Making Decarbonisation Fair 1-4 March 21

energy • poverty • decarbonisation • research • practice

Conference Proceedings

Online Panel Sessions

COST is supported by the Horizon 2020 Framework Programme of the European Union

Fuel Poverty Research Network, Defesa do consumidor (DECO), Center for Environmental and Sustainability Research (CENSE -FCT NOVA), and the ENGAGER-COST (European Energy Poverty: Agenda Co-Creation and Knowledge Innovation funded by European Co-operation in Science and Technology) network invited researchers, practitioners and policymakers to an interactive, four-day online knowledge exchange workshop.

The event focused on collaborative learning on important questions relating to ensuring fairness in the transition to decarbonised energy and housing systems. It brought together people with a shared interest in energy, housing and fairness working in different sectors and across Europe, including high-profile speakers from research, Government, European institutions, and consumer organisations.

Full details of the event, including the programme and access to online videos of all the recordings:
http://www.fuelpovertyresearch.net/conference2021

Making Decarbonisation Fair

Event Schedule

Mon, Mar 01, 2021

9:00am

Welcome to Day 1!

9:00am - 9:15am, Mar 1

Welcome to Day 1 of Making Decarbonisation Fair.

Before the opening plenary, we will give you a quick introduction to the next four days, show you some of the features of our conference platform Whova and get you ready for the start of a packed programme of events.

Speakers

Graeme Sherriff Research Fellow, University of Salford; FPRN

Rob Marchand FPRN Trustee and Lecturer in Resource Efficiency, Sheffield University Management School; FPRN

9:30am

Energy poverty in Portugal - policies and lessons for other countries

9:30am - 11:00am, Mar 1

Plenary

Welcome to Making Decarbonisation Fair, the third conference of the ENGAGER research network.

We are delighted that the Portuguese Deputy Minister and Secretary of State for Energy, João Galamba, will be joining us at the start of this conference to talk about the country's experiences of and approaches to energy poverty.

Even though we are not able to meet in Lisbon, our opening plenary will still give us a flavour of the city, which is European Green Capital 2020. Maria João Rodrigues from E-NOVA (Agencia de Energia e Ambiente de Lisboa) will welcome us to the city and speak about their work on energy poverty as part of the Green Capital initiative.

Our Opening Plenary will also give you an introduction to ENGAGER, the Fuel Poverty Research Network (FPRN) and our partners DECO (Associação Portuguesa para a Defesa do Consumidor).

Keynote Speaker

João Galamba Portuguese Deputy Minister and Secretary of State for Energy

Chair

Luis Silveira Rodrigues Vice President, DECO - Portuguese Association for Consumer Protection

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Speakers

Maria Rodrigues Technical Director, LISBOA E-NOVA (Agência de Energia e Ambiente de Lisboa)

Slavica Robic Vice Chair, ENGAGER

Aimee Ambrose Professor of Energy Policy, Centre for Regional and Economic Social Research, Sheffield Hallam University

João Pedro Gouveia Senior Researcher, CENSE, NOVA School of Science and Technology (Lisbon)

11:30am

Panel 1: Energy poverty research in Portugal

11:30am - 1:00pm, Mar 1

Panel

Our first panel will be a chance to look in more detail at energy poverty in Portugal and to hear a range of research projects taking place within the country. We will find out what is unique about energy poverty in Portugal but also what we can learn and share with other nations.

The session will be introduced and chaired by Joao Pedro Gouveia.Panellists have pre-recorded presentations based on their research interests, as described below. These are available in the Video Gallery or by clicking on the sub-sessions below.

Our panellists are:

- Pedro Palma, CENSE, FTC-NOVA - m easuring energy poverty vulnerability in future paradigms
- Katherine Mahoney, CENSE, FTC-Nova - challenges and opportunities in the Portuguese energy transition - the evidence so far
- Ricardo Barbosa, University of Minho - energy poverty and social housing - the ARCAS project
- Rita Marouço, Coopernico - how can Renewable Energy Cooperatives help make decarbonisation fair?
- Ana Horta, ICS - significants of socio-cultural dimensions for understanding energy poverty in Portugal

We recommend that you watch the recorded presentations before joining the live panel discussion.

Chair

João Pedro Gouveia Senior Researcher, CENSE, NOVA School of Science and Technology (Lisbon)

Speakers

Pedro Palma PhD Student, CENSE, FCT-NOVA (Lisbon)

Katherine Mahoney PhD Student, CENSE, FCT-NOVA (Lisbon)

Ricardo Barbosa UMinho

Ana Rita Marouço Project Developer, Coopernico

Ana Horta Researcher, ICS, University of Lisbon

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5 Subsessions

- **Pedro Palma, CENSE - Mitigating energy poverty vulnerability in future paradigms (Panel 1)**
  11:30am - 11:30am, Mar 1
- **Katherine Mahoney, CENSE - Challenges and Opportunities in the Portuguese Energy Transition-The Evidence so far (Panel 1)**
  11:30am - 11:30am, Mar 1
- **Ricardo Barbosa, University of Minho - Energy poverty and social housing - the ARCAS project (Panel 1)**
  11:30am - 11:30am, Mar 1
- **Rita Maruoco, Coopernico - How can renewable energy cooperatives help make decarbonisation fair? (Panel 1)**
  11:30am - 11:30am, Mar 1
- **Ana Horta - Significance of socio-cultural dimensions for understanding energy poverty in Portugal (Panel 1)**
  11:30am - 11:30am, Mar 1

1:00pm

Watch any time - highlights from our Video Gallery!
1:00pm - 1:45pm, Mar 1

The Making Decarbonisation Fair video gallery includes more presentations from a range of researchers,

academics and practitioners. We encourage you to explore these videos at any time and would like to highlight some to you here:

- Aimee Ambrose, Sheffield Hallam University - Walking with energy: overcoming energy invisibility through first-hand encounters
- George Jiglau, Babes-Bolyai University - Poverty, energy poverty, vulnerability: breaking the status quo
- Jean-Matthieu Gaunand - Communities for conservation
- Lilia Karpinska - The persistence of energy poverty in Europe

You can find these recorded presentations in the Video Gallery using the left-hand navigation, or by scrolling down to the sub-sessions below.

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6 Subsessions

- **Aimee Ambrose, Sheffield Hallam University - Walking with energy: overcoming energy invisibility through first-hand encounters**
  1:00pm - 1:00pm, Mar 1
- **George Jiglau, Babes-Bolyai University - Poverty, energy poverty, vulnerability: breaking the status quo**
  1:00pm - 1:00pm, Mar 1
- **Jean-Matthieu Gaunand - Communities for conservation**
  1:00pm - 1:00pm, Mar 1
- **Lilia Karpinska - The persistence of energy poverty in Europe**
  1:00pm - 1:00pm, Mar 1
- **Graeme Sherriff and Brian Whitington - Moving together: energy poverty and decarbonisation in the Outer Hebrides**
  1:00pm - 1:00pm, Mar 1
- **Marina Varvesi - Scaling up the ASSIST model for Energy Poverty**
  1:00pm - 1:00pm, Mar 1

2:00pm

Gender struggles: just approaches to energy poverty alleviation

2:00pm - 3:30pm, Mar 1

Interactive

Low carbon transitions are significantly reorganising the way people use energy and can unravel deeper transformations of economies and societies. Transitions thus open the door for a more just distribution of energy and may offer new spaces for women empowerment. Since energy poverty primarily takes place in the 'home' – one of the most gendered spaces of society – addressing inequalities at this scale is critical for a gender-just transition. There is therefore a need to go behind the front door of the household as a homogenous entity to dissect it following an intersectional approach that recognises social relations and identities such as gender, age, class, ethnicity, socio-economic status, marital status and sexual preference. Failing to recognise this complexity may lead to a lack of understanding on the differential causes of energy poverty for different people. Gender-just approaches are thus necessary to ensure the access to clean and affordable energy for all through targeted and contextualized forms of action rather than generic policy instruments.

In such spirit, this interactive session will bring together researchers and practitioners to discuss in an open dialogue gender, energy poverty and transitions. Confirmed speakers include Nthabiseng Mohlakoana (Stellenbosch University), Carmen Sánchez Guevara (Technical University of Madrid), Saska Petrova (University of Manchester) and Joy Clancy (University of Twente). The event will also feature the Horizon 2020 project EmpowerMed (Empowering women to take action against energy poverty in the Mediterranean).

Aims of the session: 1) to raise awareness about the gender dimensions of energy poverty and transitions across research and policy communities; and 2) to create opportunities for networking with people

interested in the session's topics.

The video of this session includes the introductory presentations and the feedback from the breakout activity. The breakout groups were not recorded.

Speakers

Marielle Feenstra PhD Candidate, University Twente

Sergio Tirado Herrero Research Fellow, Universitat Autonòma de Barcelona

Joy Clancy Prof Energy and Gender, University of Twente/CSTM

Saska Petrova Senior Lecturer, University of Manchester

Nthabiseng Mohlakoana Researcher, Stellenbosch University

Carmen Sánchez-Guevara Assistant Professor, Universidad Politécnica de Madrid

Katharina Habersbrunner Board member, Women Engage for a Common Future (WECF)

Tue, Mar 02, 2021

9:00am

Welcome to Day 2!
9:00am - 9:15am, Mar 2

Welcome to Day 2 of Making Decarbonisation Fair.

We hope you enjoyed our first day together. This short session will reflect on some of the themes from Monday's sessions and give you some highlights for the day ahead.

Speakers

Carolina Gouveia Legal Advisor, DECO - Portuguese Association for Consumer Protection

João Pedro Gouveia Senior Researcher, CENSE, NOVA School of Science and Technology (Lisbon)

9:30am

Energy poverty in the EU

9:30am - 11:00am, Mar 2

Plenary

Due to technical issues, some of the content of the slides is obscured during Teresa Aristegui's presentation. We apologise for this and hope that it does not affect your abliity to follow her talk.

Our second plenary focuses on energy poverty at EU scale. We hope to hear from the European Commission and to showcase some prominent projects that aim to tackle energy poverty within and across nations.

We are delighted to welcome Teresa Aristegui of the European Commission to share insights into how we can make sure energy poverty is central to the Commission's net zero policies.

We will then hear from Jeppe Jensen of Climate Alliance about the EU Energy Poverty Advisory Hub (EPAH).

Cezara Popvici will then share details of the Horizon 2020 project Solutions to Tackle Energy Poverty (STEP) and finally Martha Myers of Friends of the Earth Europe will speak about the Right to Energy project.

This promises to be a session full of insight, looking at the intersection of decarbonisation and energy poverty policy and programmes at a Europe-wide level.

Chair

Marilyn Smith Executive Director, The ENERGY ACTION Project (EnAct) / ORENDA Communications

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Speakers

Teresa Aristegui Legal and Policy Officer, European Commission

Jeppe Mikel Jensen Coordinator, Energy Poverty Advisory Hub (EPAH)

Cezara Popovici Energy Project Coordinator, STEP (Horizon 2020)

Martha Myers Energy poverty and energy efficiency campaigner, Friends of the Earth Europe

1 Subsessions

- **A short video about STEP, a Horizon 2020 project**
  9:30am - 9:30am, Mar 2

11:30am

Panel 2: Energy poverty across the world

11:30am - 1:00pm, Mar 2

Panel

This panel discussion will continue the theme of exploring energy poverty in the EU with selected speakers talking about key insights from their research and considering the future direction for policy, programmes and projects.

Speakers in this panel session are:

- Alejandra Cortes, Universidad de Chile, talking about the background to energy poverty in South Chile
- Anna Bajomi, Politecnico di Milano, who asks: will plans go up in smoke?
- Carmen Sanchez-Guevara, UPM, looking at the role of public space in the democratisation of decarbonisation
- Caroline Porto Valente, University of Technology Sydney, who has researched energy poverty among older, low-income Australians
- Raul Costano-Rosa and George Jiglua, who share insights from the Finnish Energy Observatory and discuss their research into povtyer, energy poverty and vulnerability.
- Teresa Cuerdo, IETcc-CSIC, reflecting on use patterns and energy consumption in Spanish homes during the pandemic lockdown / confinement

You can watch video presentations from our speakers by scrolling to the sub-sessions below. We encourage you to watch these in advance of the live panel discussion.

Chair

Rob Marchand FPRN Trustee and Lecturer in Resource Efficiency, Sheffield University Management School; FPRN

Speakers

Alejandra Cortes Lecturer U de Chile and PhD candidate RMIT, Australia., Universidad de Chile and RMIT University, Australia

Anna Zsofia Bajomi PhD Candidate, Politecnico di Milano

Carmen Sánchez-Guevara Assistant Professor, Universidad Politécnica de Madrid

Caroline Porto Valente PhD Candidate, University of Technology Sydney

Raúl Castaño PhD, Finnish Energy Observatory

George Jiglau Lecturer, Babes-Boylai University (Cluj-Napoca)

Teresa Cuerdo Researcher, PhD architect, Eduardo Torroja Institute for construction sciences, Spanish National Research Council (IETcc-CSIC)

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6 Subsessions

- **Alejandra Cortes, Universidad de Chile - The background of energy poverty in South Chile**
  11:30am - 11:30am, Mar 2
- **Anna Bajomi, Politecnico di Milano - Will plans go up in smoke? (Panel 2)**
  11:30am - 11:30am, Mar 2
- **Carmen Sanchez-Guevara, UPM - What is the role of the public space in the democratisation of decarbonisation? (Panel 2)**
  11:30am - 11:30am, Mar 2
- **Caroline Porto Valente, UTS - Energy poverty among older, low-income Australians (Panel 2)**
  11:30am - 11:30am, Mar 2
- **Raul Costano Rosa - Finnish Energy Observatory (Panel 2)**
  11:30am - 11:30am, Mar 2
- **Teresa Cuerdo, IETcc-CSIC - Reflections on use patterns and energy consumption in Spanish homes during the lockdown (Panel 2)**
  11:30am - 11:30am, Mar 2

2:00pm

Energy and transport poverty in Europe: overlaps, evidence and policies in an era of decarbonisation

2:00pm - 3:30pm, Mar 2

Interactive

As Europe moves towards the electrification of heat and transport as part of vital decarbonisation targets, the intersections and overlaps between energy poverty and transport poverty will become increasingly important. The process of energy systems integration will shape the future of energy provision both within homes and in public and private transport, meaning increased linkages between energy and mobility services.

It is important to ask, therefore, how the costs of electrification will be spread across the population, how access to energy and mobility services will be affected, and how this impacts both energy poverty and transport poverty. In addition, measures to address energy poverty and transport poverty are also found within the range of solutions offered by decarbonisation programmes, such as energy efficiency schemes and the expansion of low-carbon transport services. Both sets of issues are vital topics for scholars, policymakers and practitioners.

This interactive workshop features an opening discussion on defining transport poverty - a seldom discussed topic in energy poverty conferences - followed by a set of short presentations and Q & A's from academics and practitioners working on energy poverty and transport poverty. We will finish the workshop by asking participants to contribute examples of initiatives or policies which aim to tackle transport poverty, and potentially overlap or intersect with the reduction of energy poverty.

Chair

Mari Martiskainen Senior Research Fellow, University of Sussex

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Speakers

Max Lacey-Barnacle Research Fellow, University of Sussex

Neil Simcock Lecturer in Geography, LIverpool John Moores University

Kirsten Jenkins Lecturer in Energy, Environment and Society, University of Edinburgh

Ellie Grebenik Senior Programme Manager - Scottish Transport, Energy Saving Trust

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Chris Lowans Queen's University Belfast

Giulio Mattioli Research Fellow, TU Dortmund University

Wed, Mar 03, 2021

9:00am

Welcome to Day 3!

9:00am - 9:15am, Mar 3

We hope you have enjoyed the first two days of Making Decarbonisation Fair. It's time for Day 3, and this quick session will set out the day that's ahead of us, remind you of the features of Whova and help you get the most out of the online conference experience.

Speakers

Aimee Ambrose Professor of Energy Policy, Centre for Regional and Economic Social Research, Sheffield Hallam University

Marilyn Smith Executive Director, The ENERGY ACTION Project (EnAct) / ORENDA Communications

9:30am

Inclusive social movements on energy policy

9:30am - 11:00am, Mar 3

Interactive

The interactive session '**Inclusive social movements on energy poverty**' invites activists, practitioners, academics and others who are working in energy poverty from bottom-up to gather and reflect on the role of social movements in energy poverty for inclusive energy transition. The session includes a group activity to exchange challenges and opportunities we have experienced around **creating inclusive and empowering environment.** Also we will think around the question, how these experiences can influence **more inclusive energy transition policies, and bring energy poverty concerns to the fore in climate policy making.**

The recording of this session includes presentations from three social movements and then the feedback session following the group activity. The group activity was not recorded.

Speakers

Hyerim Yoon Lecturer, Universitat Autònoma de Barcelona

Sara Fuller Senior Lecturer, Macquarie University

Marlies Hesselman University of Groningen - Faculty of Law

Mònica Guiteras Blaya Aliança contra la Pobresa Energètica (APE) i Enginyeria Sense Fronteres (ESF)

Tomislav Tkalec Energy Program Coordinator, Focus

Chloé Verlinden Project Associate, CityMine(d)

11:30am

Panel 3: Retrofit as a tool for decarbonisation and poverty alleviation

11:30am - 1:00pm, Mar 3

Panel

This panel discussion will bring together researchers who are looking at how retrofit can best deliver the twin goals of decarbonisation and energy poverty alleviation.

The panellists for the session are:

- Iñigo Antepara, University of the Basque Country, who has researched low carbon regulations and under-consumption
- Miguel Macias Sequeira, CENSE, NOVA School of Science and Technology, who will talk about The Green Menu, an online one-stop-shop for retrofitting residential buildings
- Pablo Hernandez Cruz, also from University of the Basque Country, talking about guaranteeing a minimum temperature of 18°C in low income dwellings
- Roberto Barrella, Comillas Pontifical University, reflecting on the impact of energy refurbishment strategies on domestic energy services
- Sarah Robertson, RMIT University, giving a perspective from Australia on retrofitting for all

You can watch pre-recorded video presentations from our panellists by clicking on the sub-sessions below. We encourage you to watch the videos prior to the live panel discussion.

Chair

William Baker Energy advice development lead, Citizens Advice

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Speakers

Iñigo Antepara Assistant professor, University of the Basque Country

Miguel Macias Sequeira PhD student | Energy & Climate Researcher, CENSE, NOVA School of Science and Technology

Pablo Hernández Building energy efficiency engineer, University of the Basque Country

Roberto Barrella Research Assistant, Chair of Energy and Poverty - ICAI School of Engineering, Comillas Pontifical University

Sarah Robertson Research Fellow, RMIT University

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5 Subsessions

- Iñigo Antepara, University of the Basque Country - Low carbon regulations and under-consumption (Panel 3)
  11:30am - 11:30am, Mar 3
- Miguel Macias Sequeira, CENSE, Nova University Lisbon - The Green Menu (Panel 3)
  11:30am - 11:30am, Mar 3
- Pablo Hernandez Cruz, EHU- Guaranteeing a minimum temperature of 18 degrees C in low income dwellings (Panel 3)
  11:30am - 11:30am, Mar 3
- Roberto Barrella, Comillas Pontifical University - Impact of energy refurbishment strategies (Panel 3)
  11:30am - 11:30am, Mar 3
- Sarah Robertson, RMIT - Delivering retrofit for all: the view from Australia (Panel 3)
  11:30am - 11:30am, Mar 3

1:30pm

The new Fuel Poverty Strategy for England: insights for policy and practice

11:30pm - 2:00pm, Mar 3

Plenary

Energy poverty and sustainability: the new fuel poverty strategy for England

Twenty years after publishing its first Fuel Poverty Strategy, the UK government has just published an updated Strategy which aims to make decarbonisation a central principle. The new Strategy states that it wants to make sure that the poorest are the earliest beneficiaries of net zero policies. The next generation of fuel poverty policies will focus on upgrading home energy efficiency and the deployment of low carbon heating. The government does not see a role for new first time fossil fuel central heating and instead will provide grants for, among other measures, heat pumps and insulation to energy poor households.

Kirsten Horton from the Government's Business, Energy and Industrial Strategy department will join us for this session, presenting the latest insights and joining in conversation with William Baker.

Speakers

William Baker Energy advice development lead, Citizens Advice

Kirsten Horton Senior Policy Advisor, BEIS

2:30pm

Panel 4: Working with communities and vulnerable people

2:30pm - 4:00pm, Mar 3

Panel

This panel discussion will look at approaches to working with communities and with vulnerable people to address energy poverty. Participation, ownership and empowerment can all help to give people greater agency and a stronger voice in shaping a just transition to a decarbonised energy system.

Our panellists are:

- Irene Gonzales Pijuan, Sheffield Hallam University, discussing energy poverty and children in Barcelona
- Jez Hall, Shared Futures CIC, with perspectives on getting communities on board with a just transition
- Lauren Salmon and Shane Donnellan, Changeworks, considering the impacts of decarbonisation and mechanisms for protecting consumers
- Marine Cornelis, Next Energy Consumer, talking about ESRC Just Energy

You can watch pre-recorded video presentations from our panellists by using the sub-sessions below or visiting the Video Gallery. We encourage you to watch the video presentations before the live panel discussion.

Chair

Danielle Butler Senior Research and Policy Officer, NEA

Speakers

Irene González-Pijuan PhD candidate, Sheffield Hallam University

Jez Hall Director, Shared Future CIC

Lauren Salmon Monitoring and Evaluation Manager, Changeworks

Shane Donnellan Senior Behaviour Change Specialist, Changeworks

Marine Cornelis Executive Director, NextEnergyConsumer

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4 Subsessions

- **Irene González Pijuan and Laura Oliveiras Puig - Energy poverty and children - the case of Barcelona (Panel 4)**
  2:30pm - 2:30pm, Mar 3
- **Jez Hall, Shared Futures CIC - Getting communities on board with just transition (Panel 4)**
  2:30pm - 2:30pm, Mar 3
- **Lauren Salmon and Shane Donnellan, Changeworks - Impacts of decarbonisation and mechanisms for protecting consumers(Panel 4)**
  2:30pm - 2:30pm, Mar 3
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Marine Cornelis, Next Energy Consumer - ESRC Just Energy (Panel 4)
2:30pm - 2:30pm, Mar 3

Thu, Mar 04, 2021

9:00am

Welcome to Day 4!
9:00am - 9:15am, Mar 4

It's the final day of Making Decarbonisation Fair with two great panels and a closing plenary which will be a chance to reflect on some of the themes from the week and think about the challenges that lie ahead.

