

Integrated Solutions for Positive
Energy and Resilient Cities

RESPONSE INFO FOR THE TENANTS OF STUDENT VILLAGE



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n° 957751. The document represents the view of the author only and is his/her sole responsibility: it cannot be considered to reflect the views of the European Commission and/or the Innovation and Networks Executive Agency (INEA). The European Commission and the Agency do not accept responsibility for the use that may be made of the information it contains.

Welcome to the RESPOSE-info!

- First, please turn off your camera!
- Your microphone is on mute, but you can ask questions in chat. We will answer them after each presentation.
- The info will be recorded for future use.

Our presentations today

- **RESPONSE Introduction**

Sini Lamoreux, Project Development Unit, City of Turku

- **Energy Positive Student Village**

Joonas Rantala, Turku Student Village Foundation

- **RESPONSE for the residents**

Ritva Salminiitty & Anna Satovuori, Turku University of Applied Sciences

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RESPONSE INTRODUCTION

SINI LAMOUREUX

PROJECT DEVELOPMENT UNIT, CITY OF TURKU

10.12.2020



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Quick facts

- Integrated **S**olutions for **P**ositive **E**nergy **R**esilient **C**ities
- 2020-2025
- Dijon (FR) and Turku (FI)
- 53 partners
- Keywords:
 - Energy equity and security
 - Environmental sustainability
 - Positive Energy Districts (PED)



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RESPONSE

13 European Countries



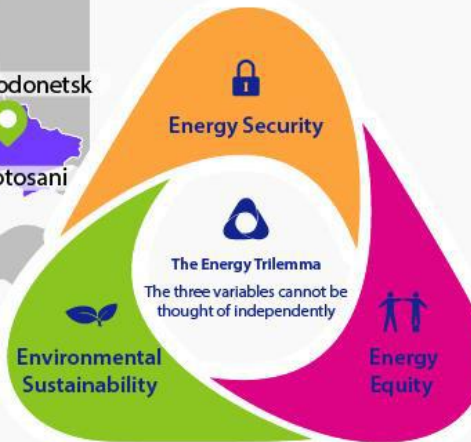
53 Partners

54% Industries and SMEs



2 Lighthouse Cities
6 Fellow Cities

RESPONSE addresses the
Energy Trilemma



Impact in the Lighthouse Cities

- accelerate decarbonisation
- GHG reduction:
 - 40% until 2030
 - 85% until 2050
- 74.782 m² total mixed-use floor area covered
- 11,2 GWh/y total local RES penetration within the PEBs
- increase total net energy needs covered by local RES to:
 - 124% (PEB1-Dijon) / 117% (PEB2-Dijon)
 - 131% (PEB1-Turku)
- 3,7 GWh waste heat recovery
- 3 GWh/y total net energy savings
- 5,6 GWh/y total outgoing energy through PEBs (overpositive)
- 19.599 tCO_{2eq}/year carbon dioxide emission reduction

Impact in the Fellow Cities

- 350.000m² Replication floor area
- Enable coal regions in Energy transition

10 Integrated Solutions

5 Transformation Axes



Increase RES Generation



Electricity Storage



Decarbonizing Electricity Grid Networks



Energy-Efficient and
Smart-Ready Buildings



Heat Storage



Decarbonizing District
Heating/Cooling Networks



Integrated City and interconnected
City Ecosystems



Smart mobility and City
Planning



Citizen Participation, Empowerment
and Awareness-Rising



City Resilience, Social Justice and
Safety

Wider scope, why RESPONSE?

- **Europe has set its sights on becoming the first climate-neutral continent by 2050**
- RESPONSE will support Turku, Dijon and six Fellow Cities in **delivering positive energy blocks and districts**
 - Specifically, it will aim to achieve a **local renewable energy systems** penetration of 11.2 GWh/y, **energy savings** of 3 090 MWh/y and an **emission reduction** of 9 799 tons CO2 eq/y within the districts of the two cities.
- Focus: heating and cooling systems, optimizing energy flows with novel storage systems and linking with existing applications and other digital infrastructure.
- UN SDGs
 - SDG 11 Make cities inclusive, safe, resilient and sustainable
 - SDG 7 Affordable and Clean Energy
 - SDG 9 Industry, Innovation, and Infrastructure
 - SDG 12 Responsible consumption and production
 - SDG 13 Climate Action



The central elements of RESPONSE

- Energy
 - Positive Energy Building Systems
 - Local Energy Supply – Low Carbon & High Share of Renewables
 - Sustainable Energy Storage
- Integrated and Interconnected City Ecosystems
 - Information System for City Data Visualization (City Information Platform)
 - E-mobility Integration
- Citizen-Centric, Resilient and Safe Cities
 - Citizen Participation and Awareness-Rising
 - 5G supported Air Quality Monitoring

Who is involved in Turku?



