Positive Energy Districts Conference

Experiences and Guidance for Design and Implementation

REPORT

Amsterdam University of Applied Sciences
cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY
Funded by the European Union
Ministry of the Interior and Kingdom Relations
Netherlands Enterprise Agency
PED EU NET
PLATFORM31

Report Positive Energy Districts Conference

Experiences and Guidance for Design and Implementation

June 23 and 24, Amsterdam

Organised by Platform31, TNO, Locality, Funded by Netherlands Agency, Ministry of Interior Affairs and Kingdom Relations, COST, and European Union.

Number of participants:

Day	Live	Online
23rd	95	23
24th	65	10
Total	160	33
Unique participants	105	23

23 June

PLENARY SESSION (HYBRID)

Opening by chair Anjel Punte – Platform31

Welcome by Geleyn Meijer – Rector Magnificus – Amsterdam University of Applied Science:
Positive Energy People, one of the main capacities: be confident.

Welcome by Frans Verspeek – consortium Coordinator Atelier, municipality of Amsterdam
Dutch Urgenda verdict really urges the Dutch cabinet to take measures and to design new climate policy. But Ukraine-Russian war urges them to open up the coal electricity production.
Mentioned capacities: Go forward but stumbling ('Voorwaarts struikelen'), include systemic changes.

Key note speech by Peter Rathje - City of Sønderborg
Mentioned capacities: Get the business sector on board, get to think out of the box
You need other participants, the city only has 2,7% of total CO2 emissions.
Get all persons from the city council on board of the plans (for the long term)
In your Public Private network should be:

- *The business*
- *The network organization*
- *The universities, human capital development*

Main goal of the people in the organization (only few employees in the organisation) is to combine the actors from the outside world with each other and with the city goals.
Mentioned capacities: understanding stakeholders and bring them together ("What is in it for them?") - Be selective in the type of program and projects that you would like to be involved with (in Sønderborg with 5 persons about 10 projects in 10 years' time, just by clear selection on what does fit within the next steps.
Use of the customer journey in DK (translated in UK en DK)

Projectzero2029.dk (with monitoring and evaluation and strategy set up with Boston Consulting Group)
Change the society mindset
The 8 recommendations from Sønderborg can be seen as a change management process (like principles of John Kotter's 8 step model)
Technical remarks: District heating is key (including sector coupling)
"Climate challenge is too vulnerable to fight"

Short interview: PED in Practice

- Florin Paven (Alba Iulia) – *no PED s in Romania, but a big challenge: sustainable will attract economy, a culture of owning, not sharing, so a challenge to learn to share.*
- Dorota Chwieduk (Warsaw) – *P&R area – top down/centralized system Poland 1500 km of district heating system (3rd generation). Challenge: to change to renewables Energy sharing on top of car sharing.*
- Marcello Turrini (Vienna) - *student projects in Medical valley, what can be done on building level (it is existent….) to use as much energy as possible, and circular, what is*

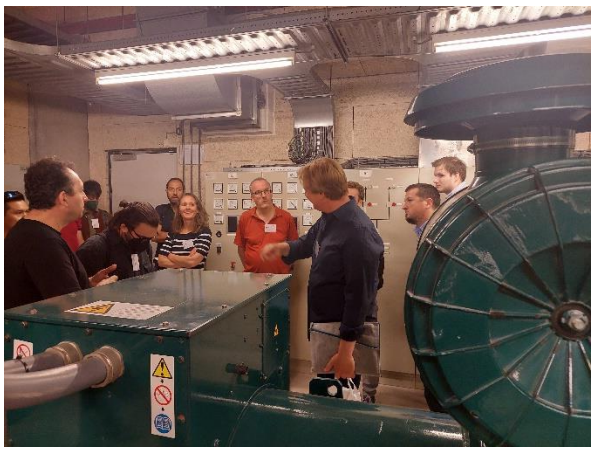
Key note by Renee Heller – Amsterdam University of Applied Science
PED: Many solutions exist both for energy savings and energy production.
Processes for designing PEDs will have to be iterative.
Local context is very important to take into account (cultural – political – climate)
Flexibility is key: storage or shift demand. It is not about energy islands, but it is about the interconnectivity, so it is not about a single technology but it is the system.

