



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

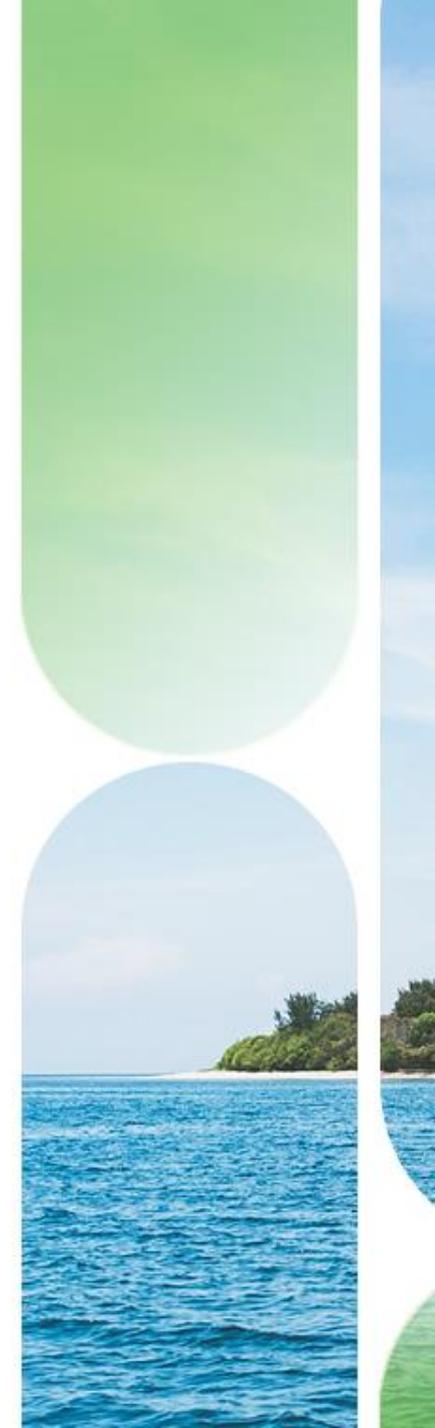
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This project has received funding from the H2020
programme under Grant Agreement No. 824395



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

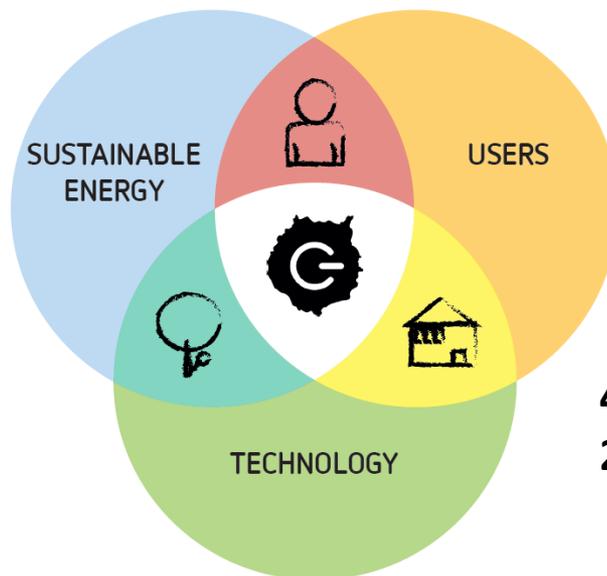
A cloud-based ICT solution which integrates high-flexibility distributed generation technologies, demand response and energy storage to provide 100% energy autonomy.