The Student Village – Yo-kylä – Studentbyn Positive Energy District and Buildings





Thanks!

Integrated Solutions for Positive
Energy and Resilient Cities

ENERGY POSITIVE STUDENT VILLAGE

JOONAS RANTALA

TURKU STUDENT VILLAGE FOUNDATION

10TH DECEMBER 2020





Positive Energy District

- In a nutshell, a Positive Energy District refers to an area that generates more energy than it consumes on an annual level.
- In this project, the parties will implement energy-positive solutions in the Student Village area integrated in the housing locations and apartments in Aitiopaikka, Ikituuri, Nummenranta (houses 17 C & D + 19 A & B) and Student Village (houses 5 A-D). The goal of these solutions is to turn the Student Village into a Positive Energy District by producing 120–130% of the area's energy consumption through environmentally friendly means.



What we will do?

- Increase electricity generation in the area with solar panels
- Energy renovation of Student Village East block 5 (houses 5 A-D)
- Heat recirculation of district cooling return water with heat pump
- Apartment-specific temperature measurement also for other locations than just Nummenranta
- Introduce an intelligent energy management system
- Implement electricity and heat energy storage

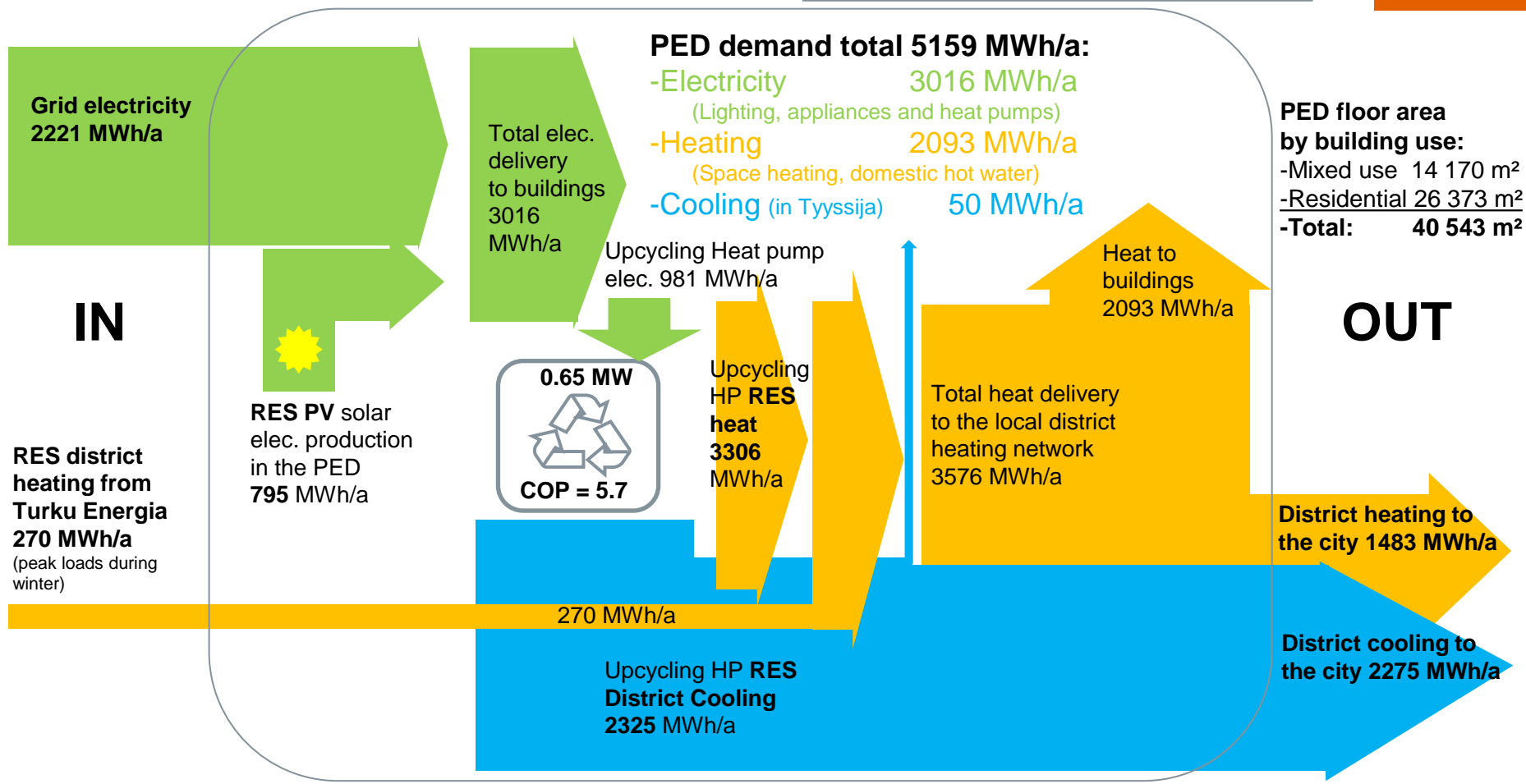
Energy flow chart of the Student Village PED LH City Turku, Finland

