

**Panel or Check?**

**Assessing the Benefits of Integrating Families in Fuel Poverty to Energy Communities**

Aparisi-Cerdá, I.; Manso-Burgos, Á.; Tortosa-Navarro, D.; Ribó-Pérez, D.; Gómez-Navarro, T.

**Publication date**

2023

**Document Version**

Final published version

**Published in**

18th Conference on Sustainable Development of Energy, Water and Environment Systems

**Citation (APA)**

Aparisi-Cerdá, I., Manso-Burgos, Á., Tortosa-Navarro, D., Ribó-Pérez, D., & Gómez-Navarro, T. (2023). Panel or Check? Assessing the Benefits of Integrating Families in Fuel Poverty to Energy Communities. In M. Ban, N. Duić, D. R. Schneider, D. Astiaso Garcia, G. Barone, S. Boldyryev, A. Buonomano, F. Calise, P. Colbertaldo, & More Editors (Eds.), *18th Conference on Sustainable Development of Energy, Water and Environment Systems: Book of Abstracts* (pp. 73). Article 573 (Digital Proceedings). University of Zagreb.

**Important note**

To cite this publication, please use the final published version (if applicable).  
Please check the document version above.

**Copyright**

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

**Takedown policy**

Please contact us and provide details if you believe this document breaches copyrights.  
We will remove access to the work immediately and investigate your claim.

**18<sup>TH</sup> CONFERENCE ON  
SUSTAINABLE DEVELOPMENT  
OF ENERGY, WATER AND  
ENVIRONMENT SYSTEMS**



**SEPTEMBER 24-29, 2023  
DUBROVNIK, CROATIA**

**BOOK OF ABSTRACTS**

**Edited by:**

Marko Ban, Neven Duić, Daniel Rolph Schneider, Davide Astiaso Garcia, Giovanni Barone, Stanislav Boldyryev, Annamaria Buonomano, Francesco Calise, Paolo Colbertaldo, Neven Duić, Yee Van Fan, Cesare Forzano, Marta Gandiglio, Tomás Gómez-Navarro, Daniele Groppi, Małgorzata Kacprzak, Soteris Kalogirou, Damian Kasperczyk, Goran Krajačić, Flavio Manenti, Luis Javier Miguel González, Hrvoje Mikulčić, Carla Montagud Montalvá, Benedetto Nastasi, Adolfo Palombo, Nikola Rajaković, Alessandro Romagnoli, Tine Seljak, Alessio Tafone, Marian Trafczynski, Laura Vanoli, Petar Sabev Varbanov, Constantinos Vassiliades, Maria Vicidomini, Milan Vujanović

## Local Organizing Committee

Prof. Neven Duić, University of Zagreb, CHAIR  
Prof. Goran Krajačić, University of Zagreb, CO-CHAIR

Prof. Zvonimir Guzović, University of Zagreb,  
Conference secretary

Dr. Marko Ban, SDEWES Centre

Ms. Ana-Marija Ljubanović, SDEWES Centre

Ms. Andreja Biskup Lazanin, SDEWES Centre

Dr. Tomislav Pukšec, University of Zagreb

Ms. Doris Beljan, University of Zagreb

Dr. Tibor Bešenić, University of Zagreb

Mr. Francisco Flores, Pontificia Universidad  
Católica de Valparaíso

Mr. Luka Herc, University of Zagreb

Mr. Filip Jurić, University of Zagreb

Ms. Ana Kodba, University of Zagreb

Mr. Marijan Marković, University of Zagreb

Mr. Josip Miškić, University of Zagreb

Ms. Zvezdana Nađ Dujmović, SDEWES  
Centre

Mr. Antun Pfeifer, University of Zagreb

Mr. Goran Stunjek, University of Zagreb

**Publisher** Faculty of Mechanical Engineering and Naval Architecture, Zagreb

**ISSN – 2706-3690 (digital proceedings)**

### Editors

Marko Ban

Neven Duić

Daniel Rolph Schneider

Davide Astiaso Garcia

Giovanni Barone

Stanislav Boldyryev

Annamaria Buonomano

Francesco Calise

Paolo Colbertaldo

Neven Duić

Yee Van Fan

Cesare Forzano

Marta Gandiglio

Tomás Gómez-Navarro

Daniele Groppi

Małgorzata Kacprzak

Soteris Kalogirou

Damian Kasperczyk

Goran Krajačić

Flavio Manenti

Luis Javier Miguel González

Hrvoje Mikulčić

Carla Montagud Montalvá

Benedetto Nastasi

Adolfo Palombo

Nikola Rajakovic

Alessandro Romagnoli

Tine Seljak

Alessio Tafone

Marian Trafczynski

Laura Vanoli

Petar Sabev Varbanov

Constantinos Vassiliades

Maria Vicidomini

Milan Vujanović

**Technical Editors** Aleksandra Mudrovčić, Marko Ban

## SDEWES2023.0573

---

### **Panel or Check? Assessing the Benefits of Integrating Families in Fuel Poverty to Energy Communities**

I. Aparisi-Cerdá<sup>\*1</sup>, Á. Manso-Burgos<sup>2</sup>, D. Tortosa-Navarro<sup>2</sup>, D. Ribó-Pérez<sup>3</sup>, T. Gómez-Navarro<sup>4</sup>

<sup>1</sup>Universitat Politècnica de València (UPV), Spain; <sup>2</sup>Universitat Politècnica de València, Spain; <sup>3</sup>TU Delft, Netherlands; <sup>4</sup>Universitat Politècnica de València, Spain (\*isapcer@etsii.upv.es)

#### Abstract

---

This research raises the possibility for households in energy poverty to participate in energy communities to alleviate their energy costs, having their investment costs paid by public institutions. The study starts from the current solution for vulnerable households based on public subsidies to reduce energy costs, which neither addresses the problem's causes nor improves the residential energy systems' environmental profile. It compares the business-as-usual solution, energy checks, with the participation of vulnerable households in energy communities. We simulate a renewable energy community composed of vulnerable households to calculate the usefulness of this solution. The chosen vulnerable households are doubly vulnerable because they are older people experiencing

social isolation and loneliness. The results show that participating in energy communities can be a better economic option for public institutions than paying energy subsidies. Moreover, most households increase their savings, and in all cases, it results in a net reduction of GHG emissions, engaging households unable to participate in their current situation in the energy transition.