THREE ISLANDS, CLIMATES & MARKET CONTEXTS

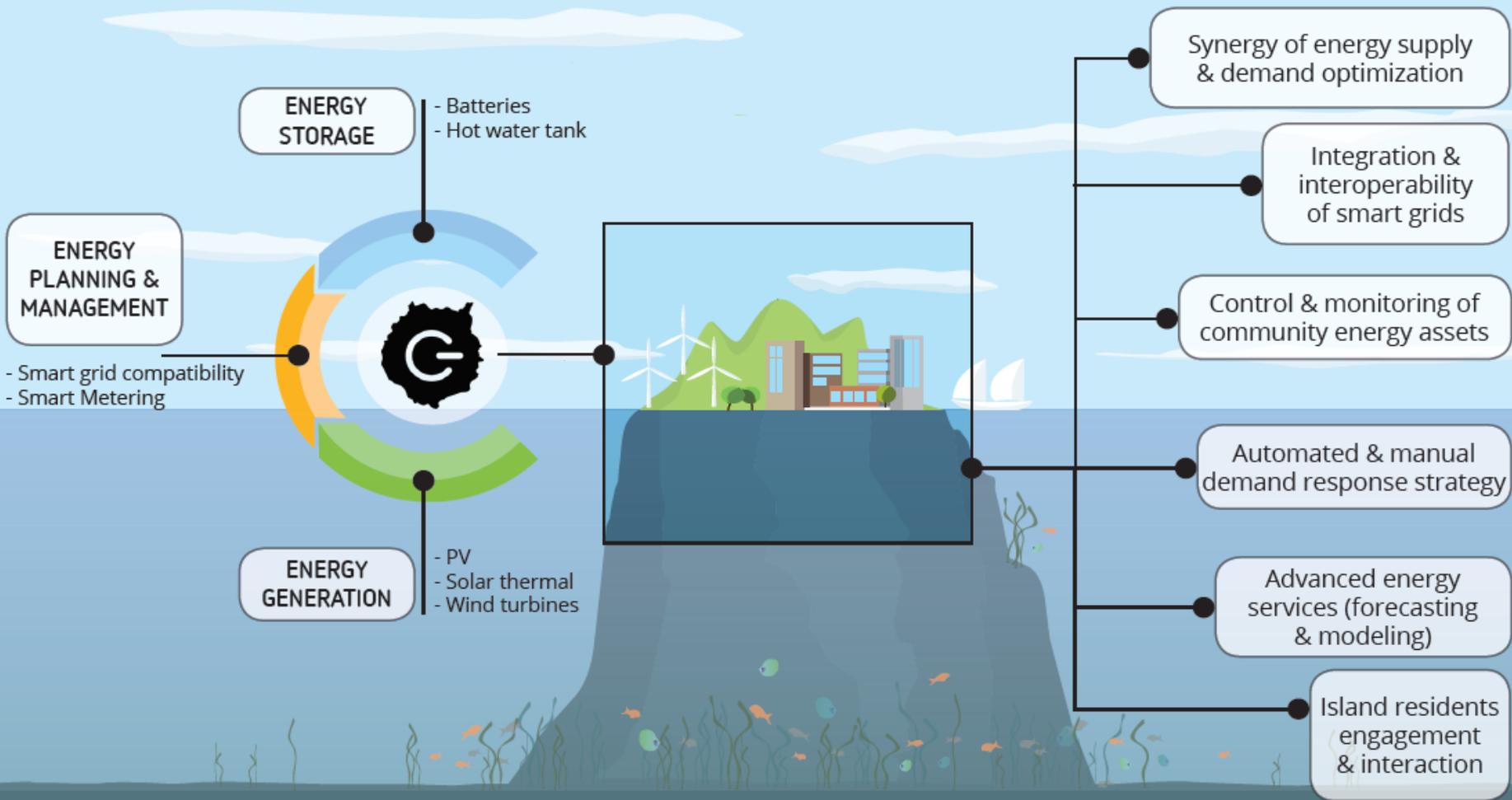
Three different pilots will demonstrate the potential to reduce GHG emissions and energy costs by 60% and to achieve energy savings of at least 10%.

