REACT

Renewable Energy for Self-Sustainable Island Communities

Energy Transition on EU Islands Citizen Engagement

SUSTAINABLE PLACES 2020
October 27-30, 2020
Digital Event

Sustainable Places, 29/10/2020

Andrew Barney, Uppsala University
andrew.barney@geo.uu.se

Thomas Messervey, R2M Solution
thomas.messervey@r2msolution.com

This project has received funding from the H2020 programme under Grant Agreement No. 824395

WHAT IS REACT?

REACT is a 4-year research project funded by the EU's Horizon 2020 Programme.

Its objective is to achieve island energy independency through maximal exploitation of renewable energy sources, its optimal utilisation by managing the energy consumption and available storage assets and engaging end-users as key players in a local energy community.

AN INTEGRATED AND DIGITALISED SMART GRID

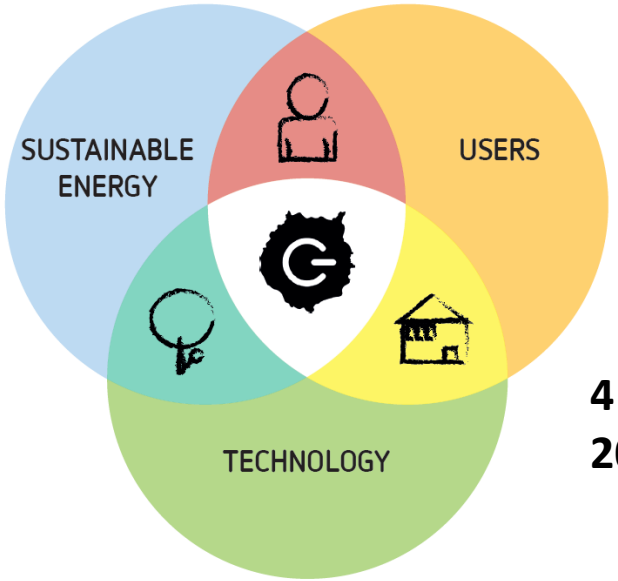
A cloud-based ICT solution which integrates high-flexibility distributed generation technologies, demand response and energy storage to provide 100% energy autonomy.

THREE ISLANDS, CLIMATES & MARKET CONTEXTS

Three different pilots will demonstrate the potential to reduce GHG emissions and energy costs by 60% and to achieve energy savings of at least 10%.

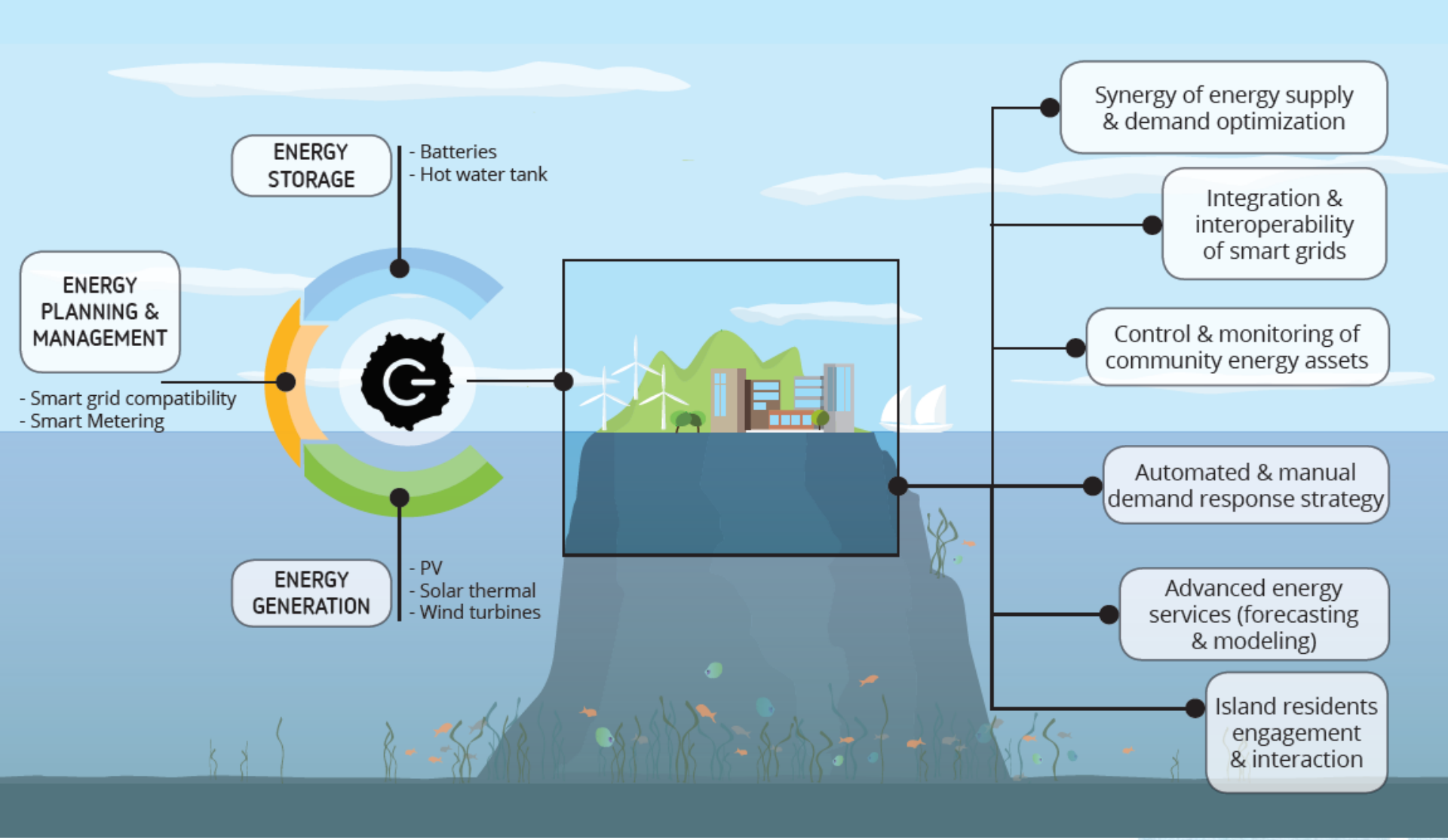
WIDE-SCALE REPLICABILITY ACROSS EU ISLANDS