9:30am

Panel 5: Decarbonisation - approaches and challenges
9:30am - 11:00am, Mar 4

Panel

Decarbonisation presents us with many opportunities - transforming the way that we live, work and travel. Some sectors are more difficult to decarbonise than others, and we have to be careful that the consequences of decarbonisation do not impact those who are already vulnerable or those who might become vulnerable. This panel will consider some of the technical, commercial and social challenges associated with different approaches to decarbonisation.

The panellists for this session are:

- Richard Mellish, AgilityEco, with insights on the decarbonisation of heat and time-of-use tariffs
- Matthew Scott, NEA, talking about the issue of disruption and the decarbonisation of heat
- Rokia Raslan, UCL, who has researched the potential for hard to decarbonise homes as a pathway for energy equity
- Siddharth Sareen, University of Stavanger, exploring the concept of accountable solar energy transitions
- Dr Sea Rotmann, Users TCP by IEA whose work focuses on engaging hard-to-reach households

You can watch video presentations from our speakers using the sub-sessions below or by searching in the Video Gallery. We encourage you to watch the recorded presentations before the live panel discussion.

Chair

Trivess Moore Senior Lecturer, RMIT University

Speakers

Richard Mellish Executive Advisor, AgilityEco

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Matthew Scott Research and Policy Officer, National Energy Action

Rokia Raslan Associate Professor, UCL

Siddharth Sareen Associate Professor in Energy and Environment, University of Stavanger

Sea Rotmann Users TCP by IEA

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6 Subsessions

- **James Somerville and Richard Mellish, AgilityEco - Decarbonisation of heat and time-of-use tariffs (Panel 5)**
  9:30am - 9:30am, Mar 4
- **Matthew Scott, NEA - Disruption and the decarbonisation of heat (Panel 5)**
  9:30am - 9:30am, Mar 4
- **Rokia Raslan, UCL - The potential of hard to decarbonise homes as a pathway to energy equity (Panel 5)**
  9:30am - 9:30am, Mar 4
- **Siddarth Sareen, University of Stavanger - Accountable solar energy transitions (Panel 5)**
  9:30am - 9:30am, Mar 4
- **Trivess Moore, RMIT - Implications for policy and practice from a low carbon public housing development (Panel 5)**
  9:30am - 9:30am, Mar 4
- **Sea Rotmann - Hard to reach energy users in the residential and commercial sectors (Panel 5)**
  9:30am - 9:30am, Mar 4

11:30am

Panel 6: Transitions to a just and low-carbon future

11:30am - 1:00pm, Mar 4

Panel

Decarbonisation of our energy system will bring many advantages but risks placing more burdens on those who can least afford them. Who are the potential winners and losers from decarbonisation? And how can we plan now to support those who are most vulnerable so that decarbonisation really works for them?

Our panellists are:

- Brenda Boardman, Environmental Change Institute, University of Oxford, who has researched many of the policy and practice aspects of decarbonisation for the energy poor
- Louise Sunderland, RAP, considering equity in the energy transition: who pays, who benefits?
- Lucie Middlemiss, University of Leeds, whose research reveals the hidden face of energy poverty in the Netherlands
- Sam Illingworth, Edinburgh Napier University, whose research has explored how we can talk about decarbonisation through games
- Rebecca Ford, Strathclyde University, who is part of the EnergyREV consortium which is driving research and innovation in smart local energy systems.

- Maria-Jose Manjon, Universidad de Comillas, who has researched approaches to tackling energy poverty through social entrepreneurship in large energy companies

You can watch video presentations from our speakers by scrolling to the sub-sessions below. We encourage you to watch these in advance of the live panel discussion.

Chair

Graeme Sherriff Research Fellow, University of Salford; FPRN

Speakers

Brenda Boardman Emeritus Research Fellow, Environmental Change Institute, University of Oxford

Louise Sunderland Senior Advisor, Regulatory Assistance Project (RAP)

Lucie Middlemiss Associate Professor in Sustainability, Co-Director Sustainability Research Institute, University of Leeds

Sam Illingworth Associate Professor, Edinburgh Napier University

Rebecca Ford Strathclyde University

Maria Jose Manjon Researcher, Universidad de Comillas

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6 Subsessions

- **Brenda Boardman, Oxford University - Practical aspects of decarbonising the energy poor (Panel 6)**
  11:30am - 11:30am, Mar 4
- **Louise Sunderland, RAP - Equity in the energy transition: who pays, who benefits? (Panel 6)**
  11:30am - 11:30am, Mar 4
- **Lucie Middlemiss, University of Leeds - Revealing the hidden face of energy poverty in the Netherlands (Panel 6)**
  11:30am - 11:30am, Mar 4

- **Sam Illingworth, Edinburgh Napier University - Talking about decarbonisation through games (Panel 6)(Panel 6)**
  11:30am - 11:30am, Mar 4
- **Maria Jose Manjon - Tackling energy poverty through social entrepreneurship in large companies (Panel 6)**
  11:30am - 11:30am, Mar 4
- **Rebecca Ford, Strathclyde University - The role of local energy in delivering a just and low-carbon future (Panel 6)**
  11:30am - 11:30am, Mar 4

1:15pm

Making Decarbonisation Fair: Perspectives from Both Ends of the Spectrum

1:15pm - 1:45pm, Mar 4

Plenary

Electrification is central to decarbonising Western economies, averting rising emissions in developing countries and lifting people out of energy poverty (SDG7). Transforming existing systems requires substantial investment, creating risks -- under current market and billing practices -- that low-income households will carry an unfair share of the cost burden. As the EU Green Deal forges ahead, making space for community energy as a more equitable approach, EnAct invites two members of its Advisory Board to share their perspectives:

- **Dr. Lawrence Jones, VP, International, Edison Electric Institute** : Representing the utilities sector globally, Dr. Jones is tackling the decarbonisation challenge on the macro scale, while deeply interested in what it means for everyone who uses energy. Over the course of his career, he has helped utilities worldwide formulate strategies for deploying new technology-innovated business solutions. He is the editor of the first and second editions of "Renewable Energy Integration: Practical Management of Variability, Uncertainty and Flexibility in Power Grids."
- **Harish Hande, CEO, SELCO Foundation** : In 1995, Mr. Hande founded SELCO INDIA, one of the first social enterprises aiming to provide sustainable energy services to the country's poorest communities. Now leading the SELCO Foundation, he envisions a world where the 3 billion people who currently lack access to energy are considered as: partners and not beneficiaries, asset owners and not consumers; entrepreneurs, decision makers, innovators and not just skilled labour. Promoting enterprise-driven, holistic sustainable energy solutions for households, health, livelihoods and education is one way SELCO demonstrates its vision.
- **Marilyn Smith, Executive Director, EnAct** will host the session.

Chair

Marilyn Smith Executive Director, The ENERGY ACTION Project (EnAct) / ORENDA Communications

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Speakers

Lawrence Jones VP, International, Edison Electric Institute

Harish Hande CEO, SELCO Foundation

2:00pm

Towards a just transition: reflections and priorities

2:00pm - 3:30pm, Mar 4

Plenary

The panel will reflect on the discussions of the week, drawing out key themes such as the just transition, and looking ahead to priorities in energy poverty research in the context of climate change and other global challenges.

Chair

Aimee Ambrose Professor of Energy Policy, Centre for Regional and Economic Social Research, Sheffield Hallam University

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Speakers

Brenda Boardman Emeritus Research Fellow, Environmental Change Institute, University of Oxford

João Pedro Gouveia Senior Researcher, CENSE, NOVA School of Science and Technology (Lisbon)

Gordon Walker Lancaster Environment Centre, Lancaster University

Stefan Bouzarovski Professor, Professor, Department of Geography, University of Manchester; and Chair, ENGAGER Action

Panel 1: Energy poverty research in Portugal

- João Pedro Gouveia (Chair) Senior Researcher, CENSE, NOVA School of Science and Technology (Lisbon)
- Pedro Palma – PhD Student, CENSE, FCT-NOVA (Lisbon)
- Katherine Mahoney – PhD Student, CENSE, FCT-NOVA (Lisbon)
- Ricardo Barbosa – UMinho
- Ana Rita Marouço – Project Developer, Coopernico
- Ana Horta – Researcher, ICS, University of Lisbon

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Energy Poverty in Portugal

João Pedro Gouveia (jplg@fct.unl.pt)

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Energy Poverty in Portugal

"Inability to maintain adequately warm housing in winter" was the fifth country with a larger percentage of the population affected (19.4%) (EU SILC, 2019).

"Population living in accommodation not comfortably cooled in summer" (2012), Portugal presents the second highest percentage of the entire European Union, with 35.7%, just behind Bulgaria.

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Energy Poverty in Portugal

"Share of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor (26,9%) after Cyprus (EU SILC, 2019).

About 70% of homes currently certified have low energy efficiency (C or less) (Energy Observatory, 2020)

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Energy Poverty in Portugal

- Near 30% of the population is potentially under energy poverty conditions, especially related to space heating and cooling.
- Location in Southern Europe, targeted as one of the most likely climate impacted regions.
- Increasing expectations of solar energy integration, which may have impact on households' energy consumption profiles.
- High costs of energy for families. In 2019, electricity and gas prices, with all taxes included, were respectively 12 and 28% higher than the European average (Eurostat, 2019).
- In 2018, it presented a GINI index of 32.1%, making it one of the European countries with the highest income inequality, above the 30.9% of EU average (Pordata, 2019).

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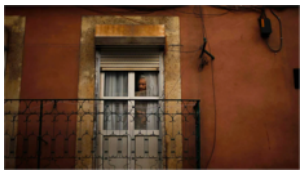
Energy Poverty in Portugal

- Decentralized low efficiency climatization systems and low rates of ownership of cooling equipment.
- Bottleneck between
  - need for increased energy services demand fulfilment (specially for space heating and cooling)
  - reduction of energy consumption through increased energy efficiency.



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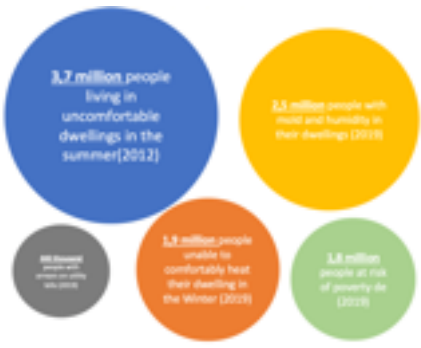
Energy Poverty in Portugal



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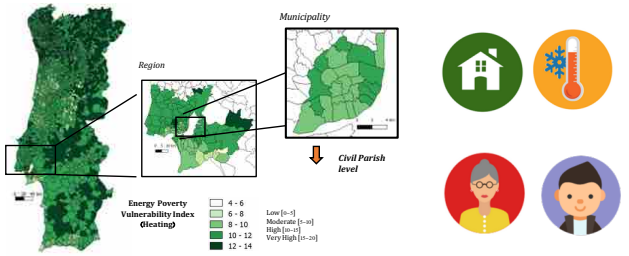
Energy Poverty in Portugal

- Multiple Scale Analysis – from buildings to a country



Source: Gouveia, J.P., Palma, P. Simoes, S. (2019). Energy poverty vulnerability index: A multidimensional tool to identify hotspots for local action. *Energy Reports 5, November 2019, Pages 187-201*

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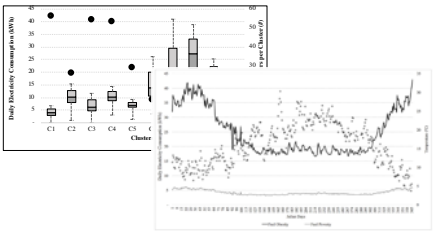
Energy Poverty in Portugal

- Using Big Data for Energy Consumption Analysis and Energy Poverty Assessment



Source: Gouveia, J.P., Seixas, J. (2016). Unraveling electricity consumption profiles in households through clusters: Combining smart meters and door-to-door surveys. *Energy and Buildings 116, 666-676*

Source: Gouveia, J.P., Seixas, J., Long, G. (2018). Mining households' energy data to disclose fuel poverty: Lessons for Southern Europe. *Journal of Cleaner Production 178, 534-550*

Source: Gouveia, J.P., Palma, P. (2019). Harvesting big data from residential buildings energy performance certificates: retrofitting and climate change mitigation insights at a regional scale. *Environ. Res. Lett. 14 095007*

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Energy Poverty in Portugal

- Integration with national local policies and plans, supporting
  - City Level urban Planning
  - Regional Climate Change Adaptation Strategies
  - Long term decarbonization Pathways
  - Positive Energy Districts Analysis

OESTE PORTUGAL
Adaptação às Alterações Climáticas

RNC2050

LISBOA
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eit Climate-KIC

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Energy Poverty in Portugal

- Media and Public Impact


Alfama estudo calcula investimento de 45 milhões para pôr fim à pobreza energética


Portugal desconhece número de pessoas em pobreza energética


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MITIGATING ENERGY POVERTY VULNERABILITY IN FUTURE PARADIGMS

DEVELOPMENT OF A BIG DATA COMPUTATIONAL MODEL FOR IMPROVED DECISION-MAKING

Pedro Mendes Aleluia Martins da Palma

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PhD Program in Environment and Sustainability

Problem Introduction

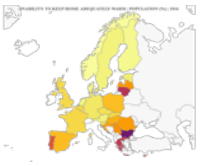
- Loss of property value
- Low Productivity
- Health Deterioration
- Social Stigma
- Excess Mortality

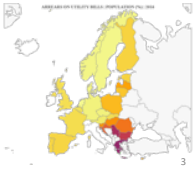
Energy Poverty Vulnerability

- Inefficient Buildings
- Low Incomes
- High Energy Prices

Context

- Energy Poverty is a **complex and serious social Issue**
- Currently affects **30 to 120 million people in the EU**
- Increasing **integration** at policy level
- Lack of a **common pan-EU definition**
- Lack of **consensus on how to measure**
- EU favors **simple indicators** while researchers support **multidimensional regional-specific approaches**
- Room for improvement in **measurement scholarship and knowledge development**





Energy Poverty in Portugal – Case-study

EU SILC[1]

- **18.9%** of the population claims to be unable to adequately heat their home in 2019 – 4° EU
- **35.7%** population living in a dwelling not comfortably cool during summertime in 2012– 2ª EU
- **24.4%** living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames or floor in 2018 – 2° EU

National Survey [2]

- **37%** of the population claim not to have any insulation in their house
- **>80%** also feel that they need to significantly increase their energy consumption in order to maintain adequate room temperature
- **20%** refers only to clothing, as a way of seeking thermal comfort

1 – Eurostat (2020). European Commission – Database. Available at: http://ec.europa.eu/eurostat/data/database
2- PCS/Quercus (2017). Inquérito realizado, em portugal continental, sobre o conforto térmico em casa – 1ª Análise dos resultados do inquérito. Quercus e Portal da Construção Sustentável.

Energy Poverty in Portugal – Case-study

- **High costs of energy** for families.
- **Ageing building stock**, with low energy performance
- **Decentralized low efficiency space heating systems,** such as fireplaces
- **Low ownership rates of space cooling systems**
- Lower levels of **energy consumption** ***per capita*** compared to the other EU28 countries.
- One of the **warmest climates** in the EU
- **Lack of specifically targeted policy schemes**
- **Inefficient building renovation instruments**

Literature Review

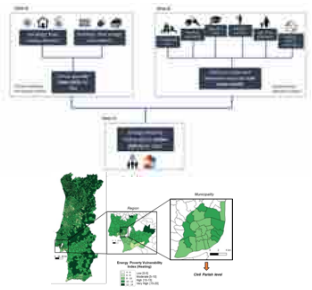
Energy poverty metrics

- Four different types: **Self-reported; Expenditure-based; Direct measurement; and supporting indirect indicators**
- Single **individual** indicators or **composite** approaches
- **Several spatial scale** assessments but **limited temporal scales,** generally for past contexts
- Focusing generally **only on winter EP**
- **Lack of studies** assessing impact of current and **future contexts,** including climate scenarios, policy schemes and extremes events

Literature Review

EP Assessments in Portugal

Energy Poverty Vulnerability Index (EPVI), developed by **Gouveia *et al.* (2019)**

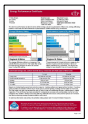


- Assessment from civil parish to country level
- Deductive Explicit model
- Static model
- Output is "Vulnerability"
- Proportion-based indicators

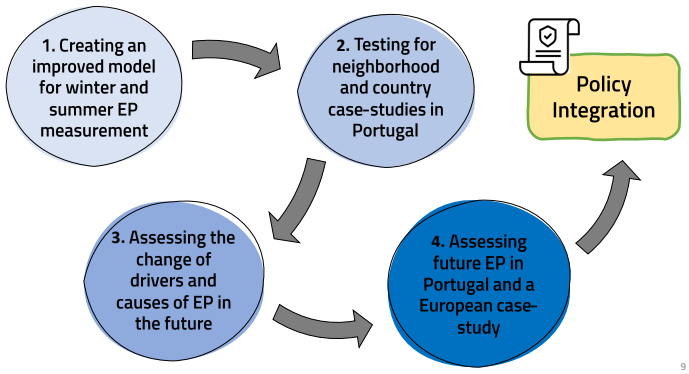
Literature Review

EP Assessments in Portugal

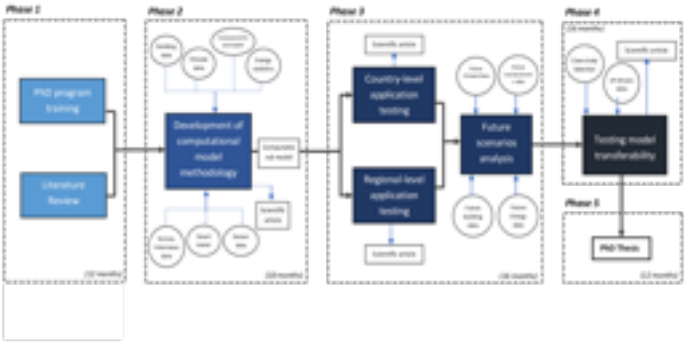
- Rodrigues et al. (2019) characterized EP in Portugal through an energy gap approach and the LIHC indicator
- Potential for big data integration in EP studies:
  - Energy Performance Certificate (EPC) data
  - Smart Meter data
  - Inside conditions indicators (Temperature and Humidity)



Main Goals



Methodologic Framework



Data Sources

Available
Potentially available

- National Statistics – census data on socioeconomic indicators and building characteristics, only every 10 years
- Energy Performance Certificates (EPC) – building characteristics, energy needs, energy class
- Climate data – outside average temperature heat waves
- Energy carrier consumption statistics – domestic sector, yearly, at municipal level
- Property cadasters – building characteristics
- Energy bills – electricity and natural gas expenditure
- Smart Meters – electricity consumptions, consumption patterns
- Mortality and disease rates – monthly
- Surveys and interviews – not many, only for a small case study
- Indoor temperature and humidity – also for small case-study

Expected Outcomes

- Review of multidimensional indicators for assessing EP
- Computational model for multi-spatial and multi-temporal scale cross-over assessment of winter and summer EP vulnerability
- Summer and Winter EP assessment with the developed model at country-level;
- Summer and Winter EP assessment with the developed model at neighborhood case-study;
- Future EP vulnerability for Portugal and another EU case-study, at NUT3 level.

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01.03.2021

Challenges and Opportunities in the Portuguese Energy Transition-The Evidence so far

Katherine Mahoney, João Pedro Gouveia, Rita Lopes

Making Decarbonization Fair 2021

Introduction

2015 Paris Agreement cut global GHG emissions **"to well below 2°C above pre-industrial levels".**

EU at the **"forefront of international efforts to fight climate change",** by 2018 the EU had cut GHG emissions by 23% against a 1990 base year

Longstanding struggle to provide a **secure, competitively priced & environmentally responsible energy supply** (Palinkas, 1998)

"All European citizens should have access to **secure, sustainable and affordable energy.**" This can only be realised by a **total reform of the energy system** (EC, 2019)

Decarbonise, Renovate, Improve

Inequality & Energy Poverty

The 2015 Energy Union Package (COM(2015) 80 final) identifies inherent structural inefficiencies, policy fragmentation, market stagnation, & widespread **inability to afford adequate energy services**

Energy poverty (EP) is an inadequate level of domestic energy services (for space heating, cooling, appliances etc.) currently **affecting 50 million Europeans** (Thomson et al., 2018). "The EU is committed to **tackling energy poverty by its roots and protecting vulnerable consumers**"

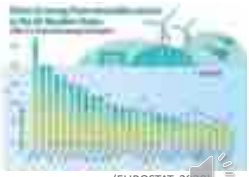
% people at risk of poverty vs the energy poverty index (Bouzarovski et al., 2015)

Median equivalised net income (EUROSTAT, 2018)

Energy Poverty, Inequality & the Energy Transition

The "energy poverty periphery" (Bouzarovski et al., 2017) share several common traits which increase vulnerability to EP including **low incomes, high energy costs, low climatization equipment ownership & poor building quality** (Antepara et al. 2020), (Robić., 2016).

Progress in alleviating domestic energy poverty (OpenEXP, 2019)



Higher rates of excess winter deaths in countries with mild **winter temperatures such as Cyprus, Malta, Portugal and Spain** above EU average (Healy, 2003), (Fowler et al., 2014).