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**



Smart (Metering – Renewables – Storage – Heat Pumps)

Optimized by an/the (REACT) ICT Platform





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, ESNB, AES, ELE

3 Pilots Islands
 5 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!



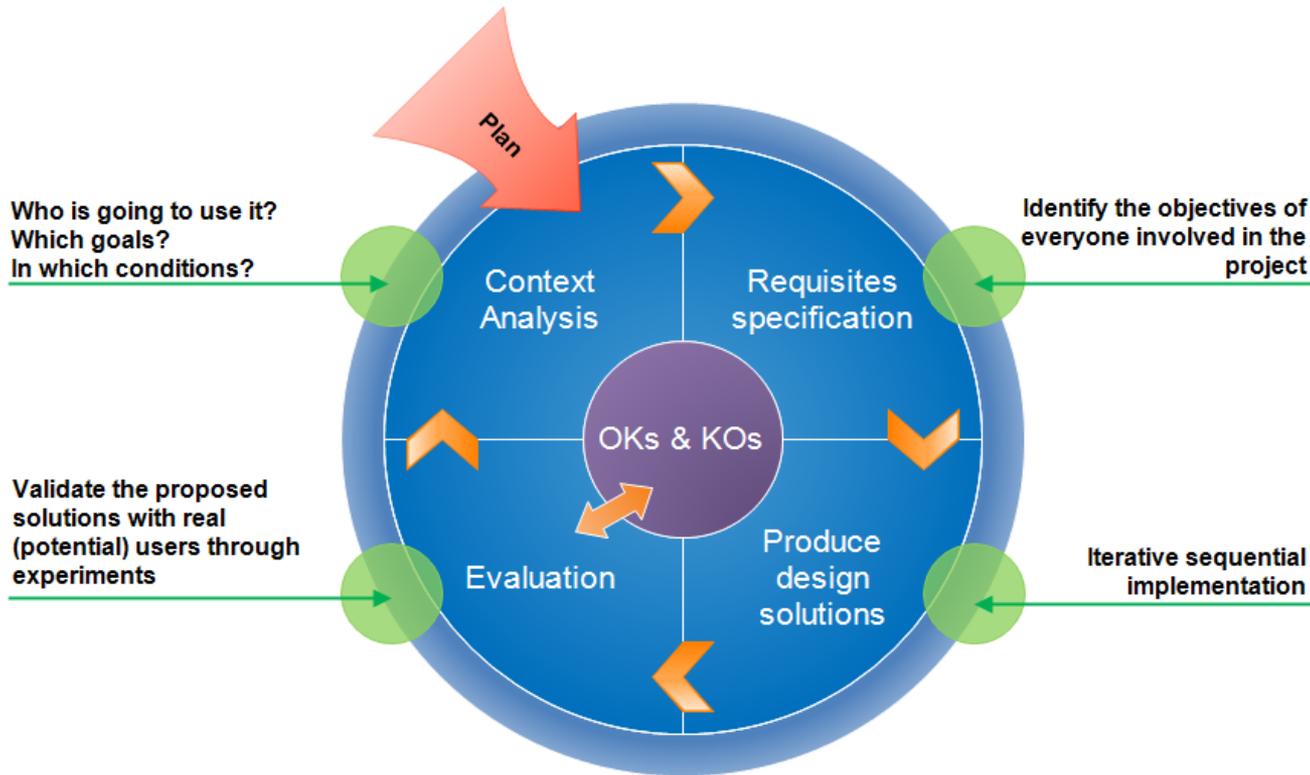
Citizen engagement – First Steps

- 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 Month 1-12	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. 2 nd 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*