Five follower islands that will allow partners to develop viable, large-scale replication plans that will measure the project's socio-economic benefits.



4 Years (2019-2022)
20 Partners

H2020 G.A. 824395



Smart (Metering – Renewables – Storage – Heat Pumps)

Optimized by an/the (REACT) ICT Platform

PILOTS

La Graciosa (Spain)

Climate: Marine west coast

Location: Atlantic Ocean

22 pre-selected residential dwellings

Reach up to 270 dwellings in La Graciosa & Canary Islands archipelago

Partners: AIE, FEN, ORD, AES.

San Pietro (Italy)

Climate: Mediterranean

Location: Mediterranean Sea

30 pre-selected residential dwellings & community buildings

Reach up to 2,300 dwellings in San Pietro & the Sardinia Region

Partners: CCF, R2M,MID, MERCE

Aran Islands (Ireland)

Climate: Marine west coast

Location: North Atlantic Ocean

24 pre-selected residential dwellings & community buildings

Up to 450 dwellings in Aran Islands & islands along the west coast of Ireland.

Partners: UNG, ESBN, AES, ELE

3 Pilots Islands
5 Follower Islands

FOLLOWER ISLANDS

Gotland Island (Sweden)

Climate: Humid continental

Location: Baltic Sea

Partner: UPP

Lesbos Prefecture (Greece)

Climate: Mediterranean

Location: Aegean Sea

Partner: AEG

Isle of Wight (UK)

Climate: Marine west coast

Location: North Atlantic Ocean

Partner: TEES

Majorca Island (Spain)

Climate: Mediterranean

Location: Mediterranean Sea

Partner: FEN

Reunion Island (France)

Climate: Marine east coast

Location: Indian Ocean

Partner: LE2P

Citizen engagement

To achieve its goals the REACT project will need to **involve** the people living on the islands, not only for the installation of RES and storage solutions but also for DR programs to be successful.

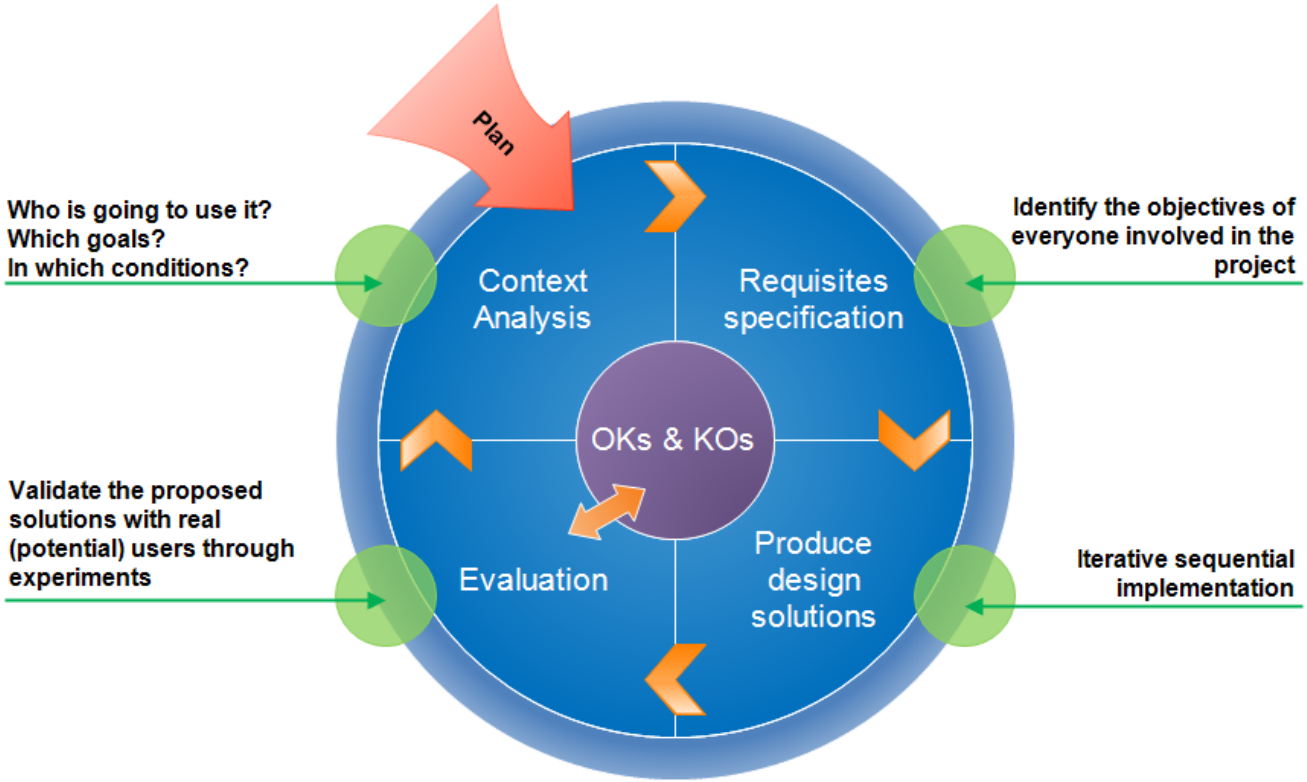
Properly engaging users is important to the project's **success** and on the **longevity** of the REACT solution after the project's end!

