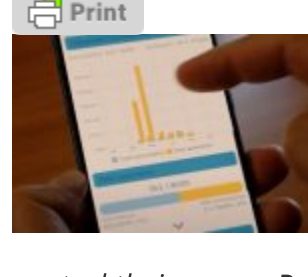


ReDREAM pilot: mobile app for real-time green energy availability, prices, to control your usage

March 21, 2024 by Luca Arfini



We already have the technology to allow households to monitor and control their energy usage so they can run individual appliances when the energy is cheapest and greenest. It just needs to be tested and then deployed at scale. Luca Arfini, writing for ESCI, describes the EU-funded ReDREAM project where over 700 people in four countries have had the monitoring installed in their homes, and been given the mobile app to control their usage. Real-time data on usage, energy prices and the availability of clean energy are all included. Household usage made up 27% of the EU's final energy consumption in 2021, so there are big wins to be had in changing people's behaviour at scale.

Despite citizens' positive attitudes towards tackling climate change, there is a gap between intentions and actions when it comes to shifting to greener habits. Eurobarometer's data show that **9 in 10 consumers value protecting the environment**, and the large majority (68%) recognise that their consumption habits have adverse effects on the environment; nevertheless, **far fewer actually behave sustainably**. For example, **only 22% buy products with an environmental label**, **only 31% avoid purchasing over-packaged products**, and **just 37% take action to reduce their energy consumption**.

EU Households: 27% of final energy consumption in 2021

This is despite Europe's households making up a significant chunk of the continent's energy demand. According to Eurostat data, households represented **27% of the EU's final energy consumption** in 2021. Natural gas was the predominant energy source (33.5% of household energy use), followed by renewables (24.6%), and wastes (21.2%), and petroleum products (9.5%). In the period 2000 - 2020, per capita residential energy consumption in the EU experienced an **increase of 2.7%**, while in 2020, it rose by 5.2% compared to 2019.