(EUROSTAT, 2020)

The Solutions-Opportunities & Challenges

Opportunities:

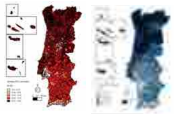
Employment opportunities (Urge-Vorsatz, et al., 2014)
Net reductions in GHG emissions, broader societal benefits (e.g. health, ecosystem services (Zhang et al., 2020)
Greater energy autonomy, reduce "energy island" effect COM(2015) 80 final
Lower energy costs, more efficient homes & less dependent on volatile fossil fuel pricing (Webber et al., 2015)

Challenges:

Energy prices can increase or decrease depending on scale of renewable plant (Sareen, 2020)
Monopolisation of the energy system by a limited number of companies
Displacement of low-income residents or so called "low-carbon gentrification" (Großmann, 2019), (Bouzarovski et al., (2018)
High upfront costs of technology less accessible to the most vulnerable (Roberts et al., 2020)

The Portuguese Case-Energy Poverty

Energy Poverty Vulnerability Index shows **high vulnerability in North & inland regions** as well as a **greater "energy performance gap",** the "gap" refers to the energy necessary for homes to reach a level of thermal comfort recommended by regulatory **bodies** (Gouveia et al., 2019) (Palma et al., 2019).



(Gouveia *et al.*, 2019),

- 22% in EP regarding space heating (EPOV, 2020)
- 29% in EP regarding space cooling (EPOV, 2020)
- **68.9%** residential properties are **EPC C grade or lower** (ADENE, 2020)
- Currently mitigated through social tariff, national strategy

High rate of EWDs (Almendra et al., 2016), & **increased incidence of hospital admittance** in summer months for **mental health conditions** (Loureiro et al. 2015). Highest number of children in Europe with **an increased risk of developing a health condition due to living in poor quality buildings** (VELUX, 2019).

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The Portuguese Case-Energy Transition

Portugal as defined **"a world leader at integrating generation from wind and solar PV"** (IEA, 2021). Portugal has progressed rapidly despite weak engagement with the Kyoto protocol (Carvalho et al., 2013) & as one of the **least resilient countries to the impacts of the 2008 recession** (EC, 2018)

(EUROSTAT, 2020)

Renewable uptake has **created jobs, number of jobs** in renewables sector expected **to triple by 2030** (Deloitte, 2019)

Public concern about climate change is strong, but **68.3% of the population express concerned about energy price increases** (Magalhães et al., 2018)

In 2019 **equivalised electricity and gas prices were the 4th highest in the EU** (EUROSTAT, 2020b)

6

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The Solutions-Opportunities & Challenges

Portugal has released **ambitious decarbonisation plans** in its Carbon Neutrality Roadmap (RNC 2050) (APA, 2019a) and **recognised the need to tackle EP in its National Energy and Climate Plan** (PNEC 2030), (APA, 2019b). It has also released a Long Term Strategy for the renovation of buildings (ELPRE) (República Portuguesa, 2020).

7

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Exploring the policy gaps

Policy Gap	The challenge
CO_2	Climatization ownership rate low, reluctant use of equipment even where present YET RNC 2050 requires 50% reduction in the energy used for domestic heating
Renovation	Support now exists for renovation work YET householders must pay upfront and then claim back funds post works
Costs new technology & rate of uptake	Uptake of renewables & A+++ equipment critical for decarbonisation strategy YET all technology has associated costs
Opposing interests	Energy companies have a critical role in the energy transition YET the transition hinges on the reduction of energy consumption

Overall unclear how vulnerable consumers will benefit

8

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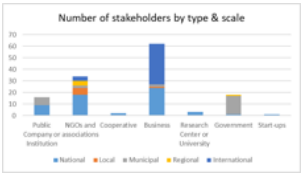
Exploring interest & power

A stakeholder analysis of the groups affecting EP in the Portuguese energy transition showed that the **majority of stakeholders were international businesses**. These mostly consisted of **energy companies & construction, providers of domestic efficiency equipment or sustainable architecture firms**



A ranking of these stakeholders showed that **businesses made up the majority of the "core" group**, indicating a high level of influence over the transition. Groups representing **vulnerable consumers & communities made up 13.9% of the "core"** group.

9

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Conclusions

The energy transition presents a range of opportunities & challenges with regard to the mitigation of energy poverty, while the opportunity for employment & innovation is significant, it is not clear that the **broader benefits of the transition are reaching the consumers**

In Portugal impressive progress has been made with regard to decarbonising the energy supply, **yet energy prices remain high and many consumers remain in a position of energy poverty**

As the Portuguese energy transition gets further underway there are significant **risks that existing vulnerabilities will perpetuate** broadly due to conflicting interests, a lack of financial resources on the part of the consumer and a reduced role on part of both Government and vulnerable groups compared to private companies

These risks need to be evaluated and reflected as the transition goes forward to mitigate this effect and to **ensure that the underlying goals of the transition are met**

10

Email: k.mahoney@campus.fct.unl.pt

Thank you!

Katherine Mahoney-SFRH/BD/147925/2019

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COOPÉRNICO

How can Renewable Energy Cooperatives help make Decarbonization fair?

Rita Marouço, Project Developer

1. About Coopérnico

Coopérnico is the first renewable energy cooperative in Portugal. Created in 2013 by 16 people who wanted to promote renewable energy through the empowerment of citizens.

What is our mission?

Renewable Energy

Sustainable Future

Citizens´ Engagement

2. Our activities

What are our areas of work?

Production

Electricity Supply

Energy Services

2.1. Our activities - Production

- The investments on RES production is exclusive for Coopérnico members.
- The members receive 3% interest per year on their investment.
- Coopérnico shares the economic benefits between the owner of the rooftop/land and its members for the first 10-15 years.

28 DECENTRALIZED PV PROJECTS
(26 FIT + 2 SHARED ENERGY SAVINGS CONTRACTS)
1,9 MWP INSTALED
> 1,75 M€ INVESTED

2.2. Our activities – Electricity Supply

Renewable production

Cooperators Consumption

GREEN ENERGY

2.3. Our activities – Energy Services

How can we better help our members and the portuguese citizens towards the energy transition?

Education/ Citizen Empowerment

H2020 projects

Tools and partnerships

3. Education/Citizens´ Empowerment

IDenergia

https://www.idenergia.pt

Talks with Energy

Poupa Watts ("Save Watts")

4. Tools and Partnerships

Partnerships with companies to help our members:

- Aquire smart meters (Cloogy);
- Aquire smart chargers for electric vehicles (VOLT-E);
- Discount services for Energy Home Audits/Certifications;

Low Cost Loans for PV Self Consumption kits

5. H2020 Projects

RESCOOP 20-20-20

RESCOOP PLUS

MEDSOL

FLEXCoop

PEARLS EMPOWERING LANDSCAPES

Compile

POWERPOOR

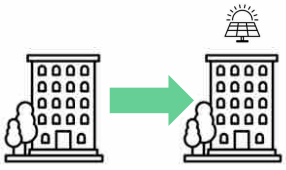
5.1. H2020 Projets – Compile

Objective: The main aim of COMPILE is to show the opportunities of energy islands for decarbonisation of energy supply, community building and creating environmental and socioeconomic benefits.

Duration: 2018 - 2022

x 180 apartments

x 2 stores



x 1 Energy Community

5.2. H2020 Projects - POWERPOOR

Objective: To develop support programmes/schemes for energy poor citizens and encourage the use of alternative financing schemes e.g. establishing energy communities/cooperatives, crowdfunding).

Duration: 2020 - 2023

Network of Energy Supporters and Mentors

POWER – TARGET

POWER – ACT

POWER – FUND

Rita Marouço

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Thank you

Making Decarbonisation Fair 1-4 March 21

energy*poverty*decarbonisation*research*practice

1-4 March 2021

Significance of socio-cultural dimensions for understanding energy poverty in Portugal

Ana Horta and Luísa Schmidt

University of Lisbon,
Institute of Social Sciences

INSTITUTO DE CIÊNCIAS SOCIAIS

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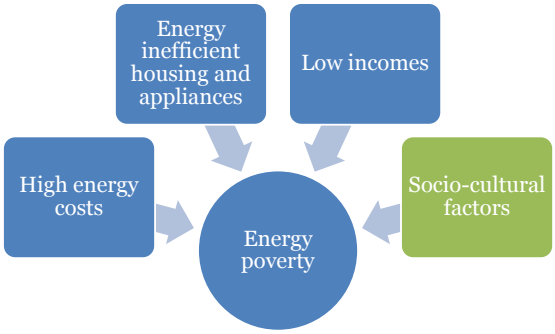
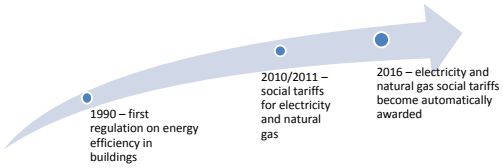
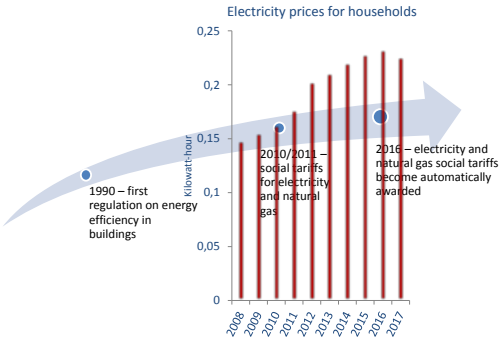


Generalized lack of awareness of energy poverty in Portugal



Generalized lack of awareness of energy poverty in Portugal



Project "Ligar"

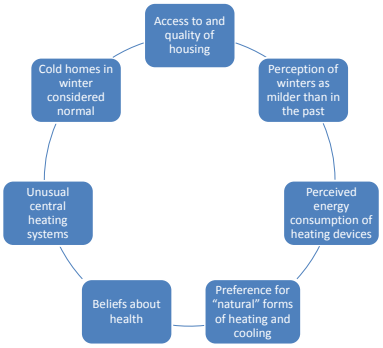
- 100 semi-structured interviews
- practices adopted by vulnerable households to cope with energy poverty
- 10 sites throughout the country (urban/rural, climate)
- diverse households (age, gender, work, education)
- Fieldwork: February-May 2018
- Average duration of interviews: 40 min.

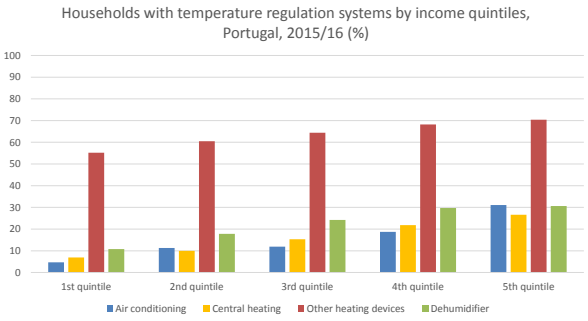
Funded by the Energy Services Regulatory Authority (ERSE) and coordinated by the Portuguese Energy Agency ADENE.

Project "Net zero energy school"

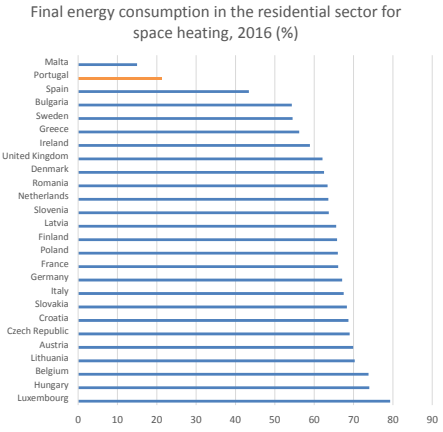
- 22 semi-structured interviews
- representations and energy uses at home by upper, middle and lower class households
- diverse neighborhoods in the Greater Lisbon area
- all households with at least a child in secondary school
- Fieldwork: late 2012-early 2013
- Average duration of interviews : 75 min.

Funded by the Foundation for Science and Technology (FCT/MIT-PT) and coordinated by Técnico ULisboa.





Source: INE, 2017



Source: Eurostat

Findings from both projects (1): High tolerance to cold

- "Do you feel cold [in here]? It's good!" (man, 84, lower class)
- "We don't really need to warm up the house. (…) We are used to it…" (woman, 29, lower class)
- "Our Winter is a nice Spring, not a Winter." (man, 43, middle class)
- "Do you know what's the best thing against colds? It is not like this [with warm clothes on]. It is to be at ambient air temperature [with just a shirt]. People are obsessed with warm clothes! (…) Look: heaters are a modern thing. In children's beds, only blankets – no heaters! (…) If it's cold, the child wears a cap, gloves…" (man, 58, middle class)
- "I have central heating but I seldom turn it on. Because there is no need (…) Only when it is really, really cold." (woman, 50, upper class)

Findings from both projects (2): Preference for "natural" heat

- "Electric blankets?? No, no, no… I don't want that!" (woman, 63, lower class)
- "I don't like that heat [from the electric heater], it hurts my eyes (…), makes my eyes itchy… Do you know what I do? I have a little blanket. (…) We always prefer that natural warmth of the blanket." (Woman, 81, lower class)
- "If it's sunny, even if very cold, (…) sunshine comes in and it gets warm inside." (woman, 50, upper class)

Findings from both projects (3): Space heating as a luxury

- "This house is so cold! Like a freezer… but if I turn on a heater, you don't have the money to pay the bill! Forget it…" (woman, 46, lower class)
- "Only on colder days, only during cold spells (…) we heat up the bedrooms, for example, but not all day or night, only in certain periods. (…) If I am cold, I put on another sweater." (woman, 48, middle class)

Findings from both projects (4): Space heating as a good life

- "[Before losing my job] we had no concern about the cost of heating our house. (…) The return to the blanket is a huge civilizational setback!" (woman, 53, middle class)
- "If electricity was cheaper, I would [use heating equipment], obviously! Of course I would! I would love to have central heating." (woman, 45, lower class – former immigrant in France)

Final remarks

- Cultural acceptance of cold at home hinders social and political recognition of energy poverty as a problem as well as the need to tackle its negative consequences on health and well-being.
- Further research is needed on the social construction of indoor thermal comfort and on how it is changing.
- There seems to be an emerging conflict between “modern” ideals of a “good life” and a more traditional culture of coping with cold in winter and heat in summer.
- This conflict may become very challenging for energy poor households, as younger generations demand higher thermal comfort (potentially increasing conflict within families).
- Social practices of coping with cold and heat at home may persist if interventions to mitigate energy poverty are designed not attending to socio-cultural dimensions, due to resistance to “artificial” forms of heating and cooling.
- In the next few years, Portugal is expected to use funding from the EU to fight energy poverty – it is critical that socio-cultural dimensions are taken into account in order not to aggravate injustice.

Thank you very much for your attention!

Final remarks

- Cultural acceptance of cold at home hinders social and political recognition of energy poverty as a problem as well as the need to tackle its negative consequences on health and well-being.
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Thank you very much for your attention!

Panel 2: Energy poverty across the world

- Alejandra Cortes – Lecturer U de Chile and PhD candidate RMIT, Australia., Universidad de Chile and RMIT University, Australia
- Anna Zsofia Bajomi – PhD Candidate, Politecnico di Milano
- Carmen Sánchez-Guevara – Assistant Professor, Universidad Politécnica de Madrid
- Caroline Porto Valente – PhD Candidate, University of Technology Sydney
- Raúl Castaño – PhD, Finnish Energy Observatory
  Video (Vimeo) – Slides (pdf)
- George Jiglau – Lecturer, Babes-Boylai University (Cluj-Napoca)
- Teresa Cuerdo – Researcher, PhD architect, Eduardo Torroja Institute for construction sciences, Spanish National Research Council (IETcc-CSIC)
- Rob Marchand (Chair) FPRN Trustee and Lecturer in Resource Efficiency, Sheffield University Management School; FPRN

FEMENMAD PROJECT

FEMINISATION OF ENERGY POVERTY IN MADRID

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http://abio-upm.org/project/proyecto-femenmad/

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Paula Alesanco Sanz
José Antonio López Bueno
Cristina Linares Gil
Julio Díaz Jiménez
Gloria Gómez Muñoz
Fco. Javier Neila González

OBJETIVES OF THE PROJECT

Assess the **gender inequalities** that occur in households suffering from **energy poverty** in the city of Madrid.

- Evaluate feminisation of energy poverty incidence at the **city scale**.
- Set the feminisation of energy poverty in the **21 districts** in Madrid.
- Establish **recommendations for housing and energy policies.**

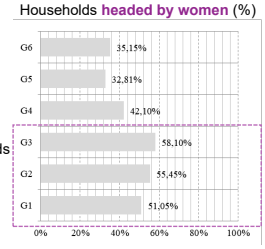
1. Gender and energy poverty?

Previous data. The case of Madrid

Authors:
Ana Sanz Fernández
Gloria Gómez Muñoz
Carmen Sánchez-Guevara Sánchez
Miguel Núñez Peiró

Households **at risk of energy poverty**

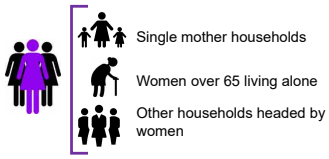
Households **headed by women** (%)



2. City scale

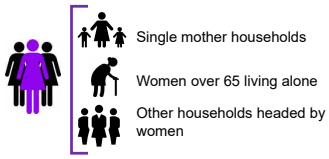
2.1 Income and energy approach

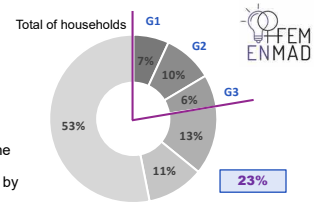
Selection and characterisation of households



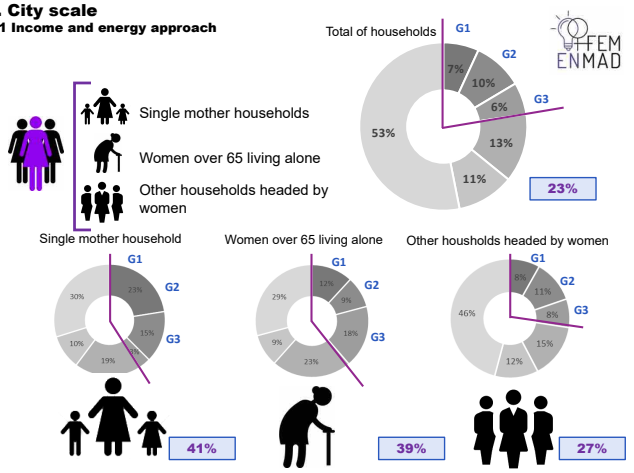
2. City scale

2.1 Income and energy approach



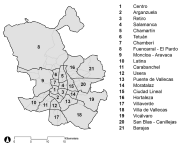


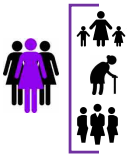
2. City scale
2.1 Income and energy approach



3. Sub-municipal scale
3.1 High Energy Requirements (HER) indicator in the 21 districts

Geographical distribution of the phenomenon





+ HER Index
(High Energy Requirements)

$HER = Va + Vb + Vc + Vd + Ve$

Va → Housing age
Vb → Housing maintenance conditions
Vc → Heating/cooling facilities
Vd → Living surface/member
Ve → Urban climate (UHI)

+

+ Income by districts

3. Sub-municipal scale
3.1 High Energy Requirements (HER) indicator in the 21 districts

Single mother households

3. Sub-municipal scale
3.1 High Energy Requirements (HER) indicator in the 21 districts

Women over 65 living alone

3. Sub-municipal scale
3.1 High Energy Requirements (HER) indicator in the 21 districts

Other households headed by women

3. Sub-municipal scale
3.1 High Energy Requirements (HER) indicator in the 21 districts

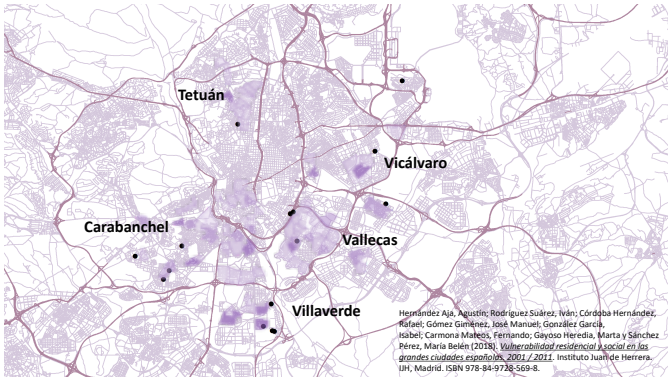
Households headed by women
→ Older housing
→ Lower presence of air conditioning facilities
→ High UHI intensity

Single mother households
→ More recent housing
→ 50% of them under poverty conditions

Women over 65 living alone
→ Lower pensions than men
→ Some of them in the wealthiest neighbourhoods
→ Old and inefficient housing
→ Highest UHI temperatures

4. Interviews and sensorization

Location of interviews // vulnerable neighbourhoods



Hernández Aja, Agustín; Rodríguez Suárez, Iván; Córdoba Hernández, Rafael; Gómez Giménez, José Manuel; González García, Isabel; Carmona Maleco, Fernando; Gayoso Heredia, Marta y Sánchez Pérez, María Belén (2018). *Vulnerabilidad residencial y social en las grandes ciudades españolas. 2001 / 2011*. Instituto Juan de Herrera. IJH, Madrid. ISBN 978-84-9728-569-8.