Citizen engagement – First Steps

- Establish the best, generally applicable criteria for recruiting islanders to become participants for demonstration RES and storage infrastructure solutions
- Develop tailored community-based actions and materials
- Attract/engage the best suited islanders to become participants for the demonstrations following the criteria
- Gather data on user practices, specific to each location, to guide the demand response strategy

Citizen engagement – Later Steps

Evaluate and understand users to improve engagement and shape DR strategy using the User Centered Design (UCD)



Engagement principles & strategy across project life-cycle

Timeline	Stage one Month1-12	Stage two Month 6-48	Stage three Month 24-48	Stage four Month 36 -48
	Meeting the communities	**Recruiting & Engagement**	**Demonstrating the potential**	**Replication & Sustainability**
Objective	Understanding community context & introducing REACT	Customized strategies to involve the communities and raise awareness	Show potential to locals and follower islands. Learn. 2nd Recruitment.	Involve follower islands and guarantee REACT's sustainability.
Actions (Focus)	Interviews Community events. Surveys	Community events involving public & relevant institutions Creation of online communities	In situ demos, Collect user feedback Keep awareness & engagement Involve larger media outlets Share results	Sustainability Training (events) Innovation workshops with followers Presentations at relevant events
Materials & Channels	Website Social media channels Project presentation Roll-up Project presentation brochure	Website + blog Weekly content (tips & tricks) SM channel. Customized recruiting brochures Customized presentations (events & video). Recruiting videos Learning materials (Gamification)	Website + blog Weekly content (demonstrations) Keep all channels active. Real videos (1 per pilot + global) Assessment & TAM Testimonials & Experiences Collect feedback from SM	Website + blog Weekly content User-oriented manuals for recruits Customized posters (1 per follower island) Customized presentations Final project video Brochure Roll-up

Findings and Progress

- Survey and its findings per island (pubic report)
- Island level strategies and tools for engagement and DR design
- General publicity items for REACT, online community formation
- Locally produced material for engagement
- Interviews
- Some (pre-Covid) meetings on islands to attract users