Indicators in relation to the total demand:

-Local RES share 131 %

-Incoming share 48 %

VTT





Measures: Ikituuri, Aitiopaikka and Nummenranta (houses 17 C & D + 19 A & B)

- Installation of apartment-specific heat and humidity meters (Ikituuri)
- Optimization of heating system operation (Ikituuri)
- V2G car charging station (Aitiopaikka)
- Possible temperature and humidity measurements (Aitiopaikka)
- Acquisition and installation of solar panels (Nummenranta)



Measures: Student Village block 5 (houses 5 A-D)

- Renewal of heat distribution
 - Installation of heat exchanger equipment and phase change accumulators
- Ventilation heat recovery
 - Installation of ducts
 - Renewal of ventilation equipment
- Roof renovation



Measures: Student Village block 5 (houses 5 A-D)

- Replacing windows with 4 glass-windows
- Apartment-specific temperature measurement
- Water tap economy nozzles
- Acquisition and installation of solar panels 100 kWp



Measures: Tyyssija

- Apartment measurements (temperature)
- Kaukokylmä heating pump
- V2G car charging station
- DC voltage micro-grid
 - Cabling of Student Village block 5 <-> Tyyssija
 - DC voltage reuse battery Bouygues Energies & Services



Communication during the project

- TYS informs the tenants of the houses and apartments where measures are taken within the framework of the project by e-mail.
- Additionally, all work stages that may cause disruptions as well as noisy work, water or power outages, changes to pathways or long-term exceptions to normal workhours will be reported to the tenants by email.



Thank you!

If you have any questions regarding the implemented solutions, you can contact me by e-mail joonas.rantala@tys.fi