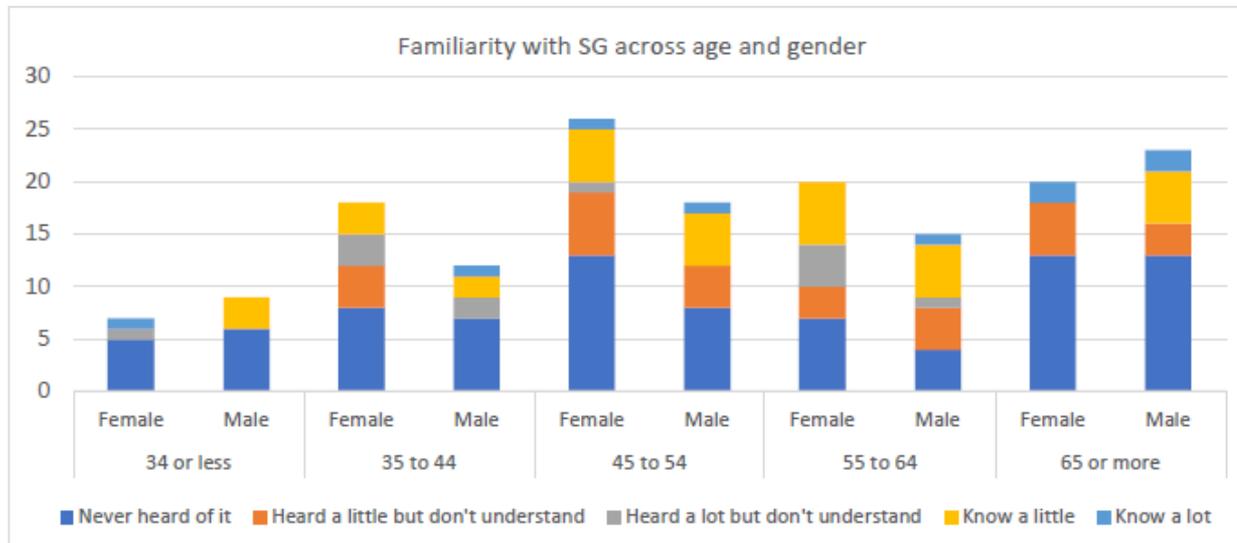


Figure 9. Familiarity with the SG concept across age groups and level of education



Survey of 179 residents

31 Questions, 81 Variables

REACT Renewable Energy For Self-Sustainable Island Communities

Welcome to the H2020 REACT project survey!

Thank you for agreeing to take part in our survey. The purpose of our survey is to better understand how you use energy in your home. It is part of a research project called REACT funded by the European Commission. The goal of REACT is to reduce energy costs for island communities and develop renewable energy solutions in your location to improve both energy services and your environment.

We only need one member of your household to answer our questions once.

To take part, please read and tick the boxes below if you agree.

I agree to take part in this survey. I understand that confidentiality will be maintained at all times, that I will not be identified and that my data will be made anonymous where otherwise explicitly stated. I understand that the data will only be accessed by the project team and project partner organisations. Information will be stored in a secure place and destroyed on completion of the project.

1. How old are you and who else lives in your household?

1. What is your age?

Younger than 18 years old
 18-24 years old
 25-34 years old
 35-44 years old
 45-54 years old
 55-64 years old
 65 years or older

2. What is your gender?

Male
 Female
 Prefer not to say
 You do not identify with a specific gender

3. How many people (including children) live in your household?

4. Of the people who live in your household (including yourself), how many are:

Persons younger than 18 years old? _____
Persons between 18 years old and 34 years old? _____
Persons between 35 years old and 64 years old? _____
Persons aged 65 years or older? _____