Model 2: *Familiarity with SG ~ Age + Gender*

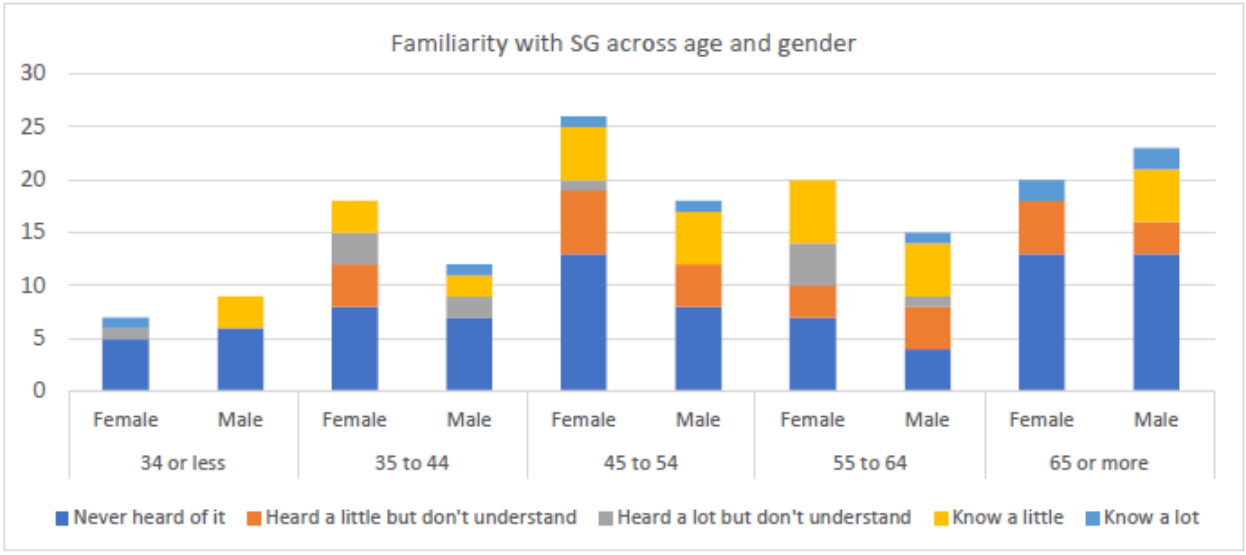


Figure 9. Familiarity with the SG concept across age groups and level of education

Survey of 179 residents
31 Questions, 81 Variables


REACT Renewable Energy for Self-Sustainable Island Communities

Welcome to the H2020 REACT project survey!

- The reticence of the island communities to take part in the REACT projects pilots led us to conduct a survey to assess the pilot island communities' perception of and readiness to engage with SGs and DR
- The main aims are to inform how we engage the island communities in the goals of the REACT project and the pilot demonstrations of the REACT solution.
- The findings are also useful when considering the development of the REACT technical solution and the scenarios to be tested at the pilot sites

Running the survey

- Caleta del Sebo in La Graciosa (Spain)
  - **21 surveys collected 13% of pop**
- Carloforte in San Pietro (Italy)
  - **77 surveys collected 3% of pop**
- Kilronan, Inis Mór one of the Aran Islands (Ireland)
  - **81 surveys were collected 35% of pop**

Select results from survey & analysis

Public Report
D4.2 User Engagement Approach
https://react2020.eu/
Prof. Tracey Crosbie
t.crosbie@tees.ac.uk

The key findings of the survey are that many people living on the REACT pilot islands

- Are highly motivated to increase the sustainability of their homes contribute positively to the electricity grid and make financial savings
- Are prepared to change their energy use behaviours
- Are unlikely to be motivated by community-based competitions
- Have little or no understanding of the SG and the technologies required to interact with it
- Are averse to adopting SG technologies such as smart meters and home energy displays

Select results from survey & analysis

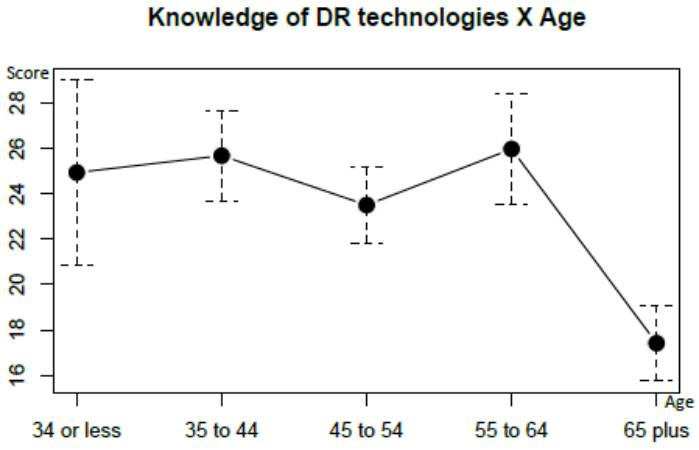


Figure 11. Knowledge of Demand Response (score) across different age groups

- acceptance of DR technologies is higher in the more educated group
- a significant relationship between how flexible people are likely to be and how familiar they are with DR technologies
- the results show that the reported flexibility is related to the level of education

