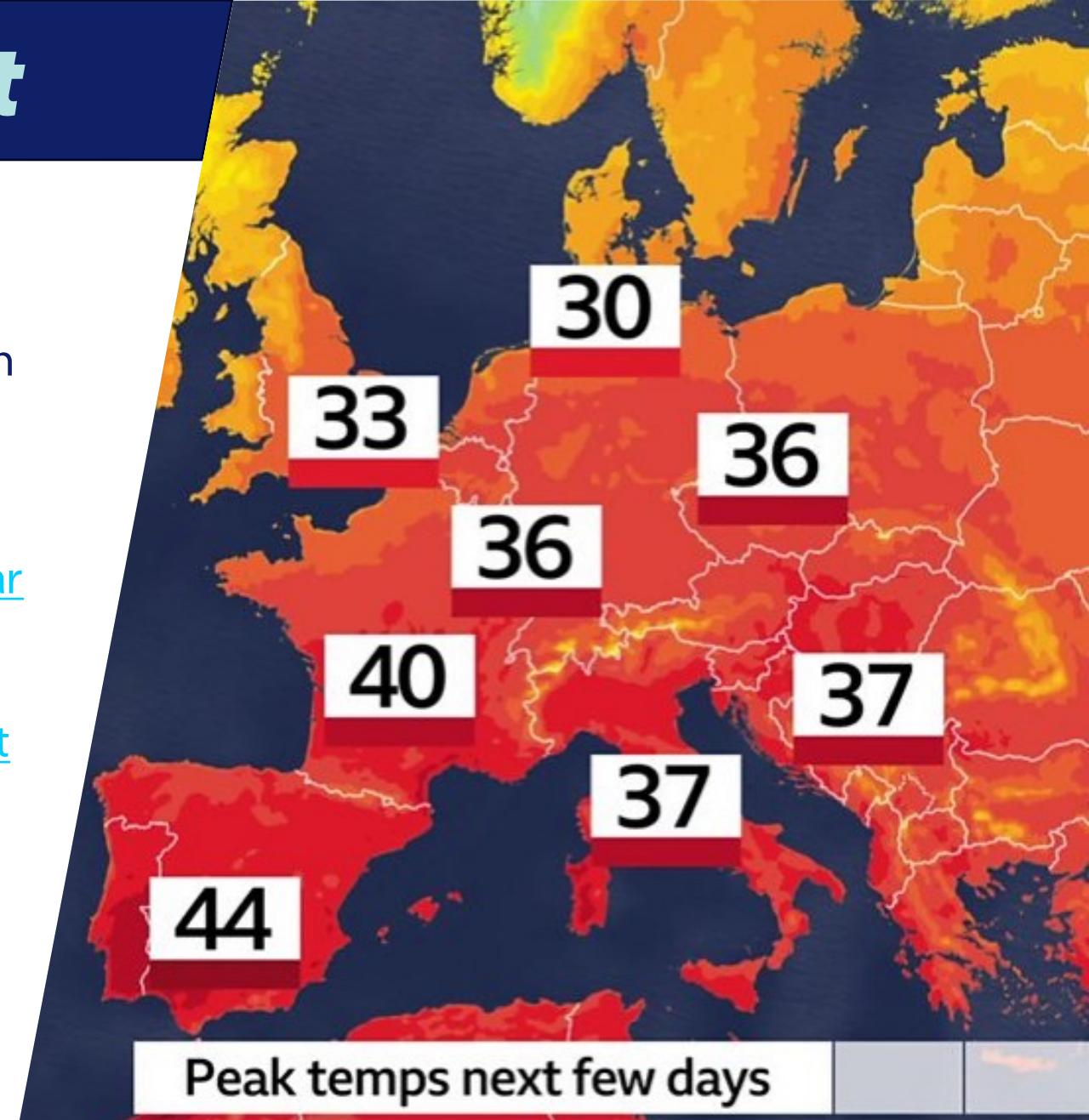
**PrivateFlex**  
Privacy-Preserving Flexibility

# Record-breaking heat

June–July 2025 heatwave brought peak afternoon temperatures to over 40 degrees C in France and Spain, breaking mainland Portugal's record of [46.6°C](#).