5. Which is the highest educational or professional qualification you have obtained?

Primary
 Secondary
 Tertiary
 Postgraduate
 I don't know / I do not remember



- 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

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

Knowledge of DR technologies X Age

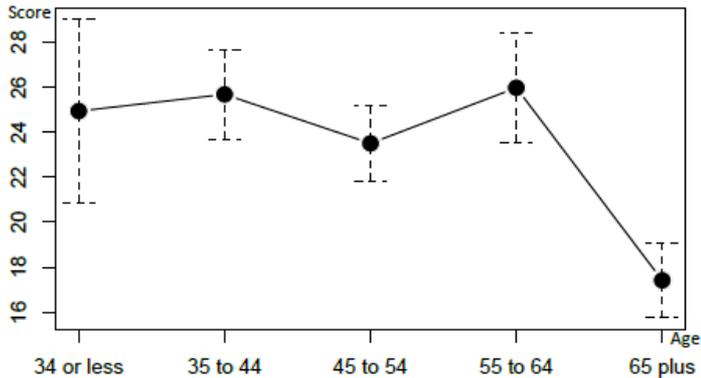


Figure 11. Knowledge of Demand Response (score) across different age groups

- 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

DR Acceptance X Education level

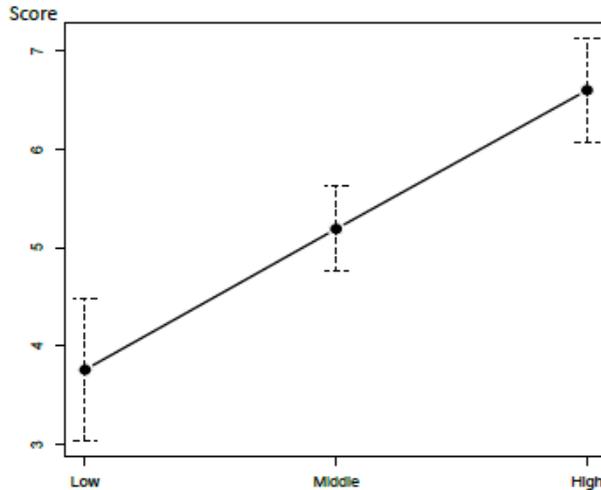


Figure 12. Acceptance of Demand Response (score) across education level

Flexibility X Education level

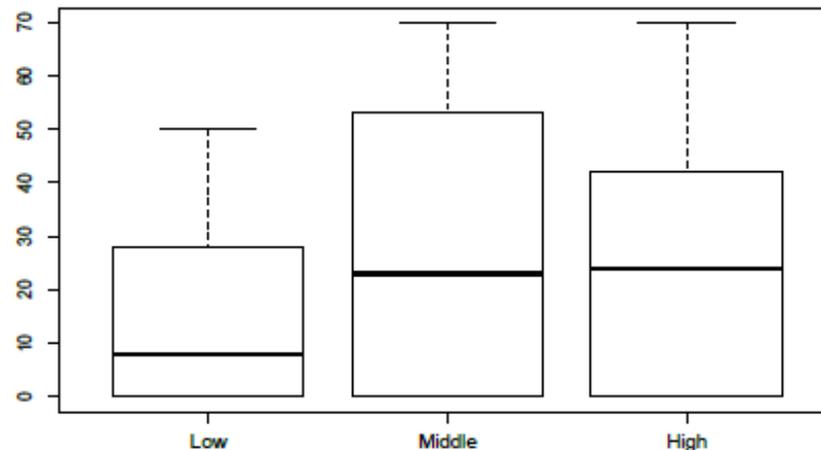


Figure 13. Flexibility (score) across different levels of education

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

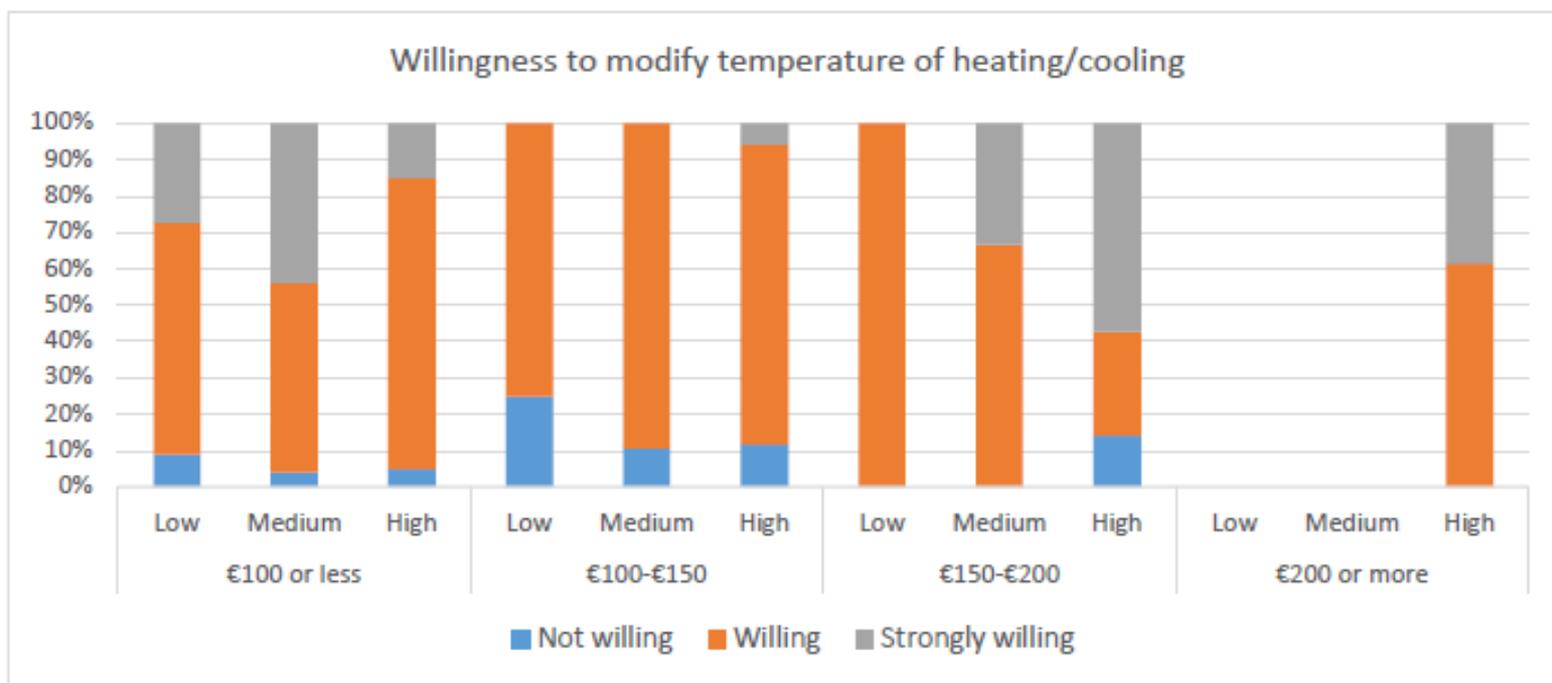
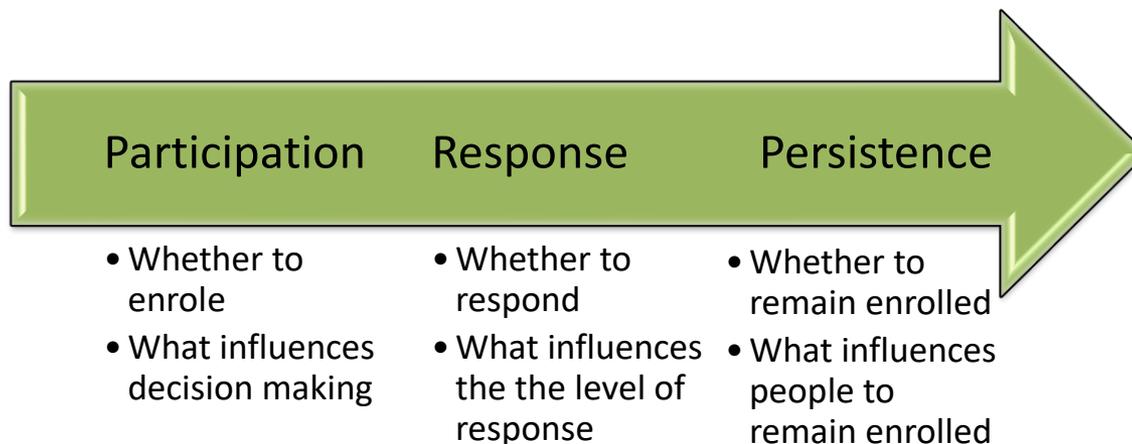


Figure 15. Willingness to modify heating/cooling temperature compared to energy bill impact and reported cost