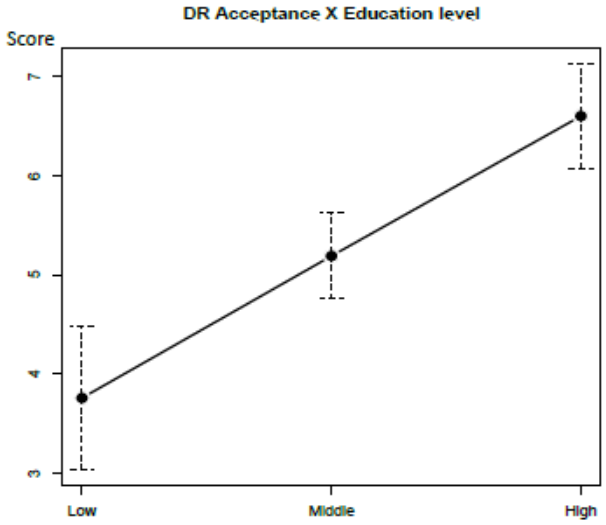


Figure 12. Acceptance of Demand Response (score) across education level

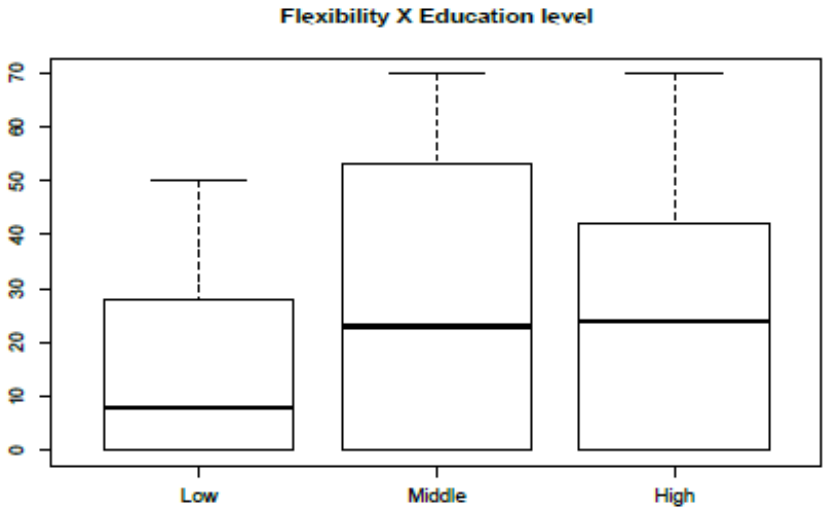


Figure 13. Flexibility (score) across different levels of education

020 G.A. 824395

Select results from survey & analysis

- There is a strong tendency to be willing to change the temperature in the home amongst those paying the highest energy bill

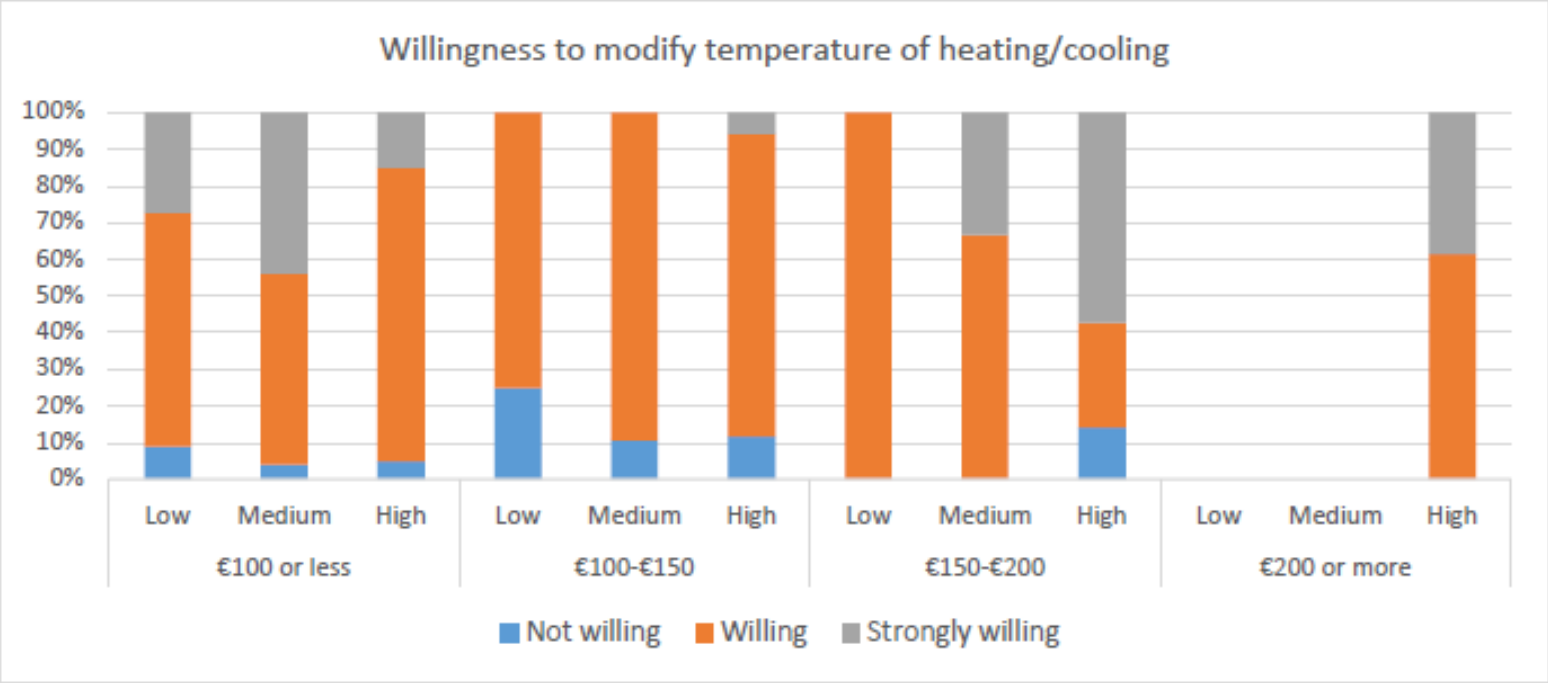
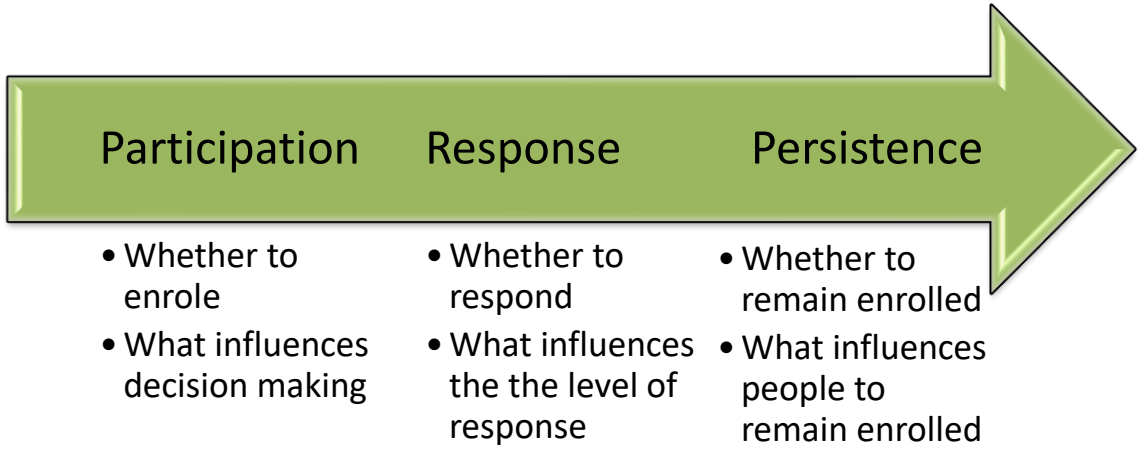