4. Interviews and sensorization

Housing characteristics

- 75% of households have damps broken windows or lack of insulation.
- 88% have heating facilities but only the 38% uses them
- 44% has experienced arrears in utility bills

Sociodemographic characteristics

- **Profile:** women 47 years, migrant living in Spain since 16 years, main breadwinner. Household consisting of 3 people, two of them dependent persons.
- Mean income **726€/month·household**.
  Temporary jobs (81%) and linked to caring tasks
  Unemployment rate (75%) and only the 18% has unemployment benefits
- The 66% suffer from a **long-term sickness**
  The 69% regularly take **medication** (37% anxiety, 25% respiratory problems).
- The 20% of households have a **person with disability** whose care depends on the interviewed woman.
- **The 44% of interviewed women have suffered gender violence (legally recognised or not)**

4. Interviews and sensorization

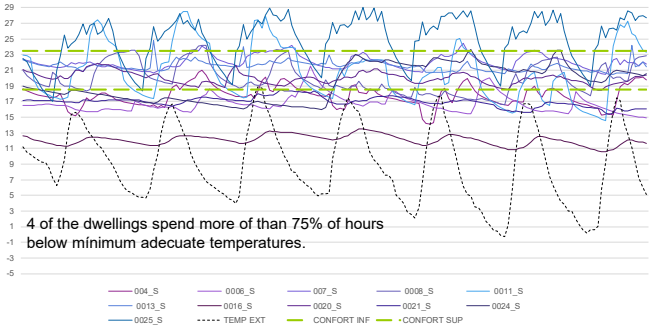
Energy poverty and personal experience

- Social isolation and **individual devaluation** (self-esteem)
- Shame on being failing in caring tasks → **mental block**
- **Fear, concern and anxiety** due to the inability to face the situation
- **Normalisation of vulnerability** and precariousness

Segregation of capacities according to gender roles. Women are socialized in certain dynamics that do not include experimentation with technology which reduce independence in dealing with day-to-day situations related to energy equipment

4. Interviews and sensorization

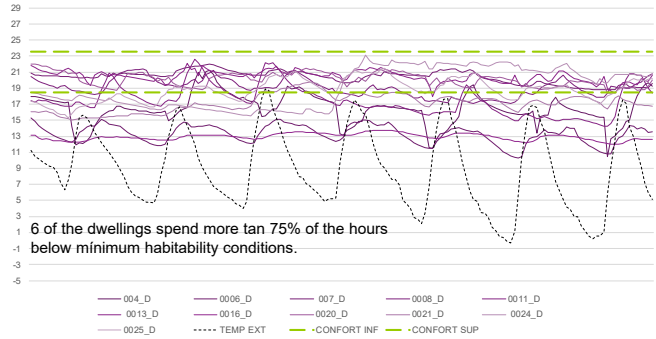
Living room temperatures



4 of the dwellings spend more of than 75% of hours below mínimum adecuate temperatures.

4. Interviews and sensorization

Bedroom temperatures



6 of the dwellings spend more tan 75% of the hours below mínimum habitability conditions.

6. Conclusions & recommendations

Incorporation of the gender mainstreaming in housing and energy policies

1. Statistical databases: household as the unit of study.

2. Better characterisation of women's situation: gender roles, división of tasks.

3. Incorporation of the **caring activities in the evaluation of households energy needs.**

6. Conclusions & recommendations

Incorporation of the gender mainstreaming in housing and energy policies

4. Development of policies to promote women's technological skills, especially at an early age, through the promotion of training in technical and scientific fields.

5. Incorporation of women's voice in neighbourhood interventions. Incorporation of the care dimension.

6. Conclusions & recommendations

Incorporation of the gender mainstreaming in housing and energy policies

6. Incorporation of women's experience in policies for intervention on the housing stock, access to energy and sanitation.

7. Sustainable energy transition that recognises and guarantees the right to energy and moves towards a feminist model of society that respects the planet.

FEMINISATION OF ENERGY POVERTY

MAKING DECARBONISATION FAIR - GENDER AND ENERGY POVERTY

Making Decarbonisation Fair 1-4 March 21

energy • poverty • decarbonisation • research • practice

FEMENMAD PROJECT

FEMINISATION OF ENERGY POVERTY IN MADRID

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PhD Candidate Caroline Valente BSc MBA MSc LEED AP BD+C

ENERGY POVERTY AMONG OLDER LOW INCOME AUSTRALIANS

Making Decarbonisation Fair | FPRN International Conference | March 2021

1. Introduction
2. Energy poverty among older vulnerable households in Australia
3. COVID-19 and its impacts on older energy poor households
4. What can be done?

INTRODUCTION

- PhD (ongoing) research on the causes, extent, impacts and potential solutions to energy poverty among older low-income households
- Mixed-methods approach with focus on qualitative component
- Current stage of data analysis and preliminary findings

ENERGY POVERTY AND OLDER AUSTRALIANS

- The impact of the home in their experience of energy poverty
- Causes and impacts of energy poverty among older low-income Australians
- Emerging ideas and insights

"Oh my gosh, it's the worst I've ever, ever felt. And I've never felt... the place is like an oven, it's like a sweat box. Absolutely awful. It definitely does affect my health during the summer months because I'm just totally exhausted, you know, and the perspiration just pouring off me. I've never felt anything like [it]. And unless you're here and experience, it's very hard for anyone to realise how bad it really [is]. I'd do anything to try and keep cool, but it's almost virtually impossible. It's because of the building."

(Janine, 64 y/o)

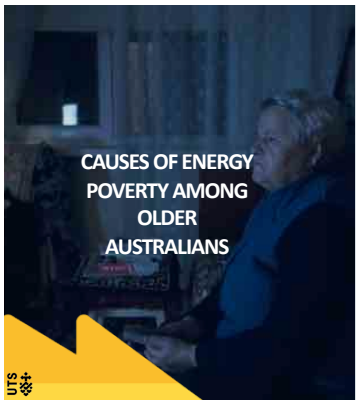
- Australia is a very slow adopter of energy efficiency requirements.
- Studies show much older stock rates 2 stars or less (in a scale of 10).

(Horne et al., 2005; Berry and Marker, 2015; Noble and Martinelli, 2009; Sustainability Victoria, 2014; Willand, Maller and Ridley, 2019)

Artificial Energy Loads and Costs per Star Rating and Location

Location	Climate Zone	0.5 ☆			2 ☆			6 ☆			10 ☆		
		MJ/m2.annum	KWh/m2.annum	Eletricity costs in AUS per m2.annum	MJ/m2.annum	KWh/m2.annum	Eletricity costs in AUS per m2.annum	MJ/m2.annum	KWh/m2.annum	Eletricity costs in AUS per m2.annum	MJ/m2.annum	KWh/m2.annum	Eletricity costs in AUS per m2.annum
Adelaide	16	584	162.22	$ 61.03	325	90.28	$ 33.96	96	26.67	$ 10.03	3	0.83	$ 0.31
Brisbane	10	245	68.06	$ 16.02	139	38.61	$ 9.09	43	11.94	$ 2.81	10	2.78	$ 0.65
Canberra	24	957	265.83	$ 73.26	547	151.94	$ 41.88	165	45.83	$ 12.63	2	0.56	$ 0.15
Melbourne	21	676	187.78	$ 43.70	384	106.67	$ 24.82	114	31.67	$ 7.37	2	0.56	$ 0.13
Sydney	17	286	79.44	$ 21.89	148	41.11	$ 11.33	39	10.83	$ 2.99	6	1.67	$ 0.46

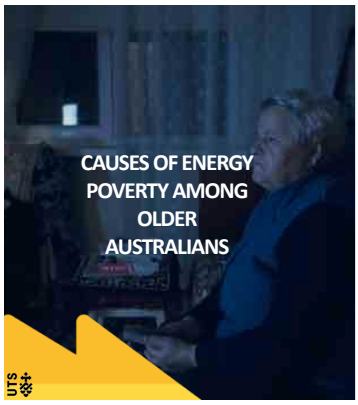
Source: The author with information from NaTHERS National Administrator, 2012 and Canstar Blue, 2019



1. Social exclusion as a cause of energy poverty
2. Being loyal to providers but not valued for that: charges up to 30% more expensive than market deals, distrust, faulty meters, disrespect and mistreating
3. Lack of computer literacy and difficulty to engage with the online energy market
4. Private renters in far worse situation – less disposable income and no agency over their home

"Oh, it was horrible, yes. The rental and all of your bills, everything, the whole lot. You are left with nothing. But I survived! Well I wouldn't go and buy; I never went out for a meal. I never went shopping for clothes. Not even a coffee because to me going out for a coffee, I could get something else with it. I could get a packet of Weet-Bix or something if that makes sense. I had a dog then and I used to go down to the dog park and walk him, so that was my social outlet. But it did [affect my social life] because I felt I couldn't afford to go anywhere with anyone. You were always asked, but I never felt I had the money to go out."

(Jessica, 65 y/o)



5. Lack of Energy Literacy:
   - Which appliances and/or energy uses consume more energy at home and 'keeping things forever'
   - The energy rebates and concessions available to this specific group
   - How to compare and choose good energy deals and rates - the '*confusopoly*'
6. Lack of suitable deals for older people in low incomes - How to help them engage in a further digitalised market?
   - No office and face to face contact
   - Being charged for paper bills

1. Social isolation as an impact of energy poverty

"I have no social life. I can't afford it. There was one neighbour who was very friendly. And she would ask me out for coffee. Often, I would have to say: 'No, I can't afford to'. That's very embarrassing. It [the energy costs] really cuts down your social life completely."

(Sonia, 74 y/o)

"Yes, I have [asked for help from family and friends], yes. I've asked a lot of people for money.... [and] you lose a lot of friends and it's so embarrassing."

(Jasmine, 53 y/o)

2. Compromising on essential and non-essential expenses

"I can just manage by living very frugally. But there's nothing left over. Nothing to save a little bit for emergencies. Nothing. You are just able to exist. Just existence money is all you have"

(Sonia, 74 y/o)

"You know, I love my fruit, but I can't afford it. So, things like that, they [energy costs] don't allow you to have. If you have to buy underwear or a t-shirt or a bra. I haven't had a bra for as long as... I don't have a bra, I can't afford it anymore. I can't afford to buy one, there is no money in the budget for that.

(Violet, y/o)

1. Proportion of income being spent on energy ranges from as low as 2% to 10.50% – and the Boiling Frog analogy
2. The Generational aspect: War Babies, life of struggles, and the 'new' current society values
3. Their frugal energy consumption patterns are very different to the avg Australian household
4. Home design and performance, localised thermal comfort and unhealthy indoor temperatures

"I mean also... It's not very nice having to go to charities to ask to pay the electricity bill. [...] And it's embarrassing when you ask for that assistance and they say "*Oh no, you know, we can't help you anymore*", you know? I didn't really feel good... And feeling like, you know, you are doing wrong asking them for help. That's, yeah, that's just, it doesn't feel good, yeah."

(Daniel, 53 y/o)

COVID-19 AND OLDER HOUSEHOLDS

- Vulnerable households have to spend more, or in many cases, all their time at home
- The social isolation measures imposed increased social exclusion
- Increased everyday expenses, such as groceries

"I think that [COVID] twisted life, particularly with energy significantly, because I was out of the house 1 hour a week in March, April, May, and June. I was home 167 hours a week, I was in my house. The same day last year, if I went to a meeting, went on a trip, went away, or was simply poking around a shopping centre or driving the car somewhere. So, the answer is that COVID had an impact on my energy bill."

(Anthony, 69 y/o)

"Before COVID, I used to be extremely social... I'd be outside my home every day. Now I think the increase in my energy costs are being compensated by not going out anymore and not socialising, as I'm still afraid of exposing myself to the virus. I'm old you know... I can't [afford to] get sick."

Iris (78 y/o)

"I honestly feel it [energy consumption] has gone up [due to COVID lockdown]. I do feel it has increased both of them, electricity, and gas. [...] The bills are dearer. [...] I also feel that food has gone up. Food. Every time you go to get your groceries, you are getting less for your value of money."

Jessica (65 y/o)

WHAT CAN BE DONE?

- Stop the 'confusopoly' and increase engagement with vulnerable consumers
- Increase energy literacy training
- Reframe and simplify processes for assistance to avoid the stigma and the red-tape

If you are interested,
check **The Conversation** article:

SCAN ME

Thanks!
Any questions?

You can find me at UTS
caroline.portovalente@uts.edu.au

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ASUTUT - SUSTAINABLE HOUSING DESIGN

FENO
FINNISH ENERGY OBSERVATORY

Network of experts that aims to address Finland's most pressing energy challenges related to climate change.

Tampere University

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FINNISH ENERGY OBSERVATORY

Chairs

Dr Sofie Pelsmakers
University of Tampere

Dr Harriet Thomson
University of Birmingham

Dr Karla Ricalde
University of Birmingham

Dr Raúl Castaño-Rosa
University of Tampere

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ASUTUT - SUSTAINABLE HOUSING DESIGN

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FINNISH ENERGY OBSERVATORY

Our main activities

- **Monitoring and disseminating** relevant resources on key energy challenges in Finland.
- **Open space for discussion** with experts from Nordic countries with other EU/non-EU countries.
- **Support for action** by assisting the public and private sector in Finland.

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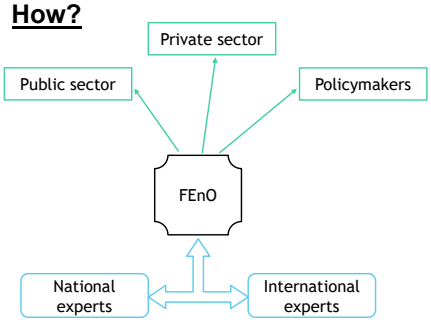
How?



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So far

- Conduct a household survey to explore energy issues, and how COVID-19 may have exacerbated these.
- First Policy brief on how the COVID-19 restrictions are impacting Finnish people's relationship with energy.
- Undertake a short survey with different stakeholder groups.

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Next

- Workshop with stakeholders to define key lines of action for the Observatory.
- Host a large online launch conference with the outcomes of our previous activities.

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FENO FINNISH ENERGY OBSERVATORY

How to support us?

- Joining to our network of experts.
- Disseminating and sharing FEnO outcomes.
- Contributing to the content and proposed lines for actions.
- Attending our events.
- Introducing FEnO to potential funding sources (foundations, private and public actors, etc.), or through support letter

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FENO FINNISH ENERGY OBSERVATORY

Join us today to create a better tomorrow!

Twitter: @EnergyFeno
Email: finnishenergyobservatory@gmail.com

Panel 3: Retrofit as a tool for decarbonisation and poverty alleviation

- William Baker (Chair) Energy advice development lead, Citizens Advice
- Iñigo Antepara – Assistant professor, University of the Basque Country
- Miguel Macias Sequeira – PhD student | Energy & Climate Researcher, CENSE, NOVA School of Science and Technology
- Pablo Hernández – Building energy efficiency engineer, University of the Basque Country
- Roberto Barrella – Research Assistant, Chair of Energy and Poverty – ICAI School of Engineering, Comillas Pontifical University
- Sarah Robertson – Research Fellow, RMIT University

Making Decarbonisation Fair 1-4 March 21
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BASQUE LANDLORD FOR PUBLIC RENTAL
Fulfilling the BASQUE GOVERNMENT's mandate
Public company to manage public renting

PUBLIC BUILDING STOCK
Manages over 230 buildings
over 7.700 dwellings
PRIVATE DWELLINGS
(BIZIGUNE programme)
Over 7000

TOTAL No. DWELLINGS
Around 15.000 dwellings

Taking into account
Spanish population,
highest dwelling stock
for rental in Spain

ALOKABIDE

RENOVATION OF THE BUILDING STOCK
Within the project

zero CO2 plana

SOCIO-ECONOMIC OF TENANTS
Low-income households are over-represented
Tenants UNDER-CONSUME (results energy audit)
Individual boiler: 30% less for HEATING, not for DHW

ENERGY POVERTY LEVEL
Calculated with 10% rule & reasonable energy costs:
9,3% in energy poverty situation
(not far from average for the Basque Country)

In 78% of the cases, the contract holder is a woman.

The 28% of the tenants are consuming less than
50% of reasonable energy costs

PROYECTO CLIMA

FOSSIL FUELS SUBSTITUTION BY SOLAR THERMAL
Methodology proposed by FES-CO2: « Methodology for thermal
aimed at reducing fossil fuel consumption in a new or existing installation"

$$RE_a = EEB_a - EP_a$$

where *REa* is Emission reduction in year "a", *EEBa* is Emissions associated with the baseline scenario in year "a", and *EPa* is Project associated emissions in year "a".

Baseline scenario: boiler running on natural gas,
Project scenario: Solar Thermal for DHW.

RENOVATION OF A BUILDING
Methodology proposed by FES-CO2: « Methodology for Energy Efficiency projects aimed at reducing fossil fuel consumption in a building" (same equation to be used)

Baseline scenario: individual heating,
Project scenario: placement of insulation on the facades, heat pump providing centralized heating, ventilation system with heat recovery.

Proyecto Clima submitted by Alokabide APPROVED in JANUARY 2021

Note: PV NOT INCLUDED in Proyecto Clima!!!!

PROJECTS SUBMITTED

ZABALGANA 92
Multi-occupancy building of 92 dwellings in Vitoria.

Replacement of incorrectly installed solar thermal collectors with vacuum tubes (lifetime 20 yrs.).

CALCULATIONS EX-ANTE

Baseline scenario
Total: 113.164,60 m3 of NG (244,2 t CO2e)
DHW: 154.375 kWh

Project scenario
Total area of vacuum tubes: 54,36 m2
Energy produced: 41.350 kWh (28,4% of DHW), i.e. 3,63% of the NG consumed
NG consumed produces 235,33 t CO2e

So, every year,
total **emission reduction is 9 t CO2e**

PROJECTS SUBMITTED

ZABALGANA 92

Cost of new vacuum tubes: 57.250,00 € + VAT

Maintenance costs 1€ pppm & 1000 kWh (elect.)

NET PRESENT VALUE & INTERNAL RATE OF RETURN ON INVESTMENT (without € emissions)

	2020	2025	2030	2035	2040
NPV	-68365,81	-62015,15	-51092,84	-32307,89	0
IRR	-0,102776				

NPV & IRR (selling CO2 emissions)
Report verification of emissions adds 50 €

	2020	2025	2030	2035	2040
NPV	-68327,45	-61772,48	-50668,92	-31880,44	0
IRR	-0,100043				

Initial investment is not returned in both cases

PROJECTS SUBMITTED

ARRASATE 140
Multi-occupancy building of 140 dwellings in Arrasate.

Replacement of broken solar thermal collectors (lifetime 25 yrs.).

CALCULATIONS EX-ANTE

Baseline scenario
Total: 78.370,00 m3 of NG (169,12 t CO2e)
DHW: 145.506 kWh

Project scenario
Total area of collectors: 105,42 m2
Energy produced: 60.819 kWh (39,4% of DHW)
Only the excess of the mandatory 30% can be accounted for, i.e. 2,05% of the initial NG

So, every year,
total **emission reduction is 3,5 t CO2e**

PROJECTS SUBMITTED

ARRASATE 140

Cost of new collectors: 38.884 € + VAT

Maintenance costs 1€ pppm & 1000 kWh (elect.)

NET PRESENT VALUE & INTERNAL RATE OF RETURN ON INVESTMENT (without € emissions)

	2020	2025	2030	2035	2040	2045
NPV	-45823,33	-39124,36	-31371,73	-22399,64	-12016,31	0
IRR	-0,026794					

NPV & IRR (selling CO2 emissions)
Report verification of emissions adds 50 €

	2020	2025	2030	2035	2040	2045
NPV	-45838,72	-39205,79	-31495,23	-22531,96	-12112,46	0
IRR	-0,02966					

Initial investment is not returned in both cases

PROJECTS SUBMITTED

ITURRITXO
Multi-occupancy building of 13 dwellings (area 774 m2).
In San Sebastian, more than 100 years old.

Renovation up to nearly zero-energy building.

CALCULATIONS EX-ANTE

Baseline scenario
Energy label F: 279.3 kWh/m2yr (54.2 kgCO2/m2yr)
37,3 t CO2e for heating and 4,6 t CO2e for DHW
(under-consumption of 30%, 30,7 t CO2e for heating)

Project scenario
Energy label B
Heating: 14,21 kWh/m2yr (no under-comsumption)
DHW: same
Produced by heat pump (COP 4,3) 3 t CO2e

So, every year,
total **emission reduction 38,8 t CO2e (only 27,7 t CO2e due to UNDER-CONSUMPTION)**

PROJECTS SUBMITTED

ITURRITXO

Cost of facades: 329.740,83 € + VAT (lifetime 25 yrs.)
Cost of heat pump: 48.400,00 € + VAT (lifetime 25 yrs.)
Cost of ventilation: 110.742,95 € + VAT (lifetime 25 yrs.)

Maintenance costs 1560 €

INTERNAL RATE OF RETURN ON INVESTMENT (without € emissions) = -0,0523084

IRR (selling CO2 emissions)
Report verification of emissions adds 33 €
= -0,0499893

Taking into account under-consumption
IRR (selling CO2 emissions) = -0,0507053

Initial investment is not returned in all cases

CONCLUSION

- Due to tenants under-consuming for heating, the problem of under-consumption has no effect in the first two cases,
- In the third case studied, the under-consumption reduces the energy consumed for heating in the baseline scenario by a 30%. So, the economic viability is affected

- The policy recommendation, when low-income households under-consume, the **accounting of emission reduction** should be justified **on the basis of theoretical** results with average consumers, rather than verifying actual emission reductions
- **Decarbonization** in the social housing sector is **easier** to achieve than the reduction of the energy consumed

ACKNOWLEDGMENTS :

SPECIAL THANKS TO

alokabide

EUSKO JAURLARITZA
GOBIERNO VASCO
INGURUMEN, LURRALDE PLANGINTZA ETA ETXEBIZITZA SAILA
DEPARTAMENTO DE MEDIO AMBIENTE, PLANIFICACIÓN TERRITORIAL Y VIVIENDA

THANK YOU!

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anek

The Green Menu: an online one-stop-shop for residential buildings retrofitting aiming at energy poverty mitigation and decarbonisation

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Making Decarbonisation Fair 1-4 March 21
energy•poverty•decarbonisation•research•practice

Project PAS2020 – Pan-European Approach on Sustainable Heritage: Regeneration by a retrofitting economy

The authors acknowledge and thank the support given to CENSE by the Portuguese Foundation for Science and Technology (FCT) through the strategic project UIDB/04085/2020.

Miguel Macias Sequeira's PhD scholarship is funded by FCT (2020.04774.BD).

Pedro Palma's PhD scholarship is funded by FCT (SFRH/BD/146732/2019).