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RESPONSE FOR THE RESIDENTS

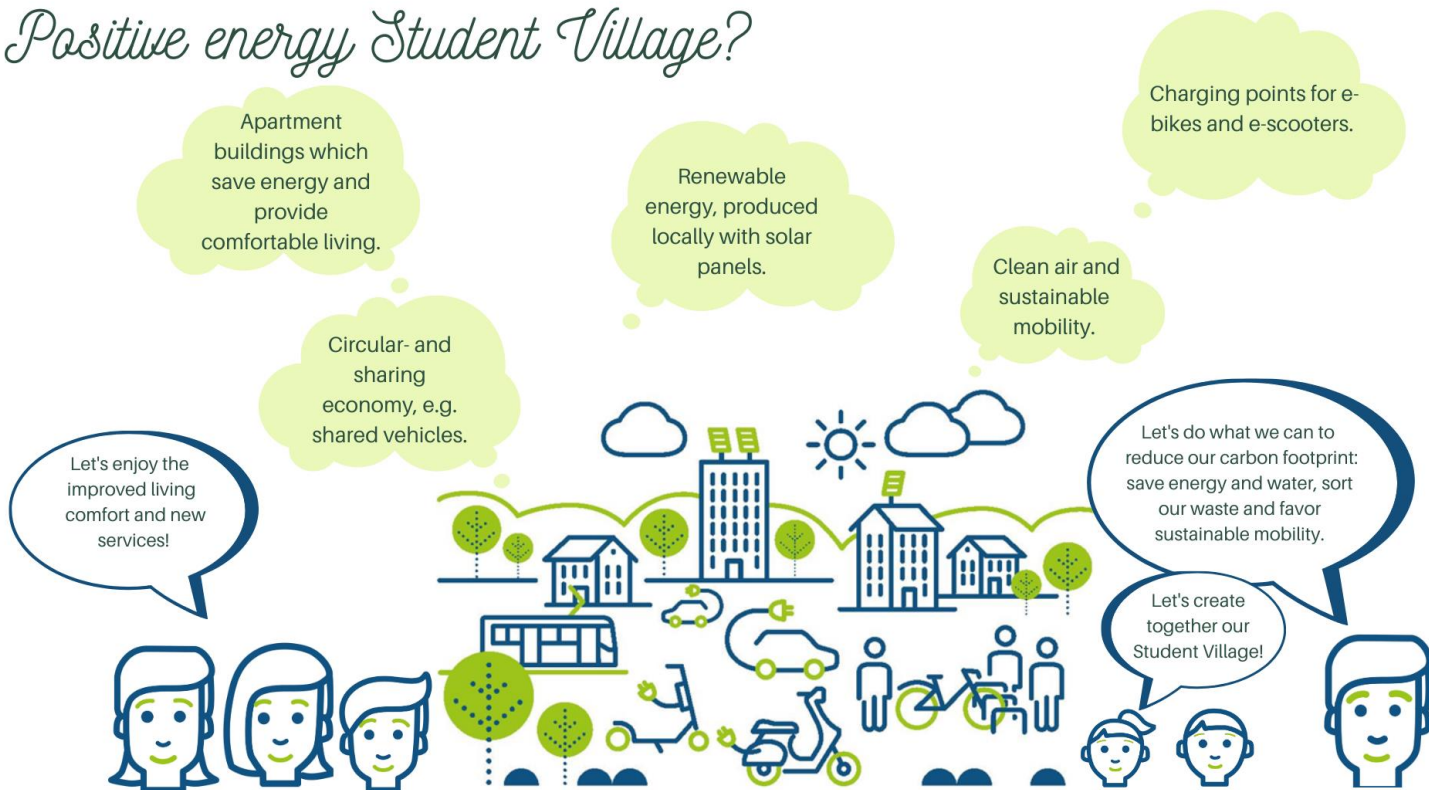
RITVA SALMINIITTY & ANNA SATOVUORI

TURKU UNIVERSITY OF APPLIED SCIENCES

10.12.2020



Positive energy Student Village?





What can we do?

- Think about our own energy usage
 - Do you know your **carbon footprint**? Have you observed how you use **energy**? Would you like to increase your understanding on how you can affect those?
- Adopt the new technical solutions
 - Technical solutions towards positive energy districts are not enough on their own, they also need to be usable. We want to know, what kind of **guidance** is needed for the use of new solutions and from where do the residents get information about them.
- Create together
 - Together with the City of Turku, TYS and the residents we want to build something new. **Let's find out together, how creating a positive energy district is possible.** What kind of knowledge and know-how is needed and how the residents' ideas can be utilized?

How to get involved?

- Mentoring
 - Within the project we will train a group of **mentors**, who will familiarize themselves with the topic, collect the residents' views, as well as plan and create new activity to the Student Village.
- Planning of events
 - During the project, **events** will be planned together with the residents. The events will be about sharing knowledge and finding solutions.
- Hackathons
 - In the hackathons residents as well as start-ups get to **brainstorm** and present their solution ideas. **The best ones will be rewarded!**
- Your own idea?
 - If you come up with an idea of your own, promoting energy sustainable and ja environmentally friendly living in the Student Village, **let us know!**



Become a mentor!

The application period for mentors starts in January, stay tuned!

The mentors:

- Gather widely the residents' views and follow discussion in social media channels.
- Organize together small-scale events for the residents.
- Communicate actively to others about environmental matters.
- Participate in the Student Village mentor network activities.
- Are given training for their role.
- Gain valuable experience e.g. on organizing events, communication and advocacy work.
- Receive a certificate for their participation.
- Get to be part of an international project.
- Case-by-case, depending on e.g. the field of study, we'll look into options for study credits or internships.

Thank you!

We're happy to tell you more about the different ways in which you as a resident can take part in the project:

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