Figure 15. Willingness to modify heating/cooling temperature compared to energy bill impact and reported cost

Impact on user engagement

REACT's User Engagement Strategy

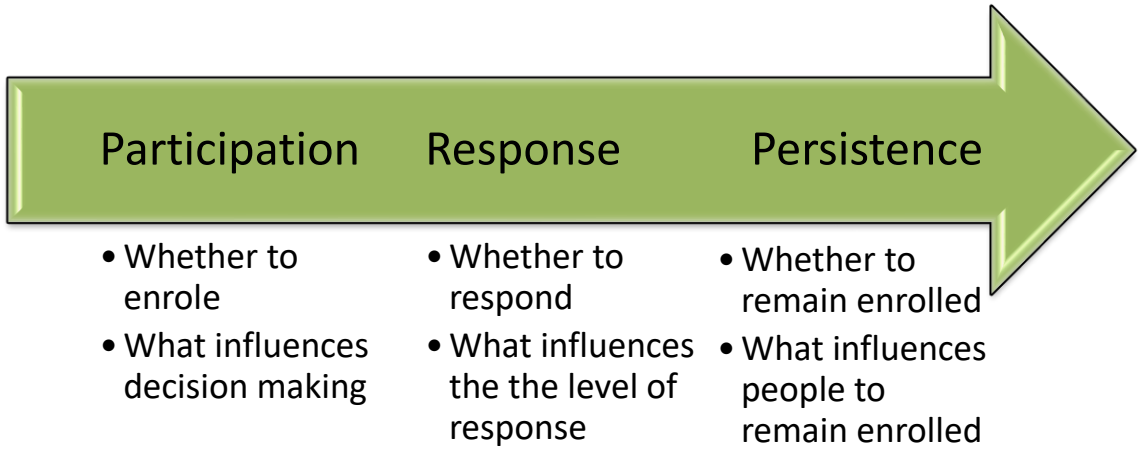
- The engagement strategy has to be appropriate for each island's context, considering the local language, age of the residents and their education levels
- Tailored to their level of familiarity with project methods and technologies
- Education regarding project methods and technologies should be engaging
- Communication routes should be continuous and persistent.
- The financial benefits of REACT should be communicated alongside environmental and social benefits