Round table:

- *Crucial: so many initiatives, and a lot of duplication, but do we really share…or do we do enough…*
- *A system that is centralized is away, and not yours, so you do not care, so bring ownership and vicinity of energy installations.*

EXCURSIONS

Arena – Life
Guides: Hans Roeland Poolman (AMS) and Tim Oosterop (Arena enery management system)
Work together and create a joint idea and picture of both solutions and problems.
Change to work in a different way
Research question: How can you follow long term collaboration and multistakeholder dynamics?
Install a heatpump, for ESG reasons, and share the power of this heatpump with the neighbourhood.



Demowoning Reigersbos

1. *The technology that's being used to improve the homes seem very nice, but at times not too practical, e.g. the ventilation system doesn't suffice when we gather here as a group. Make sure you do make the correct technology choices that are proven in practice.*
2. *The financial construction that covers most the costs (60k EUR) is remarkable, especially the loan construction that is given out in the name of the home owner's association gives insights in how barriers of the expensive renovation of a home can be overcome. Convincing home owners that their payments remain the same, but that the quality of living will drastically increase due to the renovation is a way better incentive than trying to get them to pay up 60k EUR.*
3. *The holistic approach of technology, governance and finance are intertwined in this project. It shows that it is still people's work, choosing the right technologies, and offering an attractive arrangement, that makes it possible to get people to choose to renovate.*

Schoon Schip

1. *Motivated group of people who have achieved this in 10 years. When this was set up, there was an exception rule in place of the RVO, which allowed this closed energy system to be set up. This rule has been abolished, now it would not be possible to set up such a project.*
2. *Collisions with the existing system: taxes are difficult to regulate, for example (they are still working on the 2020 taxes). Nevertheless, they remain in continuous dialogue with Waternet, the municipalities and contribute ideas about the surrounding area.*
3. *Although they largely generate their own energy, a connection to the grid is required in winter.*

Republica

1. *It requires a lot of patience to do something different: it took the residents of Schoon Schip ten years to get from an idea to a floating house, especially because the concept did not fit in with the rigid regulations of the municipality.*
2. *The real estate development in Buiksloterham is based on a local energy grid, whereby the energy is generated, stored and shared on site.*
3. *At the same time, much still needs to be developed and tested: what to do, for example, with contaminated soil in Buiksloterham? Before it can be built, it must first be cleaned up, which costs time and money and can affect the development of the area.*

Donut Economy

1. *New construction also offers energy transition opportunities for existing construction*
2. *Servers in data centers are now cooled with air, which can be done more efficiently in 'oil'. There is a test set-up at Wooden City in Amstel III that proves that you save a lot of energy and space.*

3. *High-rise buildings can be made almost energy neutral without solar panels in the facades.*

Just Prepare

1. *Local energy transition, in particular renovation of buildings, of lower income urban areas is strongly linked to social issues (poverty, the relation with the municipality, the role of local communities).*
2. *Amsterdam South-East is an area with a multitude of local bottom-up citizen initiatives towards sustainability and inclusivity. However, these initiatives often are difficult to upscale, and their impact remains small.*
3. *The share of social rentals in these areas is relatively large. Social housing organisations, therefore, have a critical role in the energy transition and social areas relating to living and housing.*

Sandcastle

1. *It is possible to arise the quality of environment, housing, shops and work of the inner city by office transformation*
2. *Intrinsically motivated real estate developers are a crucial factor for sustainable office transformation*
3. *Young people with new ideas about liveability and sustainability can be a great motivator for developing parties to build and transform sustainably.*

Take aways from day 1:

Climate change is too vulnerable to fight
Voorwaarts struikelen "Go forward and stumbling"
Creating Zero Mission: is like a change management plan
With only 5% of the municipality responsible for CO2 you need other actors to join you and design and create coalition…

Empowering people: make it concrete from an abstract concept, and to enable persons to act, both for civil servants and for civilians..
EV batteries can be used second hand. They do not accelerate anymore, but are still good enough to store energy.