Impact on user engagement

REACT's User Engagement Strategy

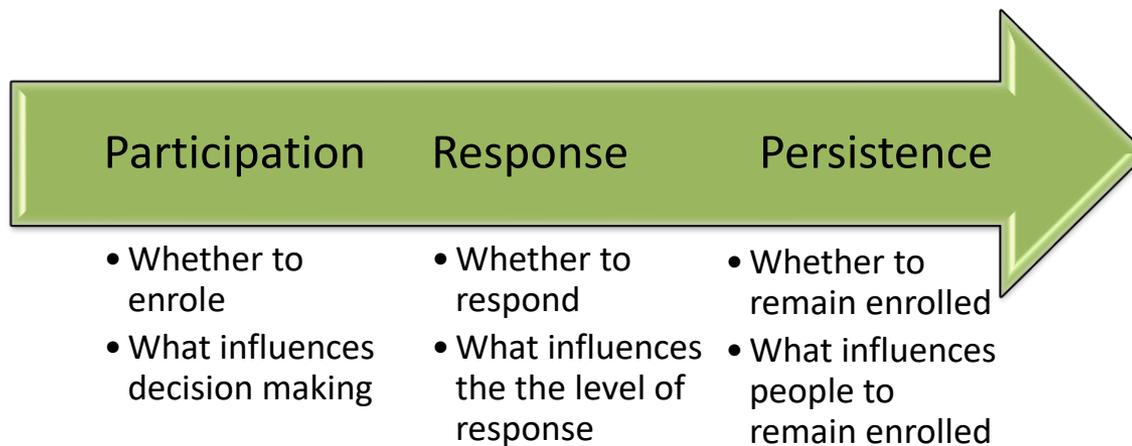
- The engagement strategy has to be appropriate for each island's context, considering the local language, age of the residents and their education levels
- Tailored to their level of familiarity with project methods and technologies
- Education regarding project methods and technologies should be engaging
- 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

REACT
Renewable Energy for
Self-Sustainable Island Communities

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EUROPEAN UNION
EUROPEAN COMMISSION
REACT

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THE REACT SOLUTION

REACT is a joint research programme by Horizon 2020 and the European Commission. It is a research programme that focuses on the development of self-sustainable island communities.

LEADS

REACT is a joint research programme by Horizon 2020 and the European Commission. It is a research programme that focuses on the development of self-sustainable island communities.

TECHNOLOGY

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TECHNOLOGY & INNOVATION

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Translated Materials



La Graciosa visit:
Communication Activities

Custom materials in Spanish

- A3 Poster
- A5 flyer 2-sided

¡SÚMATE
a la **transición energética!**

Ven a la presentación del Proyecto Europeo REACT
Sábado, 25 Enero - 18h
Salón Parroquial
Local al lado de la Iglesia de Nuestra Señora del Carmen
Calle García Escámez, 21
Caleta del Sebo

Síguenos <http://react2020.eu> @react2020

Con la colaboración de: Socos Proyecto REACT

Este proyecto está financiado por el programa H2020 de la Unión Europea en virtud del acuerdo de subvención No. 824395.

tu COMPROMISO
con el **medio ambiente**
y la **independencia energética**

REACT Renewable Energy for Self-Sustainable Island Communities

Las islas dependen en gran medida del mercado energético continental.

REACT es un proyecto de investigación financiado por la Unión Europea para contribuir a que las islas tengan independencia energética a través de la creación de Comunidades Energéticas Locales. Por eso pondrá a disposición de los usuarios fuentes de energía renovable, de almacenamiento energético y una plataforma para la gestión energética (demand-response). El proyecto dura 4 años.

100% de capacidad para la autonomía energética
60% reducción emisiones de gases invernadero y costes de energía
10% de ahorro energético
Una estrategia cooperativa de gestión energética.

ISLAS PILOTO & SEGUIDORAS

- La Graciosa (España)
- San Pietro (Italia)
- Islas de Arán (Irlanda)
- Isla de Gotland (Suecia)
- Prefectura de Languedoc (Francia)
- Mallorca (España)
- Isla de Wight (Gran Bretaña)
- Reunión (Francia)

¡Ven a conocer los planes que tenemos para tu isla!

Síguenos <http://react2020.eu> @react2020 [linkedin.com/company/react-2020-project](https://www.linkedin.com/company/react-2020-project)

Este proyecto está financiado por el programa H2020 de la Unión Europea en virtud del acuerdo de subvención No. 824395.