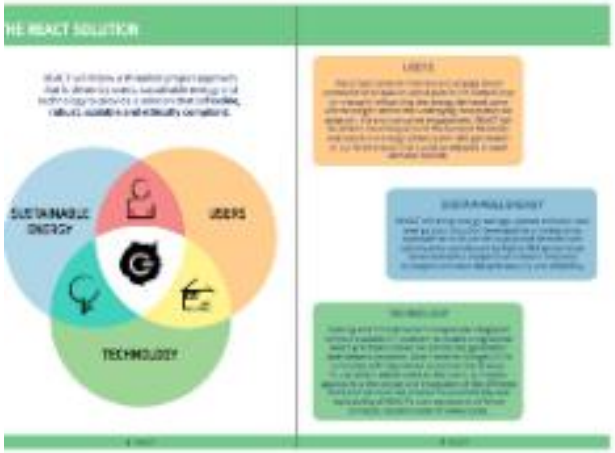
Impact on user engagement

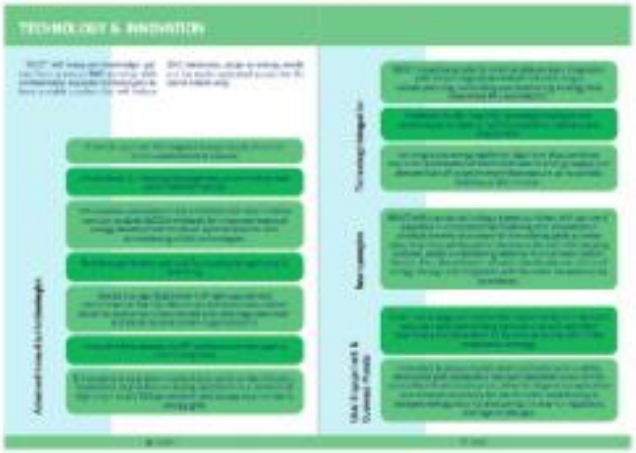
For design of DR Actions

- DR actions should not disrupt people's everyday routines more than is necessary.
- DR actions should be automated to ensure seamless integration into people's everyday life.
- Override mechanisms should be designed into the platform when automation is used.
- Opt-out options should be included in DR contracts



Some Samples:
Engagement literature: written & visual





Translated Materials

La Graciosa visit:
Communication Activities

Custom materials in Spanish

- A3 Poster
- A5 flyer 2-sided

Videos (youtube channel)

La Graciosa visit:
Communication Activities

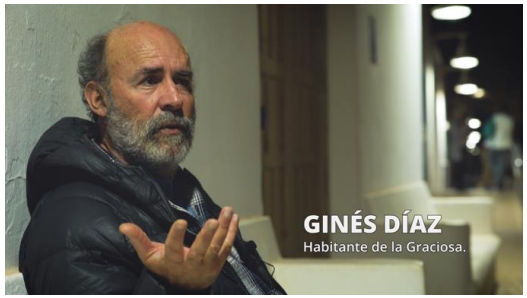
Video: 171 views total!

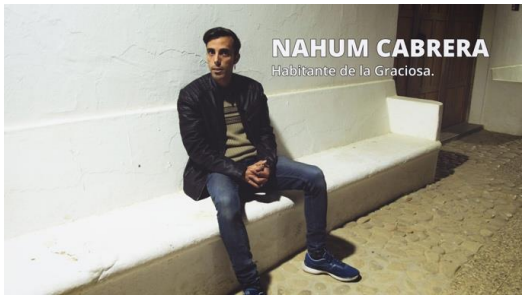
- ES: 72 views
  https://www.youtube.com/watch?v=fLpgYiQdPoI
- EN: 99 views
- https://www.youtube.com/watch?v=vcxe1-Im4uM

Video interviews with citizens

La Graciosa visit:
Communication Activities

Series of 5 interviews with local residents (pending publication)





Getting out to the mainstream media

La Graciosa visit:
Communication Activities

Good media presence in local and specialised online media.

Thanks to the support of partners, Ayuntamiento de Teguise and Orduña's press release!

[Link]

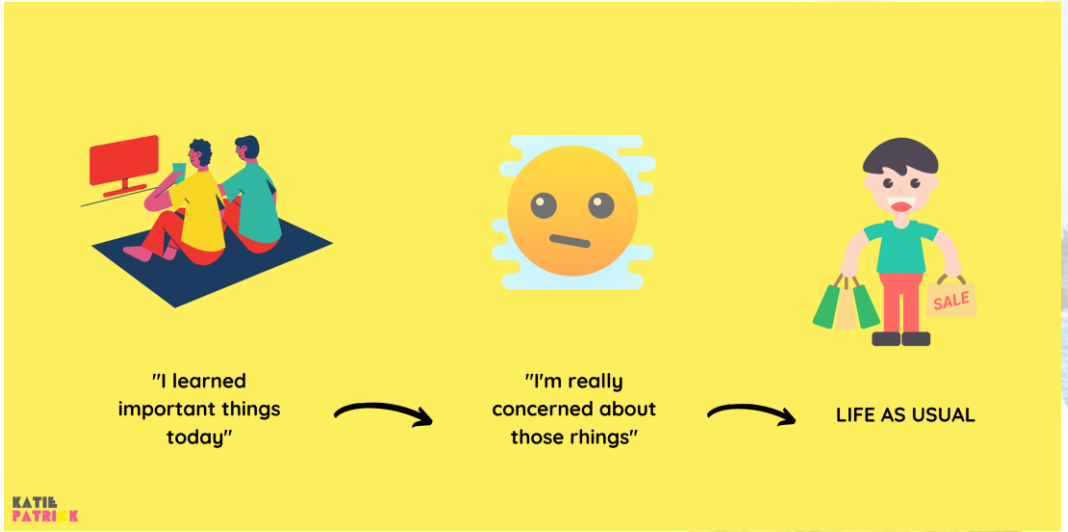
REACT Renewable Energy for Self-Sustainable Island Communities