INTRODUCTION

- 80% of existing buildings will be used in 2050 and 75% of this stock is inefficient (Eurostat, 2020).
- Building renovation is key for the recovery from Covid-19 and **current renovation rates are low.**
- Main barriers are lack of financing, information & market failures, and regulatory.
- Worst performing buildings and energy poverty are key challenges for the Renovation Wave.
- Previous research shows Portuguese dwellings' **low energy performance, lack of thermal comfort** and **energy poverty vulnerability** (Gouveia et al., 2019).

- Carbon Neutrality Roadmap 2050 (RNC2050) (2019)
- National Energy and Climate Plan 2030 (NECP2030) (2020)
- Long term building renovation strategy (LTRS) (2020)

Two key challenges:

- Decarbonization of buildings
- Energy poverty mitigation

INTRODUCTION

- Location in Southern Europe, targeted as one of the **most likely climate impacted regions.**
- "Inability to maintain adequately warm housing in winter" was the fifth country with a larger percentage of the population affected (**19.4%**) (EU SILC, 2019).
- "Population living in accommodation not comfortably cooled in summer" (2012), Portugal presents the second highest percentage of the European Union (**35.7%**) behind Bulgaria.
- "Share of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor" (**26.9%**) after Cyprus (EU SILC, 2019).
- About **70% of homes currently certified have low energy efficiency** (C or less) (Energy Observatory, 2018)

METHODS

- The consortium developed 3 country specific online one-stop-shops for residential buildings retrofitting → **The Green Retrofitting Menus.**
- In Portugal, an iconic typology from Lisbon was selected as a showcase.

RESULTS

www.menurenovacaoverde.pt

In "Menu de Renovação Verde", Portuguese citizens can find:

- Around 130 technical measures, tips, innovations, points of attention
- Detailed data on 12 financing schemes & tax benefits
- User-friendly calculation tools for 12 key measures
- Relevant regulations for each retrofitting measure
- 3D model for a traditional house from Lisbon

CONCLUSIONS

- The Green Menu provides an online one-stop-shop for building retrofitting.
- Closes information gaps, activates stakeholders and accelerates renovation.
- Enables access to context appropriate measures, without on-site visits, accounting for new business models and Covid-19 social distancing.
- 3 Green Menus are now available, further growth is anticipated by expanding to other building typologies and EU locations.

FUTURE STEPS

- The Green Menu roll-out will follow 2 main strategies: increase the online footprint of the platform and bridge the gap between online and offline.
- Partnerships will be fostered with key stakeholders.
- Although information is an important trigger, energy poverty mitigation and decarbonisation demand concrete real-world actions.
- Connect with trustworthy facilitators as local authorities, energy agencies, communities and cooperatives, as well as with businesses that work on buildings retrofitting, renewables and smart technologies.

BEB-18

(Bero eta Erosotasuna Bermatuta)

Guaranteeing a minimum temperature of 18 ºC in low-income dwellings

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FUEL POVERTY RESEARCH NETWORK

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1. Overview of the Project
2. Implementation of the measure
3. Case study
4. Conclusions & next steps

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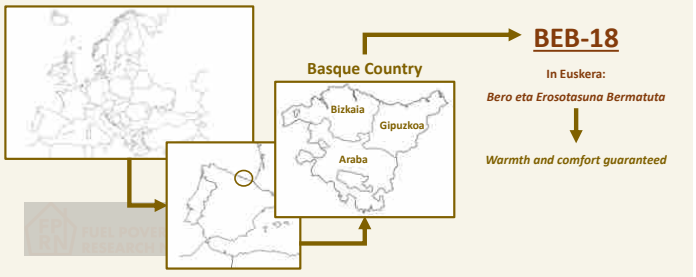
1. Overview of the Project



BEB-18

In Euskera:

Bero eta Erosotasuna Bermatuta

Warmth and comfort guaranteed

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1. Overview of the Project

alokabide

- **Social housing public manager of the Basque Country**
- **Manages** over **7.700 dwellings** (over **230 buildings**) – one of the greatest social housing building stock of Spain

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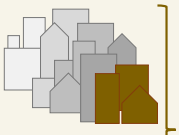

Social housing

↓

Low incomes

↓

Cold homes & Low GHG emissions

alokabide

zero@plana

REHABILITACIÓN ENERGÉTICA Y ACCESIBILIDAD DEL PARQUE PÚBLICO DE ALQUILER

- Pioneering initiative answering the **European Energy Performance Building Directive**
- **Refurbishment** of the social housing stock and **reinvention** of the **management model**

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1. Overview of the Project

Conventional Energy Management Model

Heating & DHW

- Fixed term ~ **Energy supply and installations maintenance**
- \+
- Variable term ~ **Energy consumption (kWh)** →

→ Low income → Low energy consumption → Cold homes !!

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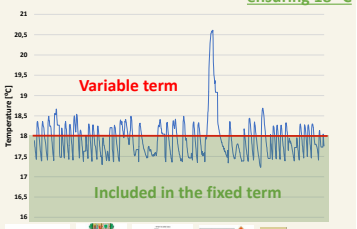
BEB-18: guaranteeing a minimum temperature of 18 °C in low income dwellings

2. Implementation of the measure

New ALOKABIDE Energy Management Model

Heating & DHW

- Fixed term * ~ Energy supply and installations maintenance + alokabide Assumes energy ensuring 18 °C
- Variable term ~ Energy consumption over 18 °C



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BEB-18: guaranteeing a minimum temperature of 18 °C in low income dwellings

3. Case study

Current state of the building:

- A high number of homes live under 17 °C: 53 % in cold season, 29 % in mild season
- High energy losses in distribution due to low consumption of the users: 60 % of energy losses

- Real building of 126 dwellings managed by ALOKABIDE in Vitoria-Gasteiz
- Complete monitoring: dwellings energy consumption and indoor temperature

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BEB-18: guaranteeing a minimum temperature of 18 °C in low income dwellings

3. Case study

Current state of the building:

- A high number of homes live under 17 °C: 53 % in cold season, 29 % in mild season
- High energy losses in distribution due to low consumption of the users: 60 % of energy losses

Calibrated simulation

BEB-18 °C simulated building:

- NONE of the homes under 18 °C, no cold homes
- Increment of 4 % in heating consumption: insignificant increasement of GHG emissions
- Improvement of the energy efficiency due to a better use of the energy

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BEB-18: guaranteeing a minimum temperature of 18 °C in low income dwellings

4. Conclusions & next steps

Conclusions

- Social housing → low incomes → energy poverty → cold homes

alokabide Takes the lead

BEB-18 °C

- ✓ No homes under 18 °C, depletion of energy poverty
- ✓ Insignificant increasement of energy consumption
- ✓ Improvement of energy performance (less energy losses)

Next steps

- BEB-18 is already being implemented:
  - Monitoring indoor temperatures and energy consumption
  - Calculation of real economic costs

First results in summer 2021

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BEB-18

(Bero eta Erosotasuna Bermatuta)

Thanks for your attention

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Impact of energy refurbishment strategies on domestic energy services affordability: the Spanish case

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Making Decarbonisation Fair
1st-4th March 2021

comillas.edu

Overview

This research work presents a bottom-up methodology to assess the impact of different **energy refurbishment strategies** on Spanish households' thermal-energy expenditure.

The results make it possible to evaluate the differences between the **current outline and various 2030 scenarios**, thus pointing out some policy implications and future research work.

1. Introduction

Introduction

The **Energy Performance of Buildings Directive** (2010/31/EU and 2018/844/EU) established that EU countries must adopt a **long-term renovation strategy** to support the renovation of their national building stock.

In 2020, the Spanish Government published the **National Strategy for Energy Renovation in the Building Sector** (ERESEE 2020), which sets a reduction target in residential sector's consumption of **15.3% by 2030** compared to 2020, with 73.7% of this reduction corresponding to thermal uses.

What is the impact of different energy refurbishment strategies on future affordability of domestic energy services?

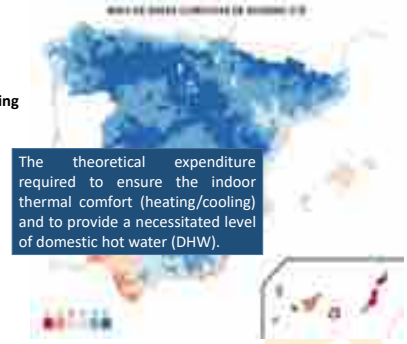
2. Characterisation of domestic energy expenditure

Characterisation of domestic energy expenditure

Spain

2019

- **Population:** 47.32 million
- **Energy poor**: 6.6% to 16.7% (INE, 2020;MITECO, 2020)
- **Spanish Technical Code for Building Construction**
  - **Winter climate zone:** α to E
  - **Summer climate zone:** 1 to 4
- **National Strategy against EP '19:** Required Thermal-Energy Expenditure (RTEE)



The theoretical expenditure required to ensure the indoor thermal comfort (heating/cooling) and to provide a necessitated level of domestic hot water (DHW).

(Ministerio de Fomento, 2018)

Characterisation of domestic energy expenditure

Spanish residential sector

Buildings

- 55% residential buildings built before 1981
- 95% out of total buildings with EPC have a rate 'D' or lower

(Census 2011; IDAE, 2018)

Thermal systems

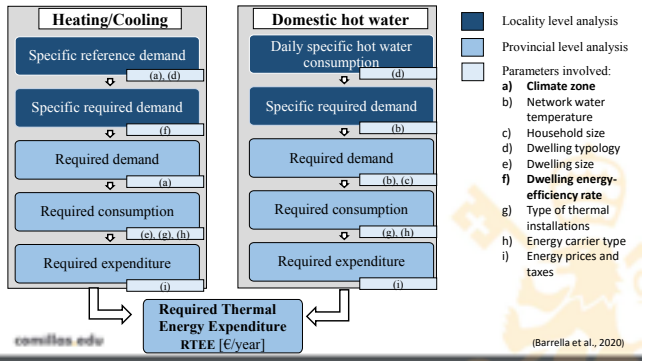
- Heating: 49% are low-efficiency boilers
- DHW: 54% are low-efficiency boilers
- Cooling: only 30% of households own air conditioning systems

(IDAE, 2019)

The residential building stock needs energy refurbishment

Characterisation of domestic energy expenditure

Required Thermal Energy Expenditure



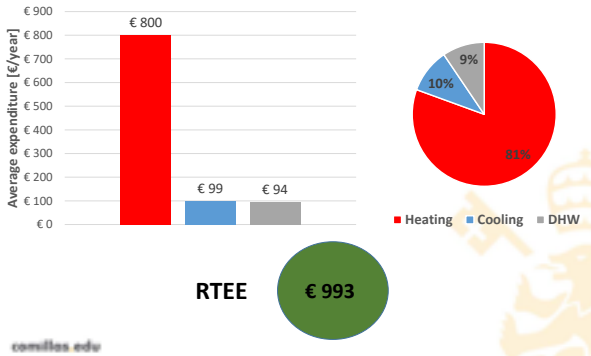
(Barrella et al., 2020)

3. Energy refurbishment scenarios

Energy refurbishment scenarios

- Reference Scenario (2020)
- Future Scenarios (2030):
  - Scenario 0 - "Secular stagnation"
  - Scenario I – "Low-cost building retrofit"
  - Scenario II – "Thermal systems replacement"

Reference Scenario (2020)



RTEE **€ 993**

Future Scenarios (2030)

Changes in energy demand and prices

Energy demand

Negligible changes in the theoretical demand for heating/cooling and DHW.

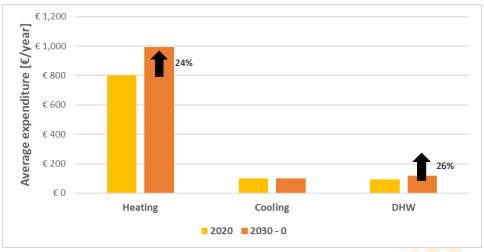
Energy prices

Fossil fuels 43.3%

(ERESEE, 2020)

Future Scenarios (2030)

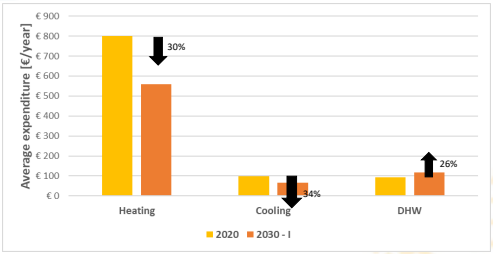
Scenario 0 - "Secular stagnation"



RTEE +22%

Future Scenarios (2030)

Scenario I – "Low-cost building retrofit"

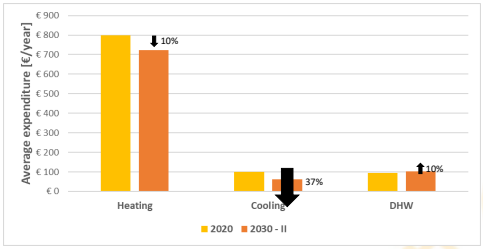


RTEE -25% € 4500

(Own elaboration based on de Luxán García De Diego et al., 2017)

Future Scenarios (2030)

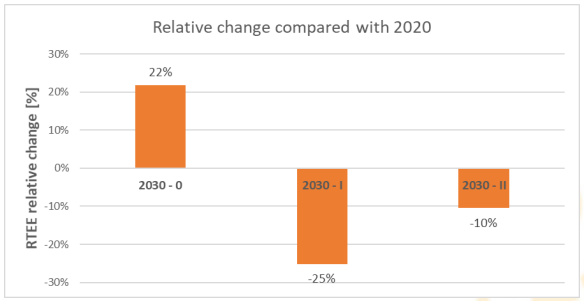
Scenario II – "Thermal systems replacement"



RTEE -10% € 1500

Future Scenarios (2030)

Comparison among scenarios



- 0 - "Secular stagnation"
- I – "Low-cost building retrofit"
- II – "Thermal systems replacement"

4. Conclusion and future work

Conclusions and future work

- The Spanish residential sector urgently needs energy refurbishment
- Increase in fossil-fuel prices can reduce or outset the positive effect of some measures
  ⇒Electrification of heating and DHW services (2050)
- Low-cost building retrofit is the most effective measure, but also the most expensive one
  ⇒Prioritize vulnerable households

Conclusions and future work

- The variables included in the analysis may change in many different ways
  - ⇒Sensitivity and climate change analysis (2050)
- Occupant behavior and socio-economical parameters affect energy consumption
  - ⇒Analysis of consumption patterns and energy poverty
- Improvement of household appliances should be considered
  - ⇒Electricity expenditure analysis

Impact of energy refurbishment strategies on domestic energy affordability: the Spanish case

Thank you very much for your attention!

Making Decarbonisation Fair
1st-4th March 2021

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Delivering retrofit for all: The view from Australia

FPRN Conference, March 2021

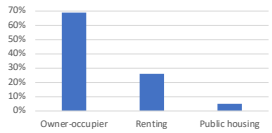
Presenter
Dr. Sarah Robertson (RMIT University)
On behalf of the HEET Research Team
Professor Ralph Horne (RMIT University)
Professor Emma Baker (University of Adelaide)
Dr Trivess Moore (RMIT University)
Dr. Nicola Willand (RMIT University)
Dr. Bhavna Middha (RMIT University)

HDR candidates
Hector Padilla (RMIT University)
Charmaine Thredgold (University of Adelaide)
Ananya Majumdar (RMIT University)

Australian housing & energy poverty context

- Australia: 25 million population & 9+ million dwellings
- Victoria: 6.7 million
- Owner-occupier dominated
- Single brick and large (~220m^2)
- Individual home heating & cooling

Changing landscape:
- Increase in apartments
- Worsening housing affordability



Australia: Energy stress

- Rising electricity and gas prices over 10 years
- Low income and those on government allowances/benefits spend high % of income on energy bills and housing

ACOSS and the Brotherhood of St Laurence 2018, 7

Victoria: How many are in energy poverty?

- 23.3% of households face payment difficulties (VCOSS 2018)
- 5.4% unable to heat their homes (VCOSS 2018)
- Private renters, large families, older people at risk

Likely to be much higher…

(VCOSS, 2018)

Policy responses - National

Limited focus on retrofit, energy poverty not on the agenda

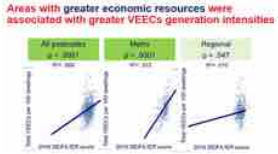
- National Construction Code – minimum performance requirements
- **2009: Energy Efficient Homes Package (Home Insulation Program)**
- 2011-2030: Small Scale Renewable Energy Scheme
- 2020: HomeBuilder

Policy responses - Victoria

Victoria: Emerging focus on retrofit

- 2007 - ongoing: Victorian Energy Upgrades (VEU) Program
- Energy concessions
- Small-scale retrofit trials & programs
  - Home Energy Upgrade Program
  - Energy Smart
  - Healthy Homes
- 2018-28: Solar Homes Program
- 2020: Promised **AUD$797 million for home retrofits and energy and appliance rebates, focused on low-income householders**

(See Willand et al. (2020) and Willand, Middha & Walker (forthcoming), for further analysis)



VEU program analysis (Willand et al, 2020)

Housing Energy Efficiency Transitions (HEET) project

Scaling up just and equitable low carbon household retrofit

- Three-year project
- Victoria and South Australia, Australia and UK
- Demand and supply sides

Project Aim:

- Understand the lived experiences of householders and retrofit providers in this decarbonisation process
- How are low carbon retrofits manifested in home making?
- What are the uneven implications of upscaling retrofit for householders?

Multi-partner and interdisciplinary project:
RMIT University & Adelaide University working with

- Prof. Gordon Walker, Lancaster University
- Dr Francisco Azipiarte, Loughborough University
- Brotherhood of St Laurence
- Australian Energy Foundation
- Master Builders Association of Victoria
- Victorian Government, Dept. Environment, Land. Water and Planning

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Emerging findings – Lived experience of retrofit

Retrofits are bound in complex social, material and temporal practices of homemaking and maintenance

Elements that shape household retrofit capabilities:

- Housing quality, scheduling and sequencing improvements
- Changing spatial requirements and practices
- Tenure
- Retrofit know-how
- Access to finance
- Networks & Trust

These elements interlock...

Elements that shape household retrofit capabilities

Housing quality, scheduling and sequencing

***M29**: When there was the insulation in the roof scheme... I took that. And the two men that came and checked it said to me, "**We can say that in a few years time, you're probably going to need a new roof.**" And then when [Person from retrofit provider] said, "**All the switchboards are going to be a real problem for you to do anything,**"*

Elements that shape household retrofit capabilities

Retrofit know-how: The different knowledge or competencies important in retrofit

- Knowing the home
- Knowing someone
- Decarbonisation know-how
- Knowing the system
- Knowing the past and future

m25: ... you learn as you go... Yeah, **so the next house, if it hasn't got any of these things, I've got all this knowledge**

Elements that shape household retrofit capabilities

Changing spatial requirements and practices

— *"that's what I meant when I bought this thing [caravan] it was only a tin shell like that. [My husband] fixed it all up.....I bought him a $100 heater in there." (LT11)*

Elements that shape household retrofit capabilities

Agency & tenure

Fixed heating provided in only one room meant different heaters being bought for use in other rooms

Reflections on scaling up

Australia is playing catch-up

Has more experience with solar

Victoria taking a lead

Need to build a strong policy/program link between retrofit and social benefits

Need whole of house/household approaches that account for diverse everyday practices and opportunities

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Relevant articles & Links

- ACOSS & Brotherhood of St Laurence (2018). *Energy Stressed in Australia*. ACOSS. acoss.org.au
- Victorian Council of Social Service (2018*). Battling On: Persistent Energy Hardship*. VCOSS vcoss.org.au
- Willand, N., Moore, T., Horne, R., & Robertson, S. (2020). Retrofit Poverty: Socioeconomic Spatial Disparities in Retrofit Subsidies Uptake. *Buildings and Cities, 1*(1), 14–35. DOI: http://doi.org/10.5334/bc.13
- Willand, N., Middha, B., & Walker, G., (in review). Using the capability approach to evaluate energy vulnerability policies and initiatives in Victoria, Australia

- Project HEET. cur.org.au/project/housing-energy-efficiency-transitions

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Panel 4: Working with communities and vulnerable people

Panel

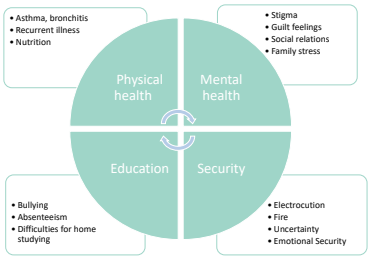
- Danielle Butler (Chair) Senior Research and Policy Officer, NEA
- Irene González-Pijuan – PhD candidate, Sheffield Hallam University
- Jez Hall – Director, Shared Future CIC
- Lauren Salmon – Monitoring and Evaluation Manager, Changeworks
- Shane Donnellan – Senior Behaviour Change Specialist, Changeworks
- Marine Cornelis – Executive Director, NextEnergyConsumer

Energy poverty and children

The case of Barcelona

Irene González-Pijuan. Sheffield Hallam University
Laura Oliveras Puig. Agència de Salut Pública de Barcelona

The impacts of energy poverty on children



Report: Impacts of energy precariousness on children

Objectives

To deepen the analysis of energy precariousness investigating its consequences in groups at risk of vulnerability.

To propose specific public measures/policy to fight energy precarity on children and teenagers.

Collect and strengthen the voice of the households in an energy precarity situation.

Methodology

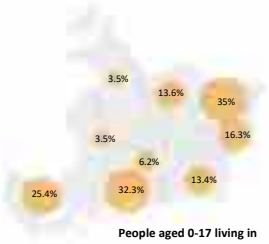
Review of the existing evidence and data

Interviews with families in an energy precarity situation and professionals working with children

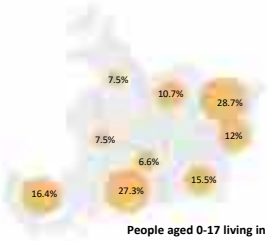
Workshops at schools/ Collective assemblies

Population 0-17

Geographic inequalities in energy poverty distribution in children in Barcelona in 2018



People aged 0-17 living in inadequate temperatures



People aged 0-17 living in homes with arrears on utility bills

Security / Irregular connections / Supply cuts

- Alliance against Energy Poverty's survey: 160 families with irregular connections, 145 minors.
- Strongly criminalising discourse towards these families
- Energy needs involved in the tasks of care and support of life are especially present and necessary in the daily lives of children
- Families will seek ways to provide energy services even if they are unsafe.
- La Cañada Real in Madrid: without basic supplies since october 2020.