Structural and psychological barriers

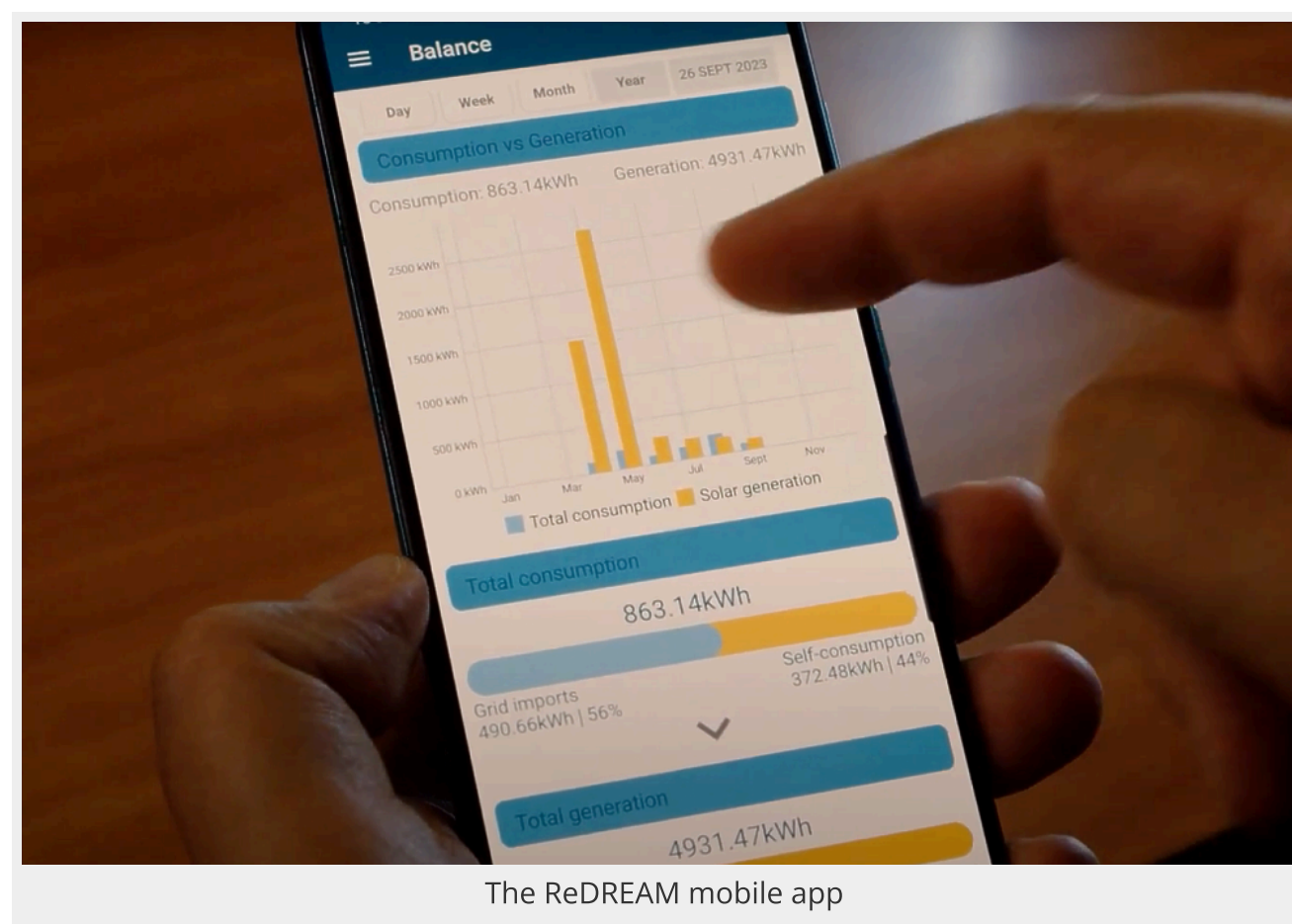
But consumers can both contribute to the EU's 2030 climate targets by cutting households' energy use and help better respond to the current energy crisis present on our continent. For example, implementing **simple actions like lowering the thermostat by 1°C can save already 7% of the heating energy** used in that household, reducing the annual energy bill by €70. However, behavioural change isn't easy to achieve due to structural and psychological barriers. For instance, according to OECD analysis, obstacles like **habits, lack of attention, feeling alone in the effort, or overwhelming and unclear instructions** prevent people from acting more sustainably.

ReDREAM project

To find a solution to this challenge, a diverse team of scientists, technicians, and companies from eight European countries united forces within the EU-funded ReDREAM project. "The idea was to create a general ecosystem that has the **prosumer** (a person who is actively involved in the production of the services they consume) at the centre while **changing how we perceive and interact with energy resources**. The key innovation of this project was that **energy became not only something that you consume but also something you can trade**. This shift is crucial for the energy transition, as it redefines energy as a commodity," explained Andreas Nikoglou of the National Technical University of Athens, who is responsible for analysing the data in ReDREAM.

The project designed this new ecosystem to manage energy resources better and **get everyone on board in the energy transition, from big electricity suppliers to everyday users**. It was built on a platform that used cloud computing and artificial intelligence to collect and evaluate data. In total **744 users from four countries, Bath (UK), Valladolid (Spain), Gallese (Italy) and Varazdin (Croatia), took part in the pilots**. They could easily access various tools and services to check and adapt their energy behaviour while sharing their experiences with other users. The aim was to move towards more efficient energy production, distribution, and usage, ultimately cutting down on CO2 emissions.

One of the tools offered to users by the ReDREAM ecosystem was a mobile app which included three specific functions: gamification tools providing **real-time feedback on users' energy consumption** from domestic appliances, a digital space where users can **connect and share their energy consumption and production data**, and innovative interfaces **encouraging users to explore and understand more complex aspects and the interconnection of energy sources**.