2025 is likely to become the [second hottest year on record](#), only behind 2024

[Europe is the world's fastest-warming continent](#) for the period 2015 - 2024





### Solar dominates midday

[50 GW](#) of power was provided by solar in Germany during the peak days of the heatwave



### Cooling demand surges

Daily power demand increased [up to 14%](#) during the 2025 heatwave



### Fossils ramp up in the evening

[25% more](#) fossil burn in Germany and Spain from average demand levels during June evenings



### Markets are under stress

During the hottest days, electricity price spreads [exceeded 400 €/MWh](#) and imbalance price was reaching [4000 €/MWh](#)

Hitzeflaute comes from *hitze* – the German word for heat – and *flaute*, which means lull, reflecting the absence of strong winds in such spells.



“

**Europe's power system is now shaped as  
much by climate as by technology.  
Heatwaves are no longer rare disruptions but  
regular, systemic stress tests.  
Each year, the margin for error narrows.**

Jean-Paul Harreman

Director, Montel Analytics



*On Monday, 28 April 2025, at 12:33 CEST, a major power blackout occurred across the Iberian Peninsula affecting mainland Portugal and peninsular Spain.*

*And EU islands  
face acute  
vulnerabilities to  
rising heat*



# EU Islands challenges



## Surging cooling demand



## Lack of Interconnection

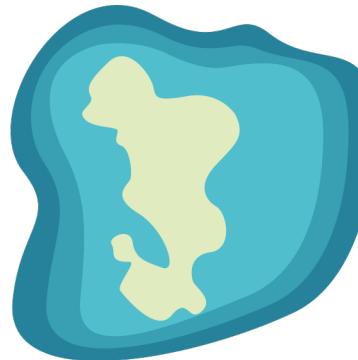


## Outdated infrastructure

Low grid visibility and automation



## Solar intermittency

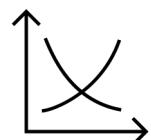


## High fossil fuel reliance

More than 90% dependency on diesel generators



## Grid instability and power outages



## Low market liquidity

Low inertia systems with high ROCOF (~2 Hz/s)