Children from La Cañada Real, 2020

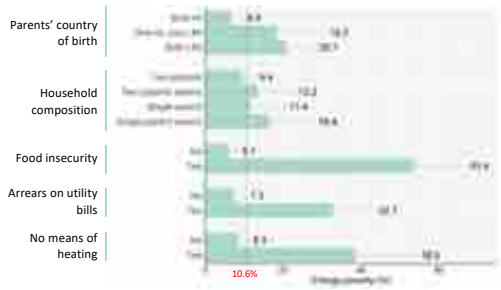
Study: The association of energy poverty and health and well-being in children in a Mediterranean city

- Cross-sectional study using data from the Barcelona Health Survey for 2016
- Specific questionnaire for children under the age of 15 years (n= 481)
- Study variables:

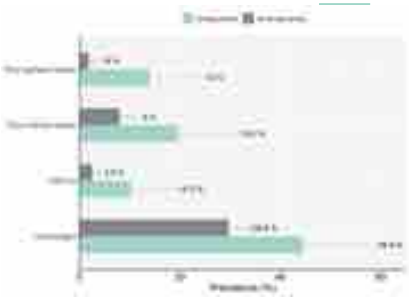
• General health status • Mental health • HRQoL • Asthma • Overweight	Adequate temperature during the cold and/or warm months	• Sex • Age • Parents' country of birth • Household composition	• Social class • Unforeseen expenditure • Arrears utility bills • Food insecurity • Housing tenure	• Leaks, damp, rot • No means of heating • No air conditioner

- Analysis:
  - Percentages of EP and their 95% confidence interval (CI) by sociodemographic, socioeconomic and housing variables
  - Prevalence of health outcomes and their 95%CI in children with and without EP
  - Prevalence differences and ratios and their 95% CI of health outcomes among children with and without EP

10.6% of children in Barcelona live in energy poverty and there are strong inequalities by sociodemographic, socioeconomic and housing characteristics



There is a strong association between energy poverty and poor physical and mental health in children



	Prevalence difference	Prevalence ratio (95%CI)
	12.2%	7.70 (2.86, 20.72)
	11.6%	2.46 (1.21, 4.99)
	7.9%	4.19 (1.47, 11.90)
	14.8%	1.50 (1.05, 2.15)

Conclusions

- The number of children living in energy poverty in Barcelona is high and there are large inequalities by territory and sociodemographic, socioeconomic and housing conditions.
- Energy poverty has specific impacts on children and there is a knowledge gap in:
  - The lived experience of children living in energy poverty
  - Meaningful policy and practice to address energy poverty in children
- It is to be expected that the social and economic situation generated by the Covid-19 pandemic will drag many families into energy poverty, as we have already seen with the 2008 economic crisis.

Thank you!

Gràcies!

Irene González-Pijuan. Sheffield Hallam University
Laura Oliveras Puig. Agència de Salut Pública de Barcelona

Getting Communities on board with Just Transition

Deliberative Democracy and Climate Change

Jez Hall, Shared Future CIC

1

Engaging residents in Complex Issues

At Shared Future we lead conversations on climate change

Based on connecting lived experiences and expert science

We promote many democratic tools for citizen action

These are called:

Citizens' Juries and Participatory Budgeting

What are Citizens' Assemblies and Citizens Juries?

- Deliberation
- Oversight Group
- Randomly selected members of the 'general public'
- Independent facilitator or facilitators
- Witnesses (commentators)
- Set of recommendations

3

Mini – publics

Citizens' Assemblies	Citizens' Juries
	
40-200 randomly selected people	20-40 randomly selected people
e.g. Irish Citizens' Assembly	e.g. Leeds Climate Change Citizens' Jury

4

Leeds Climate Change Citizens' Jury Sept-Nov 2019

Format:

8 evenings and 1 day,
25 participants

5

Oversight panel:
Diverse Perspectives shape the process

Kendal Climate Change Citizens' Jury: Oversight Panel

Kendal Town Council,
Cumbria County Council,
South Lakeland District Council,
Cumbria Action for Sustainability,
Extinction Rebellion,
Kendal Activists Saving the Little Earth (KASTLE)(youth climate change),
National Farmers Union,
James Cropper PLC,
Kendal BID (Business Improvement District),
Kendal Futures,
Lancaster University,
Frieda Scott Charitable Trust,
South Cumbria Flood Partnership,
Tim Farron M.P.

6

Recruitment

Wide Mailing
Large pool of applicants recruited (300-ish)
Final selection (30-ish)

7

Who are on a Citizens' Jury?

Leeds had 21 regular attendees

A Random Stratified Sample of the General Public

Age 15-29 **(6)** ,30-44 **(5)**, 45-59 **(6)**, 60+ **(4)**
Gender **Males (11)/Females (10)**
Ethnicity White **(16),** Asian, Black **(5)**
Indices of deprivation (on deciles): 1-2 **(7),** 3-4 **(2),** 5-6 **(4),** 7-8 **(5)**, 9/10 **(3)**
Disability Yes **(6),** No **(15)**
Geography city core, inner urban, outer urban, market town, non urban
Attitude to climate change: Very concerned**: (6),** fairly **(10),** not concerned **(5)**

8

The question in Leeds

'What should Leeds do about the emergency of climate change?'

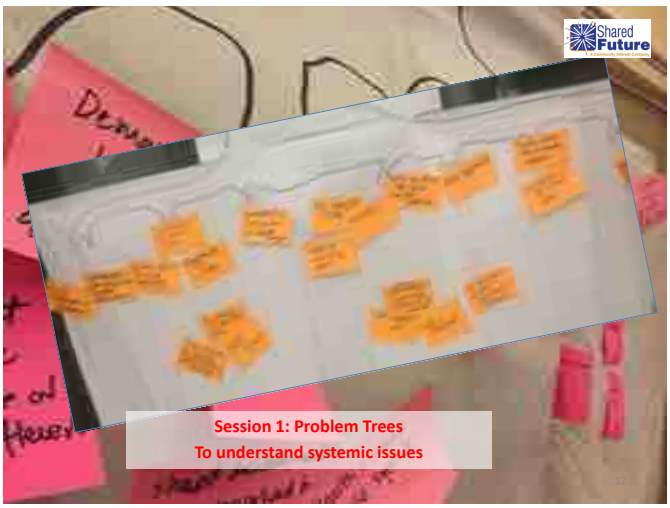
9

Session 1: Building relationships

10

Session 1: Lived Experiences:
Exploring the knowledge in the room

11



Session 1: Problem Trees
To understand systemic issues

12

Commentators (witnesses)

- 20 minute presentation
- Red cards to stop jargon
- Small group discussions
- Question and Answer

Leeds Sessions 2-4:

Suggested by oversight panel

Session 2: Introduction to climate change and its impacts:
Professor Julia Steinberger / Dr Cat Scott

Session 3: Leeds and climate change:
Professor Andy Gouldson (Leeds Climate Commission)
Paul Chatterton (Our Future Leeds)

Session 4: How does change happen?
Andrew Simms (Rapid Transition Alliance)
Penny Wangari Jones/ Sai Murray (Racial Justice Network)

Leeds Sessions 5-8:

Suggested by participants

Session 5: Transport
Paul Foster: Leeds City Council, Transport Projects Manager
Mark Goldstone: W and N Yorkshire Chamber of Commerce
Millie Duncan: Leeds Climate Commission (on the airport).

Session 6: Housing
Neil Evans: Leeds City Council, Director of Resources and Housing
Steve Batty: Engie, Sustainability Places & Communities UK & Ireland
Andy Walker: Sure Insulation (retro fitting)
Steve Rowley: Leeds Property Association
Cindy Readman: Save our homes LS26 (Residents/homeowners).

Session 7: Communication / Community Involvement
Jamie Clarke: Climate Outreach
Rob Greenland: Social Business Brokers CIC
Lydia Dibben: Extinction Rebellion Leeds
Julian Pearce: Social Communications
Alexis Percival: trustee of Roundhay Environment Action Project.

Session 8: Leeds City Council / Finance
Councillor Lisa Mulherin: Leeds City Council
Andrew Sudmant: School of Earth and Environment: Leeds University.

Recommendation writing

Typically session 8 and 9

Draft
Review
Prioritise
Report

Launching the Recommendations

Session 10: Stakeholder workshop

Led by members of the Jury
Followed by
Action Planning Sessions and Official Responses

Responding to Covid? Move it online

Connecting with other approaches

Participatory Budgeting (PB) offers well structured citizen engagement processes

A democratic Innovation that focuses on public investment

POTENTIALS: THE PB GREEN NEW DEAL

Lisbon has a 5million Euro Green PB

A means to engage in discussing Retro-fit strategies

Enabling civic action on Climate Change

Funding innovatory approaches towards a just transition

Tallinn's 800k Euro Participatory Budget

Contact Me

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CHANGEWORKS

Delivering positive low carbon living

Impacts of Decarbonisation and Mechanisms for Protecting Consumers

Shane Donnellan and Lauren Salmon

Making Decarbonisation Fair Conference 2021

Decarbonisation Scenarios

CHANGEWORKS

Scenario	Heating technologies
Green Gas	Existing gas boilers are powered with hydrogen
Electrification	Heat pumps, resistive heating and storage heating
Hybrid	Combining gas and electric heating systems, i.e. hybrid heat pumps
Heat Networks	Including communal heating
Biomass Heating	Where none of the above are suitable

Key findings

CHANGEWORKS

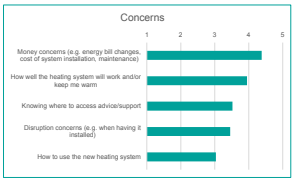
Without adequate consumer protection provisions, **inequalities are likely to widen due to the energy transition**

The most common risk appears to be linked with **higher costs** for the household, as a result of the installation, use or maintenance of a new heating system

Vulnerable Consumers' views toward Decarbonisation

CHANGEWORKS

- Ongoing research
- Householders with additional vulnerabilities surveyed and interviewed (people with mental health issues, physical disabilities, single parents)



Concerns of respondents averaged. 1 represents "Not at all concerning" and 5 "Very concerning"

Overall average scores given sources of information. Respondents rated their trustworthiness between 1 'not at all' and 5 'completely'

Example

CHANGEWORKS

Consumer group

- Very low-income
- Older single adult household
- Living in urban area
- Experiencing high level of fuel poverty

CHANGEWORKS

Impacts on this group

- Increased levels of disruption
- More vulnerable to disruption
- Affordability of heat pumps
- Ability to access to financial support schemes
- Risk of mis-selling
- Ability to access cheap tariffs

Consumer Protection

- Debt of financial loss
- Inability to sell or insure homes
- Issues caused by poor insulation
- Unusable or ineffective heating systems
- Loss of deposits

Advising and Supporting Consumers

Recommendations

- Raise awareness of the impacts of decarbonisation on vulnerable people
- Address concerns through support
  - Build trust
  - Resource

Consumer Protection

Recommendations

- Create a collective support package
- Increase independent checks
- Improve information sharing

Keep in touch

Shane Donnellan, sdonnellan@changeworks.org.uk
Lauren Salmon, lsalmon@changeworks.org.uk

Sign up for updates and insights at changeworks.org.uk/subscribe

Changeworks ~ delivering positive low carbon living

Follow us on

ESRC JUSTENERGY

(2017 – 2021)

@esrcjustenergy
#JustEnergy

THE PROJECT TEAM

Dr Naomi Creutzfeldt, Reader in socio-legal studies at the University of Westminster
@NCreutzfeldt

Dr Chris Gill, Senior Lecturer in public law at the University of Glasgow
@chrisoagill

Marine Cornelis, Executive Director, Next Energy Consumer
@MarineCornelis

Dr Rachel McPherson, Lecturer at the University of Glasgow

@esrcjustenergy
#JustEnergy

OUR RESEARCH PROJECT

- Access to justice / ADR
- EU law and regulations / national implementation
- Energy poverty / vulnerability
- Local and community support

ADR: Alternative Dispute Resolution (directive 2013/11/EU)

Ombuds or Ombudsman: An official or organisation appointed to investigate individuals' complaints against a company or organization

5 COUNTRIES AND REGIONS

- UK
- France
- Italy
- Bulgaria
- Catalonia (Spain)

Different legal, social, geographical and economic backgrounds

https://mapchart.net/europe.html

LESSONS LEARNED FROM OUR RESEARCH (1)

1. It is difficult for vulnerable consumers to access formal sources of help
2. ADR could be strengthened to play a bigger access to justice role
3. Local actors (community, third sector) are well placed to help vulnerable people
4. Joining up formal and informal actors key to addressing A2J gaps

LESSONS LEARNED FROM OUR RESEARCH (2)

Energy poverty (EP) context

1. Energy is more than a commodity – EP also linked to climate, housing, just transition issues, health, ...
2. Overall EP touches upon what's personal (the comfort of a shelter – we all experienced it in recent lockdowns)

In the energy sector, the issue of justice and ADR is progressing at a different pace than that of the most vulnerable or fragile people. How best to get hold of those who are currently invisible to the system?

OMBUDS COULD FILL UP THE GAPS

Ombudsmen have different options to help people in vulnerable circumstances:

1. **Offering help and signposting using multiple tools, including the telephone** (France)
2. (**Legal**) **option for making complaints via telephone calls possible** (UK)
3. **Collaborate with anti-poverty organisations, social services and local workers** (Catalonia)
4. **Permanent cooperation between other sectoral ombuds and regulators** (Belgium)
5. **Offer personalised services and follow-up**
6. **Better acknowledge the different forms of vulnerability**
7. **Simplify access to fundamental rights** and to maximise the **automation of those rights**

But ADR bodies may have inherent limits to their roles

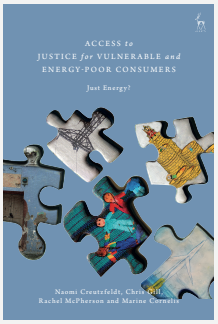
COOPERATION AMONG STAKEHOLDERS IS CRITICAL

A combination of many actors (NGOs, regulators, advice providers, local community initiatives, GP surgeries, community centers…) need to work together

The system needs to change to include access to energy justice, rather than asking people to take responsibility to assert their rights and defend themselves.

FIND OUT MORE

https://esrcjustenergy.wordpress.com
@esrcJustEnergy
www.access2energyjustice.eu
info@access2energyjustice.eu



Panel 5: Decarbonisation – approaches and challenges

Panel

- Trivess Moore (Chair) Senior Lecturer, RMIT University
- Richard Mellish – Executive Advisor, AgilityEco
- Matthew Scott – Research and Policy Officer, National Energy Action
- Rokia Raslan – Associate Professor, UCL
- Siddharth Sareen – Associate Professor in Energy and Environment, University of Stavanger
- Sea Rotmann – Users TCP by IEA

‘Disruption’ and the decarbonisation of heat

Dr Matthew Scott

matthew.scott@nea.org.uk

@CaroKanny

About NEA

NEA is a national Fuel Poverty Charity Focussing on:

- Improving access to energy and debt advice
- Providing training
- Advocating for policies that that drive the eradication of fuel poverty and help improve the experience for those living in fuel poverty
- Leading Research into Fuel Poverty
- Running local projects and co-ordinating other related services which can help change lives

‘Consumer disruption’ and decarbonisation

Variously defined as:

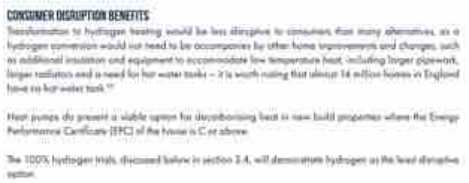
- “An estimate of the extent of the modification and installation work that will be required in each property” (Imperial College London, 2016)

And argued to be important because a key challenge of heat decarbonisation is:

- “Consumer acceptance of a new heating technology [that] entails a significant change and potential disruption to householders and businesses.” (Regen, 2020)

In other words: More disruption = less acceptance

‘Consumer disruption’ and decarbonisation


CONSUMER DISRUPTION BENEFITS

Transformation to hydrogen heating would be less disruptive to consumers than many alternatives, as a hydrogen conversion would not need to be accompanies by other home improvements and changes, such as additional insulation and equipment to accommodate low temperature heat, including larger pipework, larger radiators and a need for hot water tanks – it is worth noting that almost 14 million homes in England have no hot water tank.[47]

Heat pumps do present a viable option for decarbonising heat in new build properties where the Energy Performance Certificate (EPC) of the house is C or above.

The 100% hydrogen trials, discussed below in section 3.4, will demonstrate hydrogen as the least disruptive option.

Source: Energy Networks Association (2021: p.53)

The importance of installers

“*Our actual installers go through fuel poverty and energy awareness training so that they’re aware. And they are great. The installers, really that we’ve worked on in all phases of this, but our installers now are just great. […] I overhear, when we back in the office, stories of how far over and above the contractor has gone to help a resident who’s vulnerable or in need. I think that relationship, on our side, has really paid dividends.*”

Compared to when…

> *“ […] a team have come in and crash, bang, walloped a job in and we’ve all gone, ‘Oh my God, that’s terrible.’”*

Going beyond: advice provision

“If you just bang a system in, it doesn’t mean the person is going to use it properly at the end of it unless you can do all this extra stuff […] We realised just how much support the residents need, especially when you’re doing private sector work. You know, putting in a new central heating system or any kind of renovation works. Quite a lot of the times, the people that we’re dealing with are low income, vulnerable, clients. ***They don’t have, sometimes, the capacity to manage the work****. We knew that we needed to provide that extra support if we were going to get this project, or most of our projects, done”*

“*I’ve got a figure here; around about £700 was the average debt that got written off. It was in thousands, I think, for some properties. Yes, a big difference to some of the guys. Especially when… If a debt is hanging over them, they always feel- You don’t feel as if you can get out from underneath it. I think that’s a major benefit for the tenants.* ***They suddenly get a new gas central heating system that can heat the property, and they’re not having to worry about their debts***.”

‘Consumer disruption’ and decarbonisation

If we are going to minimise disruption and deliver holistic benefits installing low-carbon heating systems, we need:

- Frameworks for advice provision incorporated within centrally funded low-carbon heating programmes, including support on energy efficiency, debt support, and income maximisation.
- To maximise the number of installers and manufacturers who understand the needs of low-income, vulnerable, and energy poor households, and who are prepared to take the time to ensure these households understand and can use their heating systems properly.
- Appropriate redress, both to right wrongs and provide households with confidence in the process.

NEA

Action for Warm Homes

Making Decarbonisation Fair, 1st-4th March 2021

The Potential of Hard to Decarbonise Homes as a Pathway to Energy Equity

Rokia Raslan & Aimee Ambrose
UCL IEDE - CRESR

Overview

- Reducing heat sector related carbon emissions from the UK's energy system to Net Zero by 2050 requires a three-way approach
- This involves reducing heat demand, decarbonising the fuel supply & deploying low carbon heating technologies
- Decarbonising HTD homes is at the cornerstone of this agenda

Overview

What is an HTD Home?

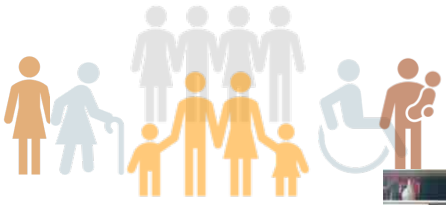
- Homes can be considered to be 'hard to decarbonise' if they are 'hard to treat' &/or do not have ***cost-effective*** options for low carbon heating

Up to 20% of UK homes

5 million properties

Why should we tackle HTD Homes?

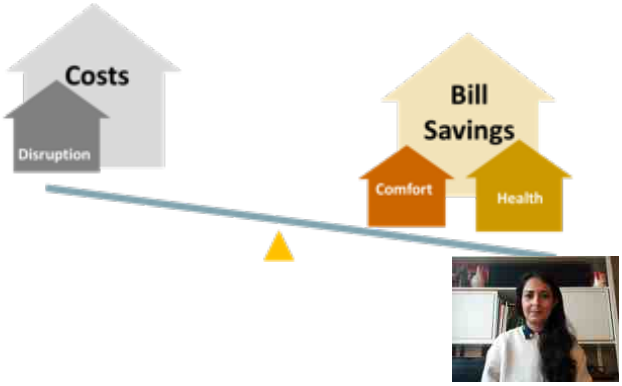
People



Why should we tackle HTD Homes?

Howard (2015) Warmer Homes: Improving fuel poverty & energy efficiency policy in the UK, Policy Exchange

Why should we tackle HTD Homes?

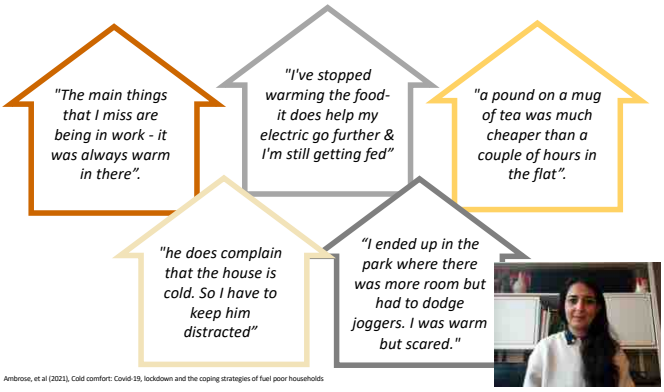


Why should we tackle HTD Homes?

Pandemic pushes '600,000 more energy customers into debt'

The average amount owed by those who haven't come to a repayment arrangement with their supplier stands at £760 for electricity and £605 for gas

Why should we tackle HTD Homes?