Videos (youtube channel)



La Graciosa visit:
Communication Activities

Video: 171 views total!

- ES: 72 views
<https://www.youtube.com/watch?v=fLpgYiQdPol>
- EN: 99 views
- <https://www.youtube.com/watch?v=vcxe1-lm4uM>

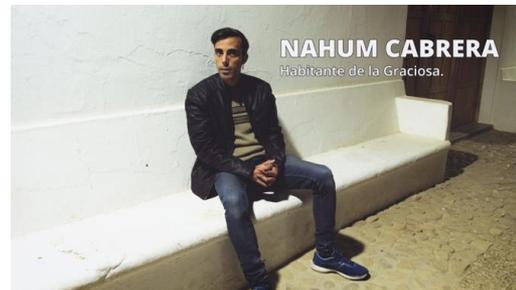


Video interviews with citizens



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 Teguiise and Orduña's press release!

[Link](#)



MEDIA MENTIONS

MEDIA	DATE	EVENT
La Voz de Lanzarote	1/30/2020	Pilot Project Presentation event (La Graciosa)
Biosfera Digital	1/30/2020	Pilot Project Presentation event (La Graciosa)
El Periodico de Lanzarote	1/30/2020	Pilot Project Presentation event (La Graciosa)
Lancelot Digital	1/30/2020	Pilot Project Presentation event (La Graciosa)
Cronicas de Lanzarote	1/30/2020	Pilot Project Presentation event (La Graciosa)
Diario de Lanzarote	1/30/2020	Pilot Project Presentation event (La Graciosa)
Cadena SER (Lanzarote)	1/30/2020	Pilot Project 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 Carlini

How NOT to wear a mask

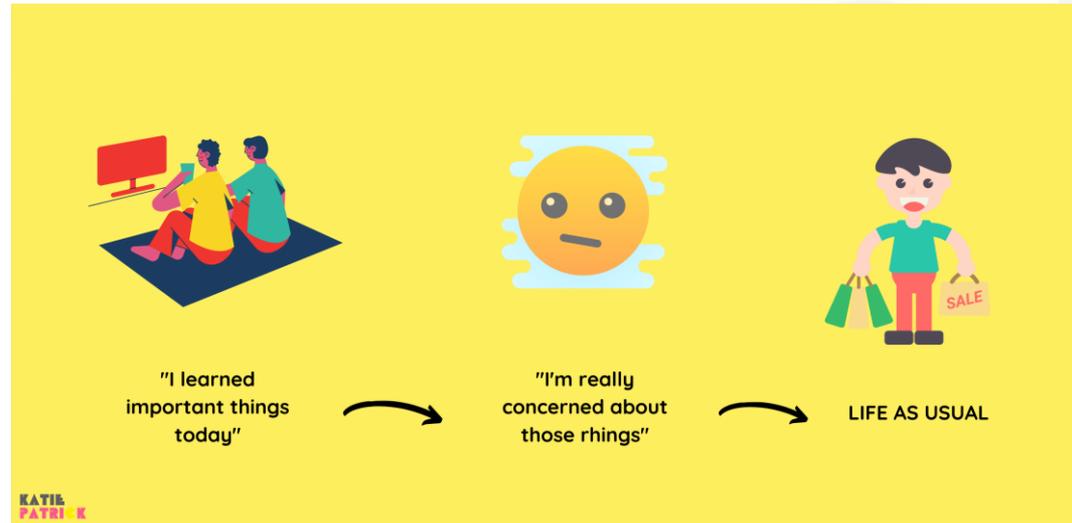


The sustainability paradox

Are shoppers the biggest hurdle to corporations going green? Behavioral nudges could help

Lucy Handley
Published Tuesday, October 13, 2020 10:36 AM EDT
Updated Friday, October 23, 2020 11:27 AM EDT

While up to 70% of consumers claim in surveys that they want to purchase more environmentally-friendly products, only 1% to 5% actually do.



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



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**



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