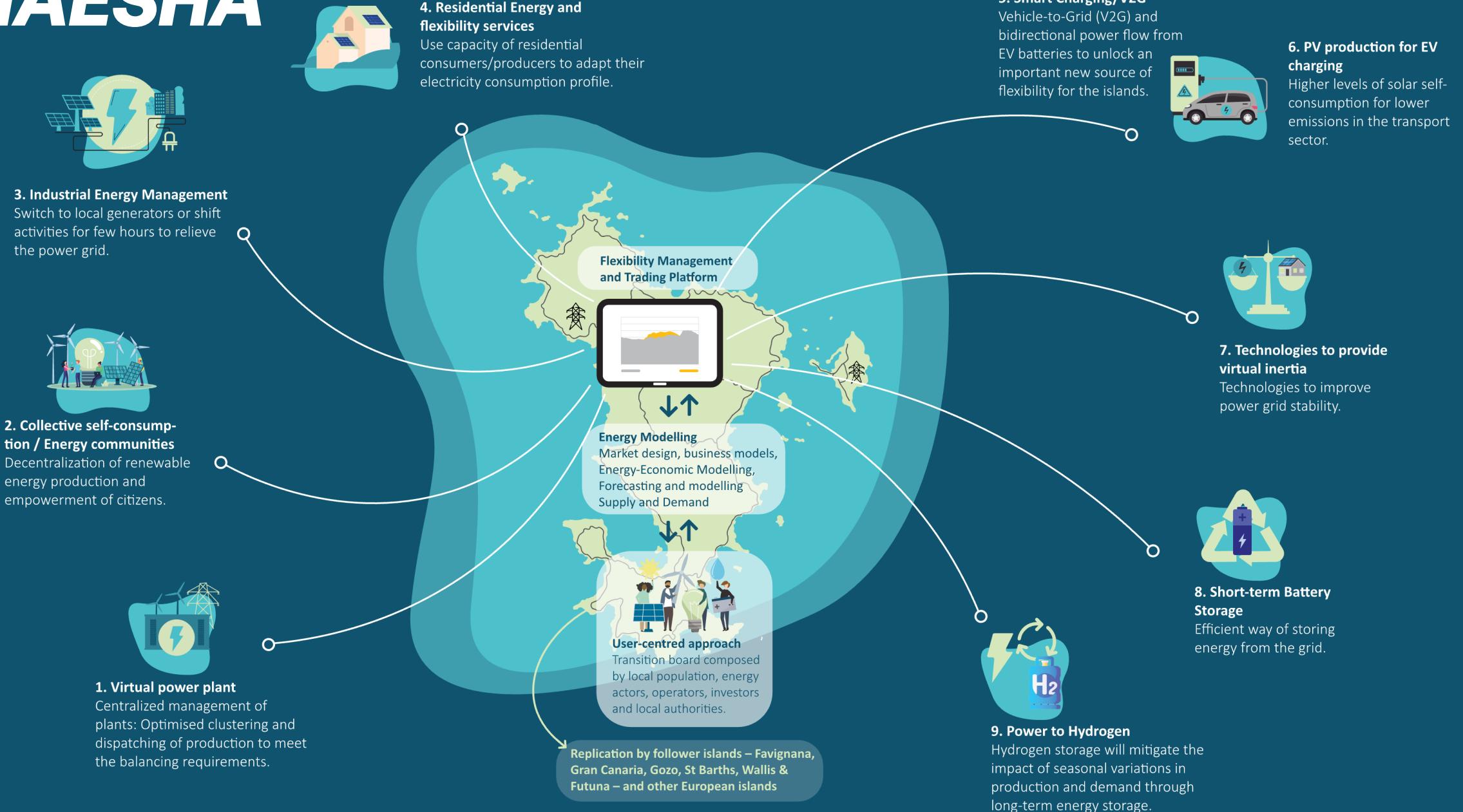
Small regulated markets with limited competition