Ambrose, et al (2021), Cold comfort: Covid-19, lockdown and the coping strategies of fuel poor households

Why should we tackle HTD Homes?

Policy

- A fairer deal for energy consumers?
- **But** falls short of the long-term solutions needed for those who live in HTD homes
- Currently targeting an improvement in EPCs as long as it is 'cost effective'

How ?

What are the knowledge gaps/challenges?

What are the knowledge gaps/challenges?

Beyond technology…..

- Understanding & integrating the impact of occupant related attributes within the HTD stock
- Particularly those in fuel poverty or fall under "hard-to-reach" (HTR) energy user groups

Beyond technology…..

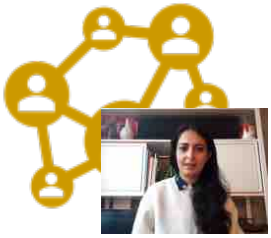
- Understanding & integrating the impact of occupant related attributes within the HTD stock
- Particularly those in fuel poverty or fall under "hard-to-reach" (HTR) energy user groups
- Ownership of properties is another dimension we will address in our research.

Our Aim

- To meet the critical need for a robust HTD evidence base, through the implementation of a participatory approach to better understand who occupies the HTD stock
- Ultimately, shape appropriate solutions that emphasize decarbonisation as a pathway to energy equity.

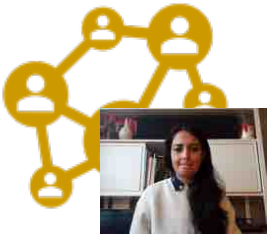
Key actions

1. Researching the experiences of occupying HTD properties through an extensive program of qualitative interviews (~200 across HTD archetypes)
2. Developing 'personas' that represent nuanced profiles & provide insights into behavioural variations amongst HTD occupants.



Key actions

1. Researching the experiences of occupying HTD properties through an extensive program of qualitative interviews (~200 across HTD archetypes)
2. Developing 'personas' that represent nuanced profiles & provide insights into behavioural variations amongst HTD occupants.
3. Co-produce regionally-focused HTD decarbonisation scenarios for key UK regions where clusters HTD are located to inform the formulation of local strategy & targets
4. **Creation of an HTD energy equity network to bring together relevant policy & research stakeholders in this area.**



What can happen?

HTD homes have recently been the focus of increased research & policy interest.

- The majority of energy efficiency will need to be installed in the next decade if homes are to be prepared for low-carbon heat
- Energy efficiency is expected to be a key component of the green economic recovery to support jobs in the UK.

What can happen?

HTD homes have recently been the focus of increased research & policy interest.

- The majority of energy efficiency will need to be installed in the next decade if homes are to be prepared for low-carbon heat
- Energy efficiency is expected to be a key component of the green economic recovery to support jobs in the UK.

This needs to be done in a way that supports energy equity to ensure that no one gets left behind.

Thank you!

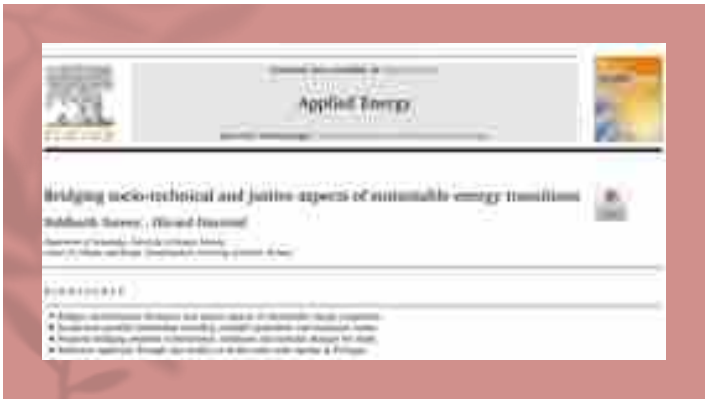
r.raslan@ucl.ac.uk

Accountable Solar Energy TransitionS

Making Decarbonisation Fair | 1-4 March 2021

3rd ENGAGER European Energy Poverty Network Conference

Siddharth Sareen | Associate Professor | University of Stavanger



Accountable Solar Energy TransitionS

- Solar energy transitions must contribute to both climate change mitigation and social equity.
- Techno-economic development is moving to the first goal while institutional changes are required for the other.
- A socio-technical and political economic approach to energy transitions can ensure equity through greater accountability.

Hard-to-Reach Energy Users

Hard-to-reach energy users in the residential and commercial sectors

Making Decarbonisation Fair Conference, March 1-4, 2021

Dr. Sea Rotmann
Operating Agent HTR Annex and CEO of SEA – Sustainable Energy Advice Ltd

UsersTCP and the International Energy Agency (IEA)

- The **International Energy Agency (IEA)** is an intergovernmental organisation that works to shape a secure and sustainable future for all, through a focus on all fuels and all technologies, and analysis and policy advice to governments and industry around the world.
- To facilitate global cooperation on energy technology, the IEA created the **Technology Collaboration Programme (TCP)**. Today, the **UsersTCP** is one of 38 TCPs each focused on a different topic. Together, they connect thousands of experts across government, academia and industry in 55 countries dedicated to advancing energy technology research and application.
- The UsersTCP is **functionally and legally autonomous** from the IEA. Views and findings of the UsersTCP do not necessarily reflect those of the IEA.

Hard-to-Reach Energy Users Annex

This international research collaboration focuses on a very distinctive and important audience segment - the "hard-to-reach" (HTR) energy users in the residential and non-residential sectors. It will determine who, and how many they are, where they are, and how to better motivate and engage them in energy efficiency and demand-side interventions geared at changing their energy-using behaviours.

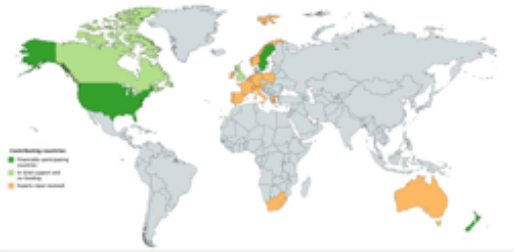
Our definition of HTR energy users

"In this Annex, a hard-to-reach energy user is an energy user from the residential or commercial sectors who uses any type of energy or fuel, and who is typically either hard-to-reach physically, underserved, or hard to engage or motivate in behaviour change, energy efficiency and demand response interventions that are intended to serve our mutual needs."

Our shared goal

"Our shared goal is to identify, define, and prioritise HTR audiences; and design, measure and share effective strategies to engage those audiences to achieve energy, demand response and climate targets while meeting access, equity, and energy service needs."

Our Participants and Collaborators



Hard-to-Reach Energy Users

HTR Annex Research Process "ABCDE Building Blocks of Behaviour Change"

Karlin et al, 2021

seechange

Hard-to-Reach Energy Users

Deliverables Year 1

- Meeting minutes 1st international workshop hosted by US
- Webinar on HTR Annex for Users Academy
- HTR Characterisation (Ashby et al, 2020a)
- ACEEE Summer Study paper on interview and survey results (Ashby et al, 2020b)
- ACEEE Summer Study paper on BEST course field research pilot (Rotmann & Karlin, 2020)
- Literature Review (Rotmann et al, forthcoming) 250+ pages
- Literature Review "Cliff Notes" (Ashby et al, 2021)
- 4 BEHAVE conference extended abstracts (including on COVID-19 impacts on HTR)
- BEHAVE conference half-day workshop on HTR Annex (23 April, 2021)
- BECC conference special panel on HTR Annex international findings
- 4 SCI client reports from field research pilots in Canada

Hard-to-Reach Energy Users

Key Findings Year 1

- Most commonly-mentioned HTR audiences: Low-income households, renters, SMEs
- HTR audiences with great energy-saving potential: High-income, landlords, building operators
- Most interesting to non-energy stakeholders: Disabled, stigmatised, geographically-isolated
- Audience size estimates: >2/3 of energy users (e.g. >60% renters, 99% of all businesses)
- COVID-19 impact: Huge, particularly on most vulnerable households, renters and SMEs
- Biggest research gaps: Commercial sector (outside office buildings), SMEs, multiple benefits, certain demographics (age, gender, race), psychographics and audience needs assessments

➔ *These audiences are not only hard-to-reach, they are also underserved and under-researched by Behaviour Changers in industry, government and academia. Energy justice, inequity, stigma are key themes that need to be addressed more urgently & on these target audiences.*

Hard-to-Reach Energy Users

Impacts of COVID-19 (literature review)

- 300 million people worldwide will lose their jobs
- The number of vulnerable households and small businesses has increased
- Lockdowns mean increased home energy bills (though also decreased transport costs)
- Behavioural changes like working from home are not possible for essential workers
- Mental distress has become a big issue for a large part of the world; stigma is understudied

Hard-to-Reach Energy Users

Impacts of COVID-19 (empirical data)

- NZ: online survey (with 330 respondents), and follow-up interviews with 25 householders (O'Sullivan et al, *forthcoming*)
- Sweden: ~30% decline in mobility demand similar to countries with stricter measures. Whereas air traffic has experienced strong low demand levels (~55-70%), road traffic has returned to near normal levels by September 2020 (Mundaca et al, *forthcoming)*
- USA: Survey of 1,000 energy customers found that >50% are using more energy and 48% are monitoring their energy use less; 15% reported postponing a utility bill. COVID-19 impacts varied by customer: high-income vs low-income focus groups (Uplight & SCI, 2020)
- UK: Fuel debt is growing, by May 2020, 4% of all energy consumers had already fallen behind on energy bills (Ambrose et al, *forthcoming*)

Rotmann et al, *forthcoming*

Hard-to-Reach Energy Users

Work Programme Year 2

1. Cross-Country Case Study Comparison ➔ JOIN US!
2. Research Process published
3. Field Research Pilots funded
4. Dissemination
   - BEHAVE special issues (2 papers), eBook, Lit review synthesis, BECC & BEHAVE panels, eceee Summer Study (2-3 papers)

Hard-to-Reach Energy Users

Thank you very much for your attention!

Any comments or questions?

drsearotmann@gmail.com

https://userstcp.org/annex/hard-to-reach-energy-users/

Panel 6: Transitions to a just and low-carbon future

Panel

- Graeme Sherriff (Chair) Research Fellow, University of Salford; FPRN
- Brenda Boardman – Emeritus Research Fellow, Environmental Change Institute, University of Oxford
- Louise Sunderland – Senior Advisor, Regulatory Assistance Project (RAP)
- Lucie Middlemiss – Associate Professor in Sustainability, Co-Director Sustainability Research Institute, University of Leeds
- Sam Illingworth – Associate Professor, Edinburgh Napier University
- Rebecca Ford – Strathclyde University
- Maria Jose Manjon – Researcher, Universidad de Comillas

Environmental *Change* Institute

Practical aspects of decarbonising the energy poor FPRN 1-4 March 2021

Brenda Boardman, Emeritus Fellow

April 28, 2021

Objectives

- Phase out fossil fuels
- Fabric first
- Get the property to a minimum energy efficiency standard
- Set a clear, tight timetable, because of climate change
- Building owner, not occupant, responsible for energy efficiency
- Cannot wait for the building to be empty, start now
- Mandatory, even when occupied

Fabric first

- Sensible:
  - minimise the size and cost of installing the new heating system
  - Maximise the efficiency of the new heating system
  - Minimise running costs
  - Limit the extra demand for electricity – needed for transport
- Energy performance recommendations based on cost effectiveness
- = Mixture of fabric and heating system
- Fabric first makes it more expensive?
- Least energy efficient cost the most

Who is the building owner?

- Owner occupiers – live there
- Social landlords – a known local authority or housing association
- Private landlords
  - Need a register
  - Mix of amateurs and professionals - owning one or hundreds of properties
  - May not self-identify – especially the worst ones
  - Worst properties probably owned by worst landlords
  - How to incentivise participation?

Low-interest loans for landlords/ building owners

To encourage them to take action:

- 2% interest if jump one band, eg D to C
- 1% interest if jump two bands, eg E to C
- 0% interest if jump three or more bands, eg F or G to C
- No limit on the amount
- Government subsidy for interest rates
- Enables government to track activity

Enforcement – by local government?

Central government – big publicity campaign, early

Local government – monitor and enforce

- Database of all properties and owners
- Confirms when the work is done
- When to visit / revisit?
- What if the work is a poor standard?
- Building owner fined for non-attainment

Thank you

Brenda.Boardman@ouce.ox.ac.uk

How to find the landlords

- New national database of landlords, 3rd party
- Covers compliance and exemptions
- One-off fee of £30 (inc VAT) per property goes to this provider
- Can only find if landlord self-identifies
- Precedents with HMOs and in Wales
- **What carrot to get landlords to sign up?**

BEIS

Improving the Energy Performance of Privately Rented Homes in England and Wales

Closing date: 30 December 2020

September 2020

Tenure, by income, England, 2014-16

	Buying with a mortgage	Social rented	Owned outright	**Privately rented**
£0 - £6000	1	3	3	**3**
£6001 - £10000	2	10	9	**6**
£10001 - £15000	4	26	16	**13**
£15001 - £20000	7	22	15	**16**
£20001 - £25000	9	15	13	**15**
£25001 - £30000	11	9	10	**13**
£30001 - £40000	22	9	14	**17**
£40000+	44	6	20	**19**

Timetable

- Consultation December 2020
- Government response 2021
- Tell landlords 2022
- Expenditure counts from 2023
- **All new lets to be C from April 2025**
- **All, including occupied, to be C from April 2028**

- Clean Growth Strategy, all fuel poor C by 2030
- Fuel Poverty Strategy, all fuel poor C by 2030

Number check

- 'We estimate that the core proposals in this consultation would bring nearly 77% of privately rented homes to EPC Band C **by** 2030' (p34)
- 10% eligible for exemptions, eg listed or conservation area
- Affordability exemption – landlord insufficient money
- Start now, 10 years to 2030 @ 0.5m pa
- If 2023-2028, 6 years @ 0.8m pa
- Both huge targets, but most are not fuel poor

PRS numbers in England, 2018

Energy Efficiency Band	Not Fuel Poor		Fuel Poor		Total	%
A/B/C	1,495,000	40%	57,000	7%	1,552,000	34%
D	1,790,000	48%	431,000	53%	2,221,000	49%
E	338,000	9%	230,000	29%	568,000	12%
F/G	124,000	3%	89,000	11%	213,000	5%
TOTAL	3,747,000		807,000		4,554,000	

Expenditure cap

- Option 1: EPC Band C and a cap of £10,000
  - Average expenditure of £4,700
- Option 2: EPC Band C and EIR (carbon) with a cap of £15,000
  - Average expenditure of £6,200
- All sums inclusive of 20% VAT

My thoughts

- Help the fuel poor
- Focus on 100% of F & G = worst first
- Means no cap

How to make it palatable for landlords?

- Is increased value in the property sufficient?
- Raise the money through increased mortgage? 2-4%
- Landlord Energy Saving Allowance (LESA) so expenditure can be offset against rental income for tax purposes. Requires landlord to have capital upfront.
- Green Homes Grant and ECO – landlords are eligible. Should they be? May not exist by 2023
- Government should offer a low-interest loan?

Standard of work

- Procedure based on PAS2035, involves whole house, retrofit assessors and retrofit co-ordinators
- Requires TrustMark personnel – does this 'guarantee' the standard is good?
- Government considering making TrustMark required. How? Good idea?
- No link between EPC and PAS2035
- What is the penalty if landlord uses own tradespeople?
- Who knows the work has been done? To the right standard?

Role of local authorities

- Enforce compliance / advertise non-compliance
- Fund this through fines, up to £30,000 ?
- What proportion of (bad) landlords will sell up?
- Should local authority / HA buy them and improve? To keep as rented, prevent 2nd homes
- **Implement HHSRS asap – includes repairs – is a duty**

Protecting the tenant

- **How to prevent rent increases?**
- Ensuring the tenant agrees to the work
- Ensuring the tenant is not evicted in order to do the work
- What help for the tenant if landlord gets exemptions / does not find the money to upgrade to a C ?
- Tenant still in fuel poverty – needs an income addition?
  - Landlord 'to provide redress' = reduce rent?

My proposal - low-interest loans

- 2% interest if jump one band, eg D to C
- 1% interest if jump two bands, eg E to C
- 0% interest if jump three or more bands, eg F or G to C
- No limit on the amount
- Provided by government-subsidy
- Through Green Investment Bank, Energy Saving Trust, Carbon Trust or ?

Fabric first

- Recommendations in EPC based on cost effectiveness
- Mixture of fabric and heating system
- Government want fabric energy efficient (C standard) before low-carbon heating system put in
- Sensible, but difficult to enforce
- Makes it more expensive for the landlord?
- Should the government underwrite?
- What about repairs – the broken window, leaking roof? Who pays? Do first? How?

Equity in the energy transition: who pays, who benefits?

Making decarbonisation Fair, 1st – 3rd March 2021

Louise Sunderland
Senior Advisor
Regulatory Assistance Project (RAP)®

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A critical decade for climate and energy poverty

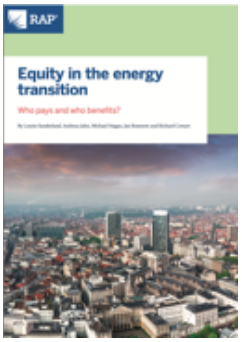
- Renovation Wave strategy – energy poverty as one of three main headlines for the decade.
- New European 2030 climate target of -55%
- Requires €350bn more annual investment than 2011-2020

*"The rising trend in energy-related expenses as a proportion of income is expected to peak around 2025-2030, after which this share is expected to decline, as the benefits of the energy transition materialise in full."**

* European Commission (2020) Recommendation on energy poverty. https://ec.europa.eu/energy/sites/ener/files/swd_on_the_recommendation_on_energy_poverty_swd2020960.pdf

Opportunities for a fairer transition

Early 2020	Autumn 2020	June 2021	End 2021
Just Transition Mechanism & Fund	Recovery spending	Energy Efficiency Directive	Energy Performance of Buildings Directive
Climate Law proposal	Renovation Wave	Renewable Energy Directive	EU rules on gas
Smart Sector Integration	2030 Climate Target Plan	Effort Sharing Regulation	
		EU ETS Directive, Energy Tax Directive, Carbon Border Adjustment	
		State Aid	



Equity in the energy transition: Who pays and who benefits?
https://www.raponline.org/knowledge-center/equity-in-energy-transition-who-pays-who-benefits/

Accessible briefing on the research:
Right to energy (2020)
https://righttoenergy.org/wp-content/uploads/2020/05/whos-to-pay-splitting-the-costs-of-the-transition-1-1.pdf

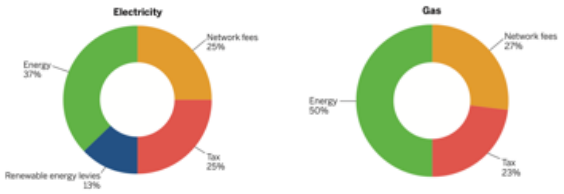
Three 'energy justice' lenses

Who pays | Who benefits | Who for

Who pays | Who benefits | Who for

Who pays

Make up of average European household bills



Source: RAP (2020) Equity in the energy transition, based on data from Agency for the Cooperation of Energy Regulators / Council of European Energy Regulators. (2019). *Annual report on the results of monitoring the internal electricity and natural gas markets in 2018: Electricity and gas retail markets volume.*

Who pays

Exemptions for some groups leave greater burden on others

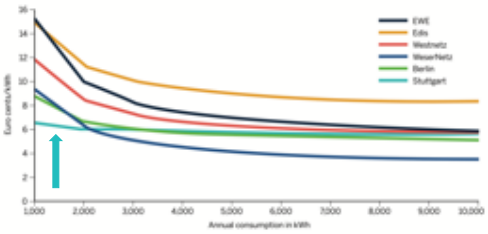
Energy-intensive industry benefits from most exemptions for infrastructure costs, renewable energy levies and carbon prices.

Icons created by Alice Design from the Noun project

Who pays

How we pay: costs are shared on a per customer basis impact low energy users more

When costs are shared per customer, low users pay up to **2.5 times** more per unit of energy for infrastructure costs.

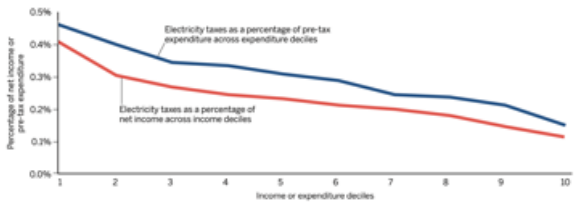


Sunderland, L., Jahn, A., Hogan, M., Rosenow, J. and Cowart, R. (2020, May). Equity in the energy transition: Who pays and who benefits?. Brussels, Belgium: Regulatory Assistance Project.

Who pays

Carbon pricing burdens those with least capacity to act on the price

Average electricity taxes (21 OECD countries) as a percentage of net income or pre-tax expenditure



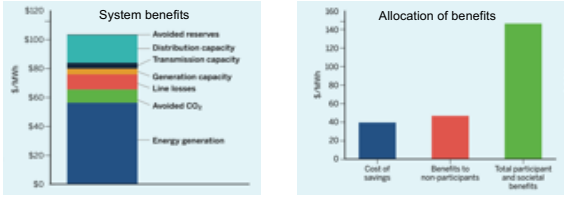
Source: OECD, as cited in Flues and Thomas (2015) referenced in Zachmann, G., Fredriksson, G. and Claeys,G. (2018). The distributional effects of climate policies. The Bruegel Blueprint Series 28. https://bruegel.org/2018/11/ distributional-effects-of-climate-policies/

Three lenses through which to assess

Who benefits

Who benefits directly and indirectly?

Assessment of Efficiency Vermont energy efficiency obligation



Sunderland, L., Jahn, A., Hogan, M., Rosenow, J. and Cowart, R. (2020, May). Equity in the energy transition: Who pays and who benefits?. Brussels, Belgium: Regulatory Assistance Project.

Who benefits

Who benefits directly

Most energy efficiency and renewable energy support mechanisms aim to deliver at least cost, relying on participant contributions.