MEDIA MENTIONS

MEDIA	DATE	EVENT
La Voz de Lanzarote	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Biosfera Digital	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
El Periodico de Lanzarote	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Lancelot Digital	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Cronicas de Lanzarote	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Diario de Lanzarote	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Cadena SER (Lanzarote)	1/30/2020	Pilot Proyect Presentation event (La Graciosa)
Solar News	3/6/2020	Orduña + La Graciosa
Ecoconstruccion.com	3/6/2020	Orduña + La Graciosa
Energetica21.com	3/6/2020	Orduña + La Graciosa
EnergiasRenovables.com	3/6/2020	Orduña + La Graciosa

Value Action Gap / Deficit Hypothesis

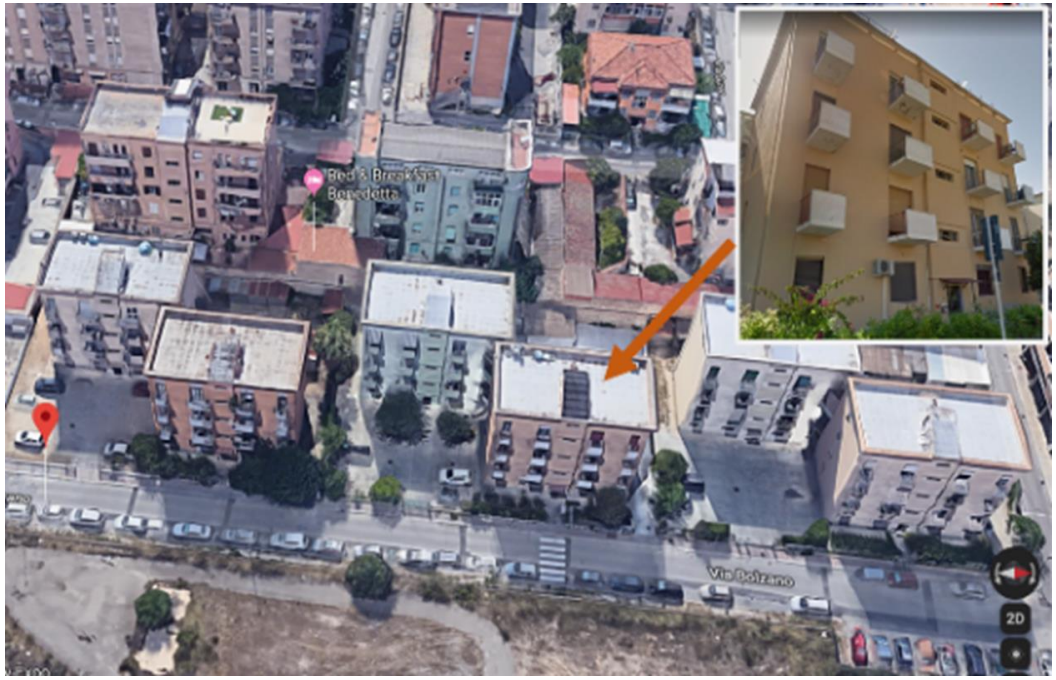
THE FLORENTINE by Leo Cendrowicz



How getting it done might work Smart Condo as an Example

- **Supporting Policy**
  - Collective Self-Consumption on shared walls
  - Transfer of Tax Credits C2B and B2B
- **Incentives**
  - Decreto 110% - Improve by 2 Energy Classes and get a good deal
- **Hands Free Technological Solutions**
  - Interoperable smart meters to renewables to appliances to HVAC
- **Turnkey Bundled Solutions**
  - It is easier to sell the renovated smart home as a bundle than selling each part independently
- **Delivery by Business Partnerships**
  - Not many organizations are structured for such an integrated offering – alliances are needed ++++ you need an energy supplier working with you for optimal energy contracts

How getting it done might work Smart Condo as an Example



- Condo has envelope problems
- Design retrofit to access 110% benefit
- Work with administrator + residents to form LEC
- Install Solar for collective self consumption
- Install fiscal certified blockchain enabled smart meters that enable P2P energy sharing
- Install single POD meter and work with energy supplier for new type of energy contract

Value Proposition:

- Access to renewable energy
- Avoidance of tax/distribution costs
- More efficient building via retrofit
- Use of tax credits to fund vast majority of work

R2M energy INNOVATIVE NZEB ESCO

Scaling up – Aggregated Assets

Aggregated Assets / Energy Communities

- Where you own the grid infrastructure (LEC)
- Where you don't own the grid infrastructure (VPP)

Key Aspects to Unlock Progress

- Supporting Policies and Incentives
- Key technologies (next generation smart meters)
- New Energy Contracts

Engagement Levers

- Public buildings (schools / sport facilities – both present in REACT)

THANK YOU FOR YOUR ATTENTION

REACT

Renewable Energy for
Self-Sustainable Island Communities

This project has received funding from the H2020 programme under Grant Agreement No. 824395

Andrew Barney, Uppsala University
andrew.barney@geo.uu.se

Thomas Messervey, R2M Solution
thomas.messervey@r2msolution.co