## Subsidized supply tariffs

Lack of flexibility-driven incentives

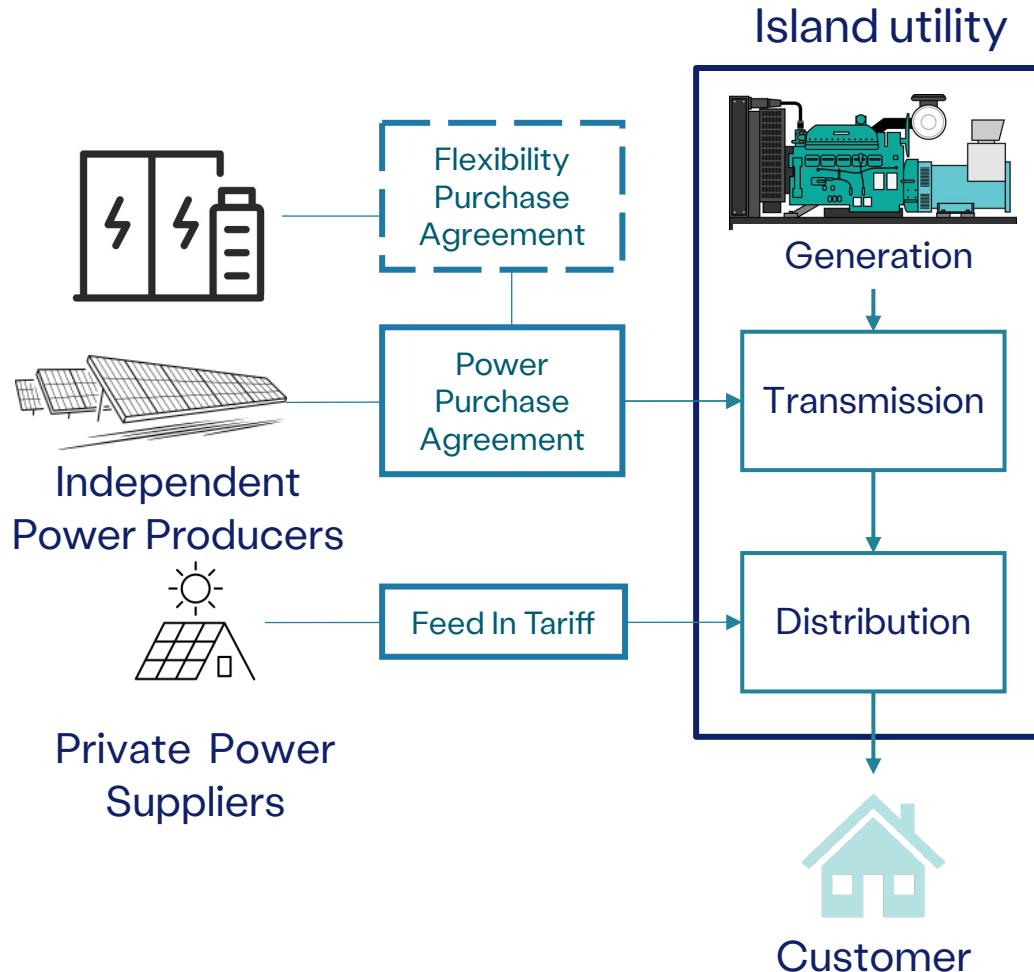
# MAESHA



# Island Flexibilization



## 'Business as usual' scenario

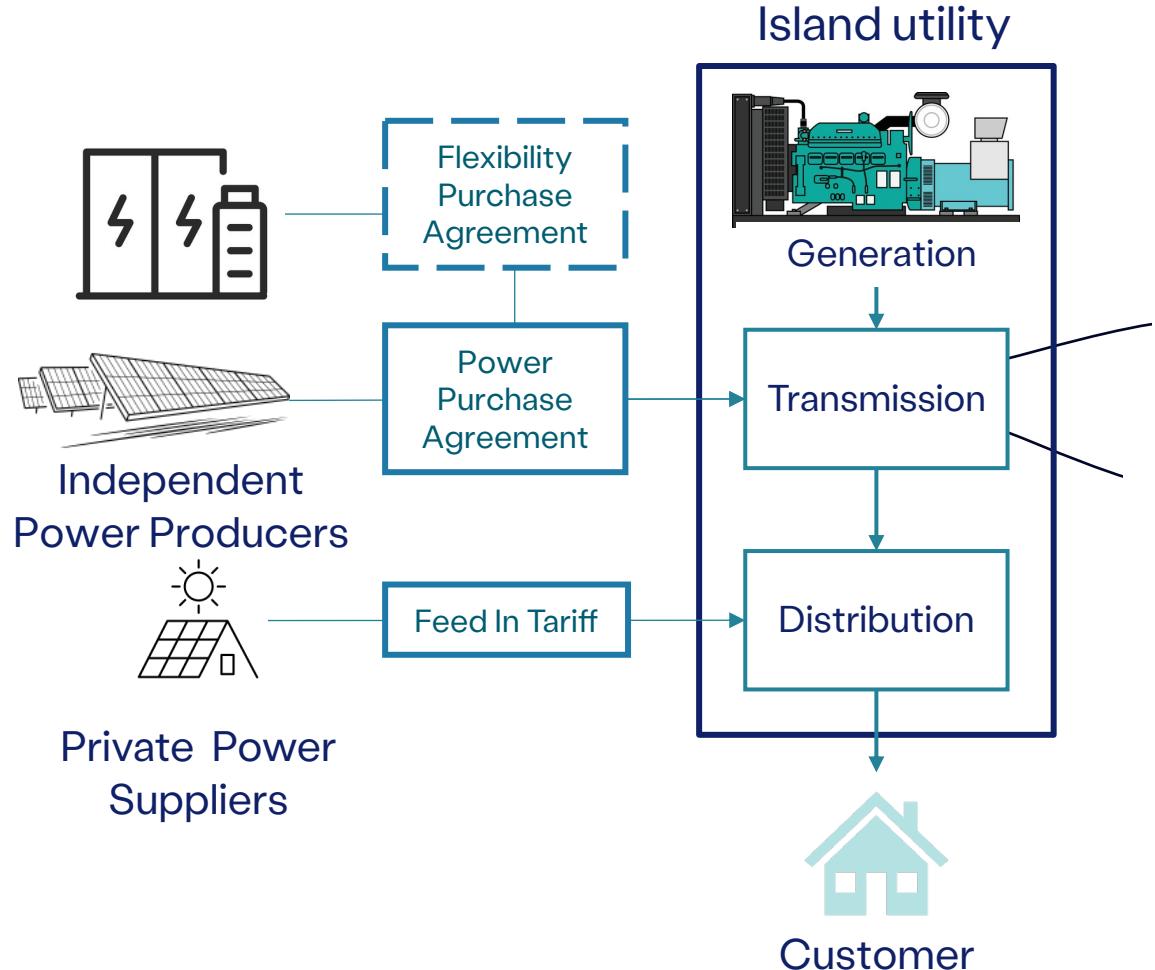


- Limited market competition in electricity supply
- Private sector involved through
  - Independent power producers (e.g., solar PV) via PPAs with the state utility
  - Private power producers connected to the distribution grid