Energy efficiency obligations in Europe:

- 15 Member States and the UK use energy efficiency obligations
- Less than half have any provision for low-income/energy poor households
- Only 2 and the UK **guarantee** savings are delivered for these households

ENSMOV and SocialWatt (2020) Alleviating energy poverty through Article 7 of the Energy Efficiency Directive. https://socialwatt.eu/library/publications

Three lenses through which to assess

Who for

Who decides, who owns, who is enabled to engage?

Currently, low-income customers can come off worse in de-regulated markets – through, for example, lower engagement in switching:

- Switching rates are low in Europe – at best between 10-20% of household meter points switching per year. Some markets have no switching.

And this is not limited to energy:

- The Poverty Premium concept illustrates that low-income households achieve worse outcomes and pay more for across a number of essential goods and services

The Poverty Premium: see work by Davies, Finney and Hartfree, (2016) The poverty premium. University of Bristol http://www.bristol.ac.uk/geography/research/pfrc/themes/finexc/poverty-premium/; Save the children (2018) The UK Poverty Rip-Off: The poverty premium 2010. https://resourcecentre.savethechildren.net/library/uk-poverty-rip-poverty-premium-2010 and Fair by design. https://fairbydesign.com

Who for

Who decides, who owns, who is enabled to engage?

For who, and by who, are our energy systems, tariffs, markets and decarbonisation programmes designed?

Get in touch

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About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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Revealing the hidden face of energy poverty in the Netherlands: towards a Dutch policy for a just energy transition

Presenter: Dr Lucie Middlemiss
Sustainability Research Institute, University of Leeds
@luciemiddlemiss
Authors: Marielle Feenstra, Lucie Middlemiss, Koen Straver, Marlies Hesselman, Sergio Tirado Herrero

Energy poverty in the Netherlands

- Until now – largely ignored at National level.
- BUT strong interest in energy transition, emerging links to energy poverty in Dutch National Climate and Energy Plan.
- Local and regional stakeholders pioneer energy poverty action as opportunity to address multiple issues (climate, poverty, health)
- EU – inclusive energy transition requires monitoring of EP.
- On the carbon reduction agenda: targets, including heat transition.

Relatively low rates of incidence

	Number of households	Percentage of households
High energy ratio and payment risk	269,000	4.0%
High energy ratio only	385,000	5.7%
Payment risks only	259,000	3.8%
Any of the above	913,000	13.6%
None of the above	5,800,000	86.5%

Table 1. Households with high energy ratios and payment risk in The Netherlands (2014); based on: PBL (2018)

An intervention

2019

Linking energy transition and EP in NL

Recommendations:

1. Multi-indicator framework for EP, with monitoring of EP in the lived experience;
2. Directly addressing energy poverty in national policy;
3. Integrating energy poverty into social, energy, environment, and built environment policies.

Energy transition and EP agenda

- EU energy transition policy as **opportunity** to raise EP agenda in nations that are not currently interested.
- Because: **Need for incorporation of EP in Energy transition measuring, monitoring and action**.
- Systemic perspective a good way in to including EP in reluctant nations.
- In NL – first national policy now being drafted based on our white paper.

Thank you for listening

- Lucie Middlemiss
- Associate Professor in Sustainability
- Co-Director of Sustainability Research Institute, University of Leeds
- @luciemiddlemiss
- l.k.middlemiss@leeds.ac.uk

Talking about Decarbonisation through Games

Dr Sam Illingworth
@samillingworth
www.samillingworth.com

Why tabletop games?

The strength of tabletop games lies in the creation of a 'safe space' in which to engage in discussions of complex, and at times contentious, topics and in enabling people to take control of their own learning.

Lean, J., Illingworth, S. and Wake, P., 2018. Unhappy families: using tabletop games as a technology to understand play in education. *Research in Learning Technology*, *26*.

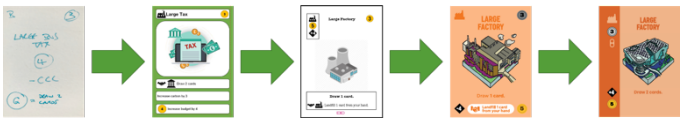
Designing games

Illingworth, S. and Wake, P., 2019. Developing science tabletop games: Catan® and global warming. *Journal of Science Communication*, *18*(4).

Co-creating games

Game development

Design development



Listening to feedback

Starting conversations

Play the game

TABLETOPIA

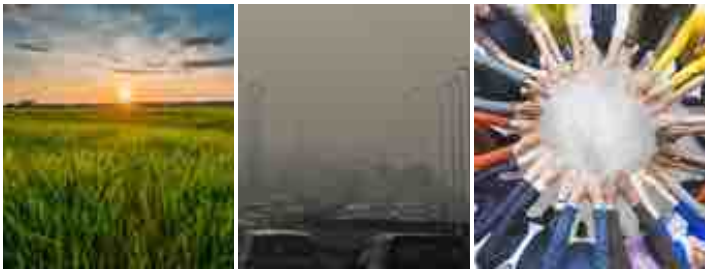
PNP ARCADE


EnergyREV
The role of local energy in delivering a just and low carbon future
Rebecca Ford
Research Director, EnergyREV
Making Decarbonisation Fair
4 March 2021

Local energy supporting post pandemic green reovery

Fell, M.J., Bray, R., Ford, R., Hardy, J. and Morris, M. 2020. Post-pandemic recovery: How smart local energy systems can contribute. EnergyREV, University of Strathclyde Publishing: Glasgow, UK. ISBN 978-1-909522-70-1

Unlocking co-benefits through aligning activities



Delivering local benefits

Local knowledge

Engagement and trust

Co-ordinated local planning

Economic development and place based prosperity

But… Non Trivial Challenges to Overcome

Local institutions need more resources and accountability

We need better alignment across governance scales

Meaningful engagement needs to go further

EnergyREV

Thanks! Questions?

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TACKLING ENERGY POVERTY THROUGH SOCIAL ENTREPRENEURSHIP IN LARGE ENERGY COMPANIES

Maria-Jose Manjon
Making Decarbonisation Fair,
March 2021

SUMMARY

Context: *Energy poverty affects more than 50 million people in Europe.*

Object: *Proactive agency of incumbent large-scale energy companies and innovation niches of social entrepreneurs, with the mission to solve social problems.*

Theoretical framework*: Agency in transition management and organisational change theory with stakeholder-oriented approach, under the framework of energy justice*

High level proposal*: introducing the logic of social entrepreneurship in large-scale energy companies.*

KEYWORDS:

Social entrepreneurship; stakeholders' theory; large-scale companies; energy poverty; niche strategy management, *organisational change,* sustainability transitions.

CONTENT

1. INTRODUCTION

CONTEXT

Energy poverty is the inability of a household to maintain adequate temperature conditions and other needed energy services at an affordable price. **50 million people** in Europe (Thomson and Bouzarovski, 2018). The COVID-19 negative impact.

Causes: Triad of insufficient income, high energy prices, and energy inefficiency.

A complex problem that requires the coordinated participation of multiple actors (Van Tulder and Keen, 2018; Waddock, et al, 2015).

Bridging disciplines and domains is particularly appropriate to address energy poverty issues (Sovacool, 2019, 2014).

In this conceptual work, social entrepreneurship issues in the energy social science emerge to provide non-exclusive alternatives to tackle energy poverty (Martiskainen, Heiskanen and Speciale, 2018; Sovacool, 2014).

Social enterprise is a productive space that provides a proper logic to build broader responses to energy vulnerability.

WHY (JUSTIFICATION)

Social entrepreneurship is a niche (Dacin, Dacin and Tracey, 2011) with limited power and resources (Mair and Marti, 2006). Risk of disappearance.

The framework of **multi-level** transition could be an opportunity for the change of the energy system (Geels and Schot, 2007).

Very little research about **company actors** in transitions (Horisch, 2015):

(i) the niche of social entrepreneurs as innovators in energy poverty (Hiteva and Sovacool, 2017; Van Tulder, 2018)

(ii) incumbent large-scale energy companies as influential actors that could transform the regime (Turnheim and Sovacool, 2019; Andersen and Gulbrandsen, 2020

Main utilities are watched closely since **power supply is an essential service** (Pérez Arriaga, Jenkins and Batlle López, 2017).

CSR does not affect all levels of the organisation in large-scale companies (Frankental, 2001), the **tokenism.**

OBJECT AND OBJECTIVES

A new logic does not mean substitution, but interaction and adaptation between actors on a gradual path towards transformation (Schot and Geels, 2008; Schot and Geels, 2007).

Objectives:

- to enrich interdisciplinarity in energy poverty, social entrepreneurship, CSR theories with a stakeholder approach, and transition theories.

- to provides a managerial method to develop a framework for structured multi-actor collaboration (Van Zanten and Van Tulder, 2018) with the integration of the hybrid logic of social entrepreneurship in large-scale energy companies through a new department to deal directly with vulnerable customers (the Social Energy Department- SED) to accelerate transitions led by energy justice.

RESEARCH QUESTION

How could and why would the logic of social entrepreneurship better respond to the challenges of energy poverty within large-scale energy companies in the framework of the just energy and sustainability transition?

2. LITERATURE REVIEW

LITERATURE REVIEW

- Energy poverty **problem** (energy justice, metrics and indicators, social energy science)
- **Transition management theories** (Multilevel Geels, Niche Management Strategy, Transition Paths, bridging). Slow transformation from inside corporations, without radically changing their own business model and could also accelerate the adaptation of the incumbents to the sustainability transition (Loorbach and Wijsman, 2013).
  - **Agency of the actors** (Social entrepreneurs act as **bridge-builders** (Nelson and Jenkins, 2005).
- Social entrepreneurship is often studied through the lens of **stakeholder theory** (Burga and Rezania, 2016). A minor change in the organisational structure of a large-scale energy company may change its stakeholder map.
- **Organisational change theories** (Weick and Quinn, 1999) and CSR more stakeholders approach theories in large-scale companies: stakeholders may serve to analyse the constant adaptation of large-scale companies to their context (Mitchell, Agle and Wood, 1997; Maon, Lindgreen and Swaen, 2010).
  - **Power**, legitimacy and authority of the new logic (Agle, Mitchell and Sonnenfeld, 1999)

2. METHODOLOGY CONCEPTUAL PAPER

A TRANSITION EXPERIMENT OF ORGANIZATIONAL CHANGE

The Social Entrepreneurship Department (SED)

- Assimilating the logics of social entrepreneurship is a **challenge** for many traditional energy incumbents that are often regulated monopolies and highly subject to governmental influence regarding social policy.
- The SED department will deal directly with the **vulnerable consumers** of the large- scale energy company (with all the defaulting non-payers).
- The **authority and legitimacy** will be defended by the governance of the corporation and it will be located close to the CEO, separated but integrated with the rest of departments.
- The team of **empowered social intrapreneurs**. will be designed to reduce the vulnerable consumers considering the complexities of energy poverty.

1. MISSION DRIVEN

- Energy poverty would be the mission of the core business of energy companies (Loorbach, 2010). **Such mission would legitimize the use of corporate resources,** taking a step further in a proactive role towards energy poverty (Van Zanten and Van Tulder, 2018, Turnheim and Sovacool, 2019).
- Internal and external motivations (Brown, Vetterlein and Roemer-Mahler, 2010). **Empowerment** (Pareja y Valor, 2020).
- The context of national policies and the energy sector may strongly influence the actors (Perez-Arriaga et al, 2019).
- Internally, managers adopting the new logic could **carry out business in a different way** that affects the greatest possible number of stakeholders and is aimed at a change in the power relations between stakeholders (Winn, 2001)

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ADVANTAGES OF INCLUDING SOCIAL ENTREPRENEURSHIP IN A LARGE-SCALE ENERGY COMPANY

- To become a **proactive pioneering actor** against energy poverty acting co-responsibly in the energy transition and be a model to be imitated by the rest of the actors (Geels and Schot, 2007).
- To become a **visionary** in the sustainability transition achieving a position in the regime sponsoring the niche of social entrepreneurship to achieve a strategic position in the long-term (Turnheim and Sovacool, 2019; Geels, 2004).
- **Not only competition**. Social entrepreneurs are more prone to collaboration than their for-profit peers (providing competition to the conventional players in the market, making competition its basis). SED could be a **competitive advantage** for the energy company that implements it first (*Pioneer Goliath*) with larger scope and a long-term orientation (Hockerts and Wustenhagen, 2010; Turnheim and Sovacool, 2019).
- Social entrepreneurship strategy **followed by different companies** could contribute to tackling energy poverty.

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2. ECONOMIC VS. SOCIAL MISSION: SUSTAINABLE MODEL

- The link among CSR activity and financial performance has not been widely confirmed (Margolis, Elfenbein and Walsh, 2007).
- The organisational change may affect the whole design of the organisation with implications in the stakeholder map – the butterfly effect (Winn, 2001).
- Thoughtful solutions, like SED activities, for community empowerment or household energy efficiency (Van Tulder, 2018).
- All vulnerable consumers to be easily identified and interventions carefully designed. financial (and non-financial) gain (Cools and Oosterlynck,2015).
- The difficulty to prove such success in the multi-level approach has been noted (Geels, 2004). This approach should be persistent even no immediate impact is obtained.

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3. ENERGY JUSTICE

- Energy justice is applying **justice principles** of distribution, recognition and procedural to energy system (Jenkins et al, 2018)
- Energy justice would help developing **framings** for social entrepreneurship logics (Hervieux and Voltan, 2018).
- Energy justice needs **reflexivity** to impact the work of large-scale energy companies (Jenkins, et al, 2020) and **co-adaptation** to the dynamic reactions of internal and external actors (Schot and Geels, 2008).
- CSR scholars' critiques demand alternatives to enlarge the impact of corporations and increase their sustainability commitment (Banerjee, 2008; Fineman and Clarke, 1996, Frankental, 2001). This proposal could **balance power** among stakeholders, and legitimizing the vulnerable people (Mitchell, Agle and Wood, 1997).
- Energy companies **of all sizes** should interiorise the energy justice framework as a tool to guide decision-making (Sovacool et all, 2017).
- SED leaders (**and social intrapreneurs in the team)** to apply energy justice through their decisions (Sovacool and Dworkin, 2015; Hiteva and Sovacool, 2017).

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4. SOCIAL ENTREPRENEURSHIP IMPACT IN STAKEHOLDER MAP

Transition management recommends experiments in sustainability transition (Schot and Geels, 2008).

This proposal addresses **several challenges** for multi stakeholder cooperation to tackle energy poverty: SED may be the tipping point for an inclusive innovative approach in the energy company (Van Tulder, 2018). The new logic could be adapted from the *niche* to the energy *regime* **to transform the dynamic and stable regime radically and gradually** (Wesseling, Bidmon and Bohnsack, 2020; Geels, 2002).

Assumptions:

- SEDs to be positioned as the rest of the departments (Alter, 2007) and supported by CEO.
- SEDs to adopt a social business model targeting vulnerable consumers as **priority customers** and supervision by social workers (Cools and Oosterlynck, 2015). Income model to be adapted on a case-by-case basis.
- This proposal does not intend to gather best practices in stakeholder management (Bryson, 2004) but rather **to provide an organisational approach to stakeholder theory.**

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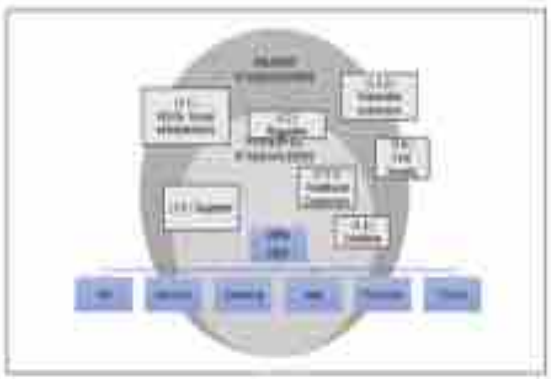
AN INITIAL STAKEHOLDER MAP IN AN ENERGY COMPANY



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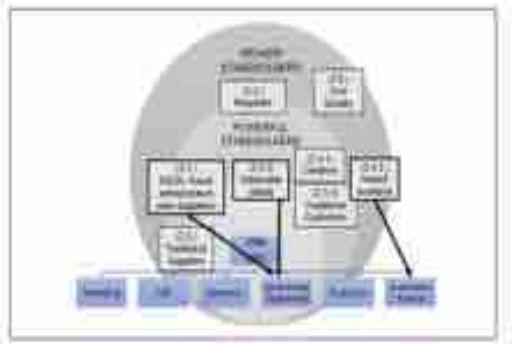
A NEW MAP OF STAKEHOLDERS IN THE ENERGY COMPANY



A NEW MAP OF STAKEHOLDERS IN THE ENERGY COMPANY

(2.1.) **NGOs and social entrepreneurs** would move from being external stakeholders to become direct suppliers of capabilities-centered services(Van Tulder and Keen, 2018).

(2.2.) In relation to **energy regulators**, this department may facilitate the provision of richer policy insights towards energy poverty (Geels, 2004) because energy poverty may be now be a real issue for more actors. Gradually, there may be an increase of regulation in energy poverty related to resources and more binding legislation (Van Zanten and Van Tulder, 2018).

(2.3.1) **Traditional consumers** might be more aware of the situation of vulnerable thanks to the targeted communication of SEDs

(2.3.2) **Vulnerable consumers** become special, priority customers (Van Tulder and Keen, 2018). SEDs may help to improve the relationship between energy companies and vulnerable customers.

(2.4.) **Creditors**. Sustainability finance is a growing and emerging sector that may be keen to work with corporations in the implementation of its instruments (Schoenmaker, 2017).

(2.5.) **Employees and managers.** Senior leadership with social and business skills would be required (Brugmann and Prahalad, 2007, Van Tulder and Keen, 2018) and profiles from NGOs could join the SED to provide the necessary human-centered skills. Moreover, **social engagement**, **social intrapreneurship and open innovation** could be launched by SEDs to attract internal and external projects for vulnerable consumers (Hiteva and Sovacool, 2017; Chesbrough and Di Minin, 2014; Dawson and Daniel, 2010).

4. DISCUSSION

DISCUSSION 1

- Taking a **transformation pathway** would allow the basic elements of the energy companies to remain untouched, which may be **more realistic** (Geels and Schot, 2007).
- The integration of the social entrepreneurship logic may lead to **a step forward in the more stakeholder-based approach to CSR** of large-scale energy companies for inclusive transitions.
- The objective of this proposal is to defend the interaction/integration between different actors to scale the mission of social entrepreneurship in the regime, through consolidated actors with a broader influence. **The logic of social entrepreneurship as a bridge between agents to foster the social intrapreneurship in the energy sector.**
- Transition management (mainly agency, multilevel, pathways and SNM) would be enriched through the perspective of bridging between agents (Geels and Schot, 2007).

DISCUSSION 2

- **Many implications on several levels.** External and internal influences in a **dynamic process** (Burga and Rezania, 2016; Schot and Geels, 2008) since the points of view of the different stakeholders may change constantly (Van Tulder and Keen, 2018; Mitchell, Agle, and Wood, 1997).
- Regarding temporality, the role of incumbent energy companies to **accelerate the transition** (Loorbach and Wijsman, 2015) and the expansion of social entrepreneurship into the regime to *stretch-and-transform* the *regime* (Andersen and Gulbrandsen, 2020)
- The niche of social entrepreneurship could be constructed in the regime towards sustainability (Schot and Geels, 2008), utilizing SNM and a multi-level approach.
- Mitigate the risk of social entrepreneurs to remain as niche players or even disappearing (Van Tulder, 2018).

LIMITATIONS AND LINES OF RESEARCH

- The proposal of an SED stems from a **highly contextual** dependence and non-linear relationships (Waddock et al, 2015). However, contextualization is assumed to be essential to social construction (Winn, 2001).
- We argue that this approach could be conceptually applied to corporations in other sectors with SDG related activity subject to the corresponding critical assessments (Van Zanten and Van Tulder, 2018).
- We explicitly reflect the **cautiousness** of our statements since they deal with issues related to vulnerable groups.
- **Future lines of research:** perception of incumbents of the profits lost if social approaches are embraced in transitions or authority of this logic is a challenge against the resistance of incumbent energy companies (Turnheim and Sovacool, 2019), government support for the logic of social entrepreneurship. Energy companies to become frontrunners to be imitated to spread the logic of social entrepreneurship in transforming energy companies instead of dismantling them (Geels and Schot, 2007).

PRACTICAL IMPLICATIONS

- A new strategy for social intrapreneurship and **inter-organizational business** relationships on the social side of the sustainability transition.
- The transfer of social practises from small entrepreneurs to large corporations could imply a **profound cultural transformation** in relation to the incumbent culture (Maon, Lindgreen and Swaen, 2010).
- This proposal could be implemented as a transition experiment (Schot and Geels, 2008) and would require **high responsibility and respect** towards social needs to be correctly implemented in theory and practice (Ghosal, 2005; Dey and Steyaert, 2010).
- Social entrepreneurship has a proximity to energy poverty **not so easily transferable to larger structures**. What seems like a small organizational change (*an incremental change*) in the electricity system could have major outcomes (*regime shift)* (*butterfly effect*) (Waddock et al, 2015; Geels and Schot, 2007).

CONCLUSION

- The issue of energy poverty is increasing in political agendas and **requires a coordinated participation** of interest from multiple interrelated actors.
- Proactively, social entrepreneurship in energy poverty could move **from the protected niche of small entrepreneurs to a higher position in the meso level or regime of incumbent energy companies** (Geels, 2002; Van Tulder, 2018).
- A step forward in the stakeholder-centric approach to CSR is needed in mission-driven companies. A bridge between social entrepreneurs and energy companies **in the framework of transition management (Loorbach and Wijsman, 2013).** Energy companies could lead the demand for social inclusion in the electricity sector and co-participate in the shift towards sustainable development by directing all actors, including regulators and investors, towards sustainable business practices.

THANK YOU

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Making Decarbonisation Fair 1-4 March 21

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