The ReDREAM mobile app

"The app offered features like gamification to monitor the energy use of your domestic appliances and **guided you in deciding when it was the best time to use these appliances**. For example, it suggested how to adjust home heating for your comfort while saving energy. The suggestion was **based on your inputs on what you were doing, what you were wearing and the outside temperature**. All this served to create a balanced ecosystem," said Ionah Nuur, Strategist at Soulsight and responsible for the qualitative research of the user experience in the ReDREAM project.

Ionah Nuur added that while it was evident **some users were enjoying the app's different functions, others didn't fully understand its added value**. He says while the app helped users track their energy consumption and share this data with other users, it **didn't send any personalised notifications or actively recommend how to be more efficient in energy use**.

"I can plug in the car, go on the app, and then see what's happening. But it's me searching for the information rather than having the information pushed to me. I think probably, I would have been a lot more active in how I used it if I was getting information sent to me," commented a British user.

"Perhaps there could be questions generated by the system that motivate you, like, 'Today, you haven't measured anything,' and then you wouldn't receive any rewards," suggested an Italian user.

However, Ionah Nuur also highlighted that many users shared positive feedback on their experience in this project, becoming more conscious of how to use energy efficiently. They understood **when during the day it was best to utilise their domestic appliances to reduce energy usage**.

"One of the major benefits was being able to track consumption, having it available in real-time. Because, until now, you could only track consumption based on the bills. But this app provides real-time monitoring," explained an Italian user.

"I would need an app of this kind to inform me when I need to consume and when the system is injecting energy into the grid. This could help me calculate how much money I'm earning or saving," reported a Spanish user.

The ReDREAM project, which began its journey over three years ago, is now coming to an end. The hope is that **the project could be used as a role model** on how digital solutions and a user-focused ecosystem can empower consumers to play a pivotal role in greening the energy market.

"I think that an important lesson learned from this project is the willingness of the people to shift the way they use energy; the fact that they are ready for the energy transition," concluded Andreas Nikoglou.

The final results of the pilot are due to be published in May and uploaded onto the ReDREAM project website: <https://redream-energy-network.eu/>

Luca Arfini is a freelance science journalist writing for the [European Science Communication Institute \(ESCI\)](#)