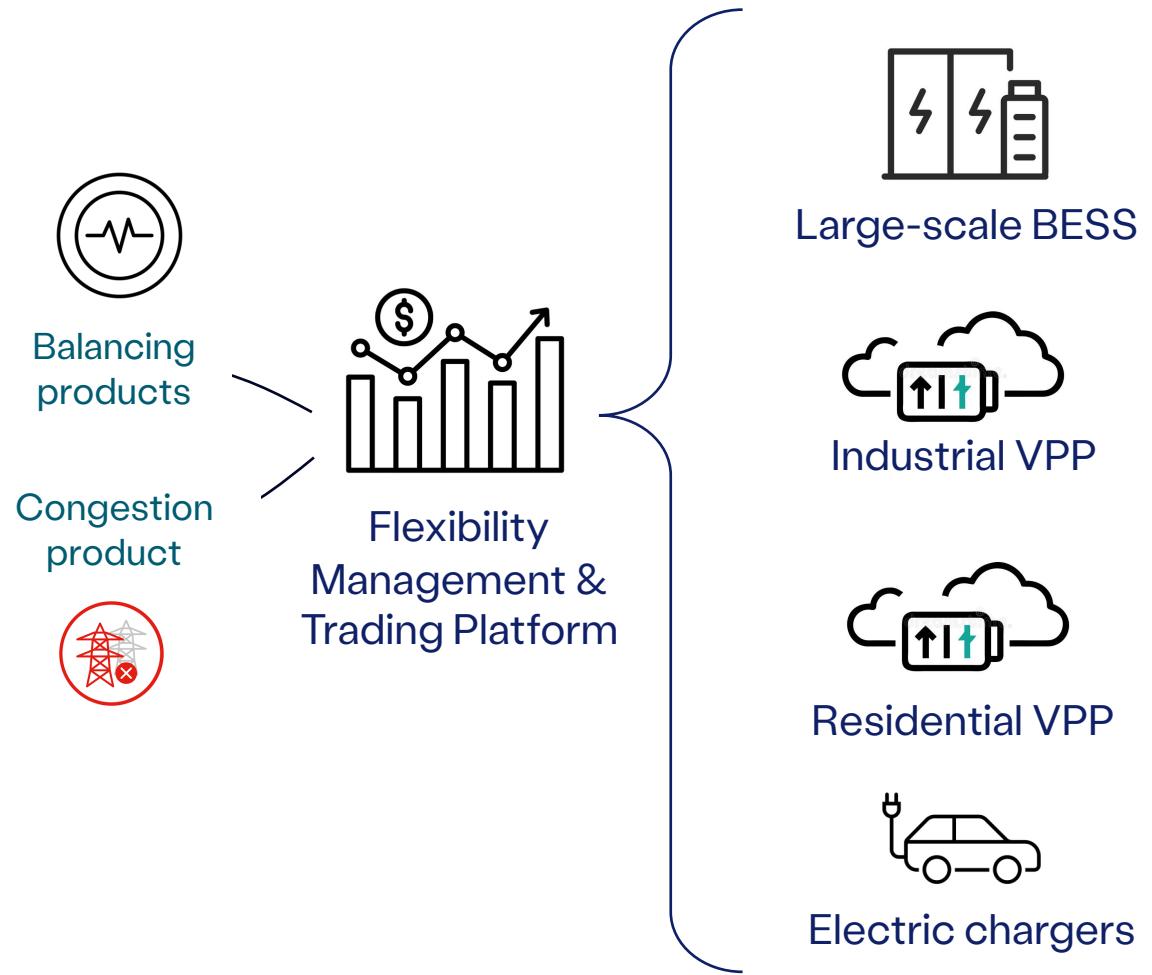
# Island Flexibilization



'Business as usual' scenario



'Market Flexibility' scenario





# The residential VPP

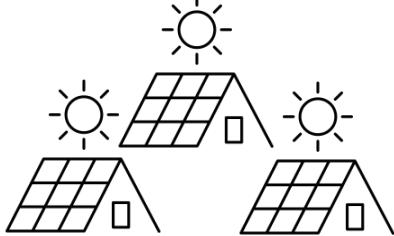
## Services



### Downward Regulation

Curtail solar production when system is over supplied

### Rooftop solar



### Peak Load Reduction

Smartly shifting air conditioning to reduce evening peak

### Air Conditioner



## Platform

### Forecast

Solar production and household thermal dynamics

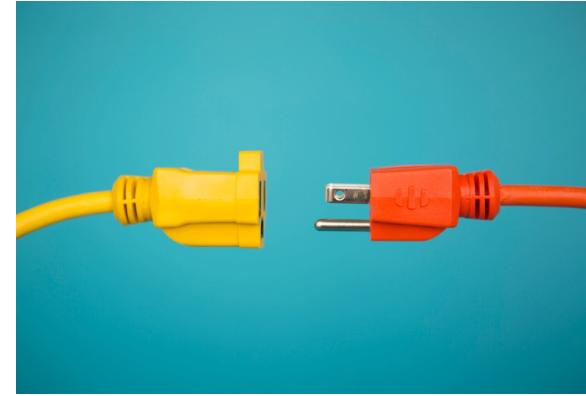
### Trade

Plan the bids in accordance with the expected system state

### Control

Distribute the market controls among the assets

# Scaling learnings to the mainland



## Normalize clean flexibility

Flexibility-driven curtailment is a cost-effective feature of the electrified energy future – not a bug

## Enable connectivity

Around 950,000 heat pumps remain offline today due to lack of connectivity with around half a million households connected Air-to-air heat pump in 2024

## Remove fixed kWh subsidies and agreements

Prevent fixed kWh remuneration schemes, and incentivize grid aware asset operation through relevant mechanisms and grid tariffs

# Come say hello



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Head of Energised  
Futures



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Research & Innovation  
Manager



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**Gunjan Arora**

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**Thijs Peirelinck, PhD**

Research Engineer



**Mindy Gold**

Communications &  
Community Lead

# Any questions?

Connect, work with, and/or join us .



[www.energised-futures.com](http://www.energised-futures.com)



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