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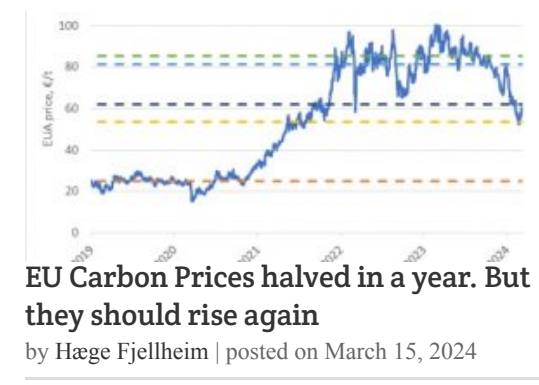
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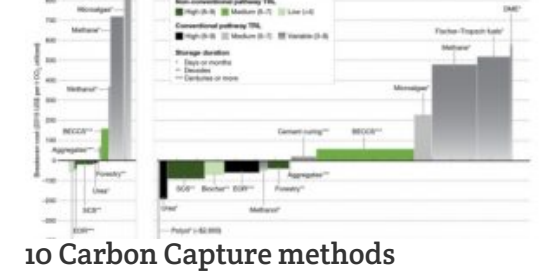
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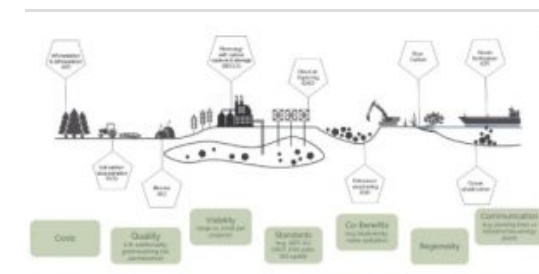
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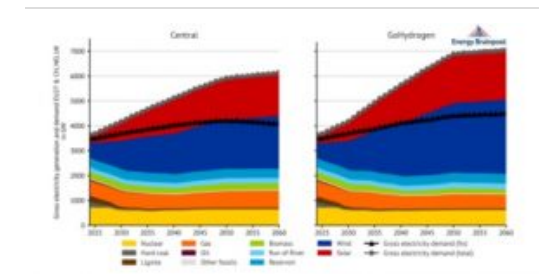
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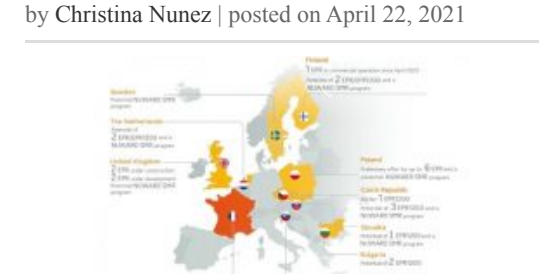
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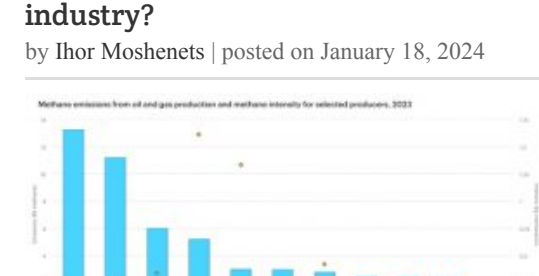
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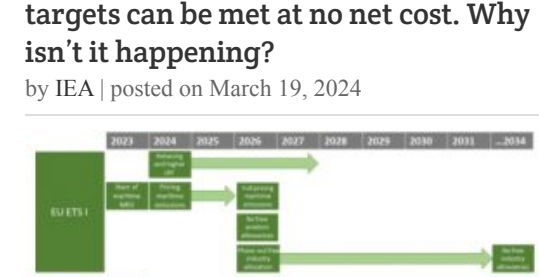
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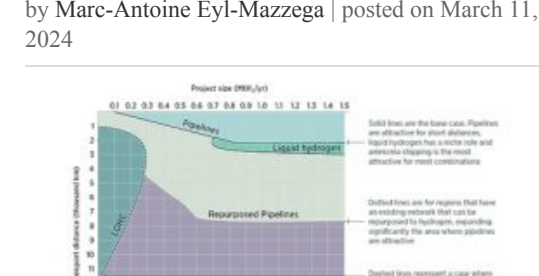


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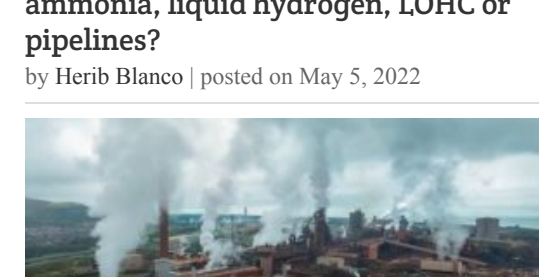


Figure 5: EU Industrial production, 2015-09M 2023 (EU27-2015)

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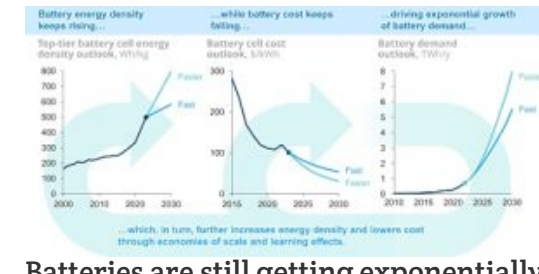


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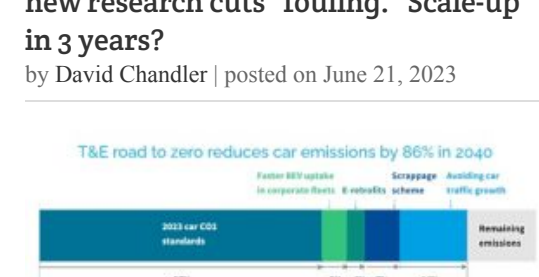
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