- *Incorporate lessons from exchanging, go and dive deeper and*
- *Work between silos and built upon capacities (work vertical and not only horizontal), interdisciplinarity.*
- *Think continuously about creating value on all type of flows, Even extending a project investment create value. How are you going to share?*

SHORT SUMMARIES OF PARALLEL SESSIONS

Development and evolvement of PEDs – A (Judith Borsboom | Locality, Christoph Gollner, FFG)
The first JPI Urban Europe calls on PEDs give an impression of their development:

- *In general there is a lack of incentives, in particular for some specific groups in society (e.g., well-to-do migrants considering refurbishment). Also, national regulations allow local governments to avoid the energy issue as it is usually strongly coupled to areal development, so it is only considered when areas are developed (e.g., extension of district heating is not profitable when nothing is built). EU could push here more. Lastly, law focuses on energy and contracting but we lack good model contracts for PED development.*
- *There is a knowledge gap but not as a group: we need*
    - *public/open/shared cost estimations*
    - *easy access to tools, practical onboards*
    - *references for developers and use of EU money for public and private learning*
    - *checklists ticking the boxes for policies, technologies, legal, social, economic conditions)*

The overall conclusions from the speed dates are:

- *PED development can probably be categorised in a cross-table with the axes driving force (city or bottom-up) and easy or difficult to bring about. Big companies are usually interested in the easy ones*

- *A PED is a community of buildings but also a community of people. Behaviour is more interesting and effective and has more potential than only economic motives. However, this potential is not tapped into: citizens are coming in too late in the process and nobody thought before what is actually expected from them (why, what, etc.). Without proper communication it is difficult to make the energy topic interesting for lay people. Experts/ practitioners are ahead of citizens and have filled in the space. Main issue: make clear what people are participating in. If citizens do not trust the process, they will not participate. And what are the rules of the game: e.g., for ESCO when negotiating outsourcing energy production to adjoining neighbourhoods.*
- *Make energy trendy/cool/fashionable: this worked for circularity and food, why not for energy? E.g., award prizes.*
- *We need better understanding of the demography of the neighbourhood: Elderly people will less easy make the investment.*
- *Regulations can still be a huge obstacle: one local government had to hire a specialist lawyer for 40.000 Euro top understand the different laws.*

Energy Technology – B (Renee Heller | AUAS)

The pitch was on definitions of PEDs and technology choices. Discussions was not conclusive, but the international exchange of ideas was fruitful:

- *on monitoring: without monitoring a concept is useless;*
- *whether PED is a goal in itself for all districts: no, but it sparks innovation*
- *on definitions: now it is not clear but also may not be realistic to see PED as a real future standard like NZEB*

Role of local governments – C (Frans Verspeek | City of Amsterdam, Savis Gohari | Oslomet)

- *Can we make any real PED in the Netherlands. If there is only one place that can implement PED is Scandinavia. Sønderborg in Denmark is a good example.*
- *One of the challenges is the increase of population. We are reducing CO2 based on the present population, managing the expectations for the future generation is uncertain and challenging.*
- *Having a roadmap cannot help us to implement PED alone, we need to know how it is written, what is the process behind it, what the difficulties are!*
- *We need to have a good dialog with citizens from all group of societies, poor and rich; old and young*
- *Our processes should be transparent and democratic. However, it is happened that authorities promised citizens something, but they cannot meet their promises because they cannot control and predict the processes. It is necessary that they create the ownership.*
- *Maybe our ambitions are not realistic. we need to have discussion with relevant department in the municipalities, such as sustainability.*
- *Different departments should know their roles and what is expected from them.*
- *Money or policy alone is not enough, we need right regulation as well.*
- *Conflicts need to be discussed appropriately*
- *We must avoid micromanagement*
- *Municipalities can take different roles: to orchestrate, to initiate, to enable, to make strategy, to make policy, to develop, to coordinate, to co-finance, to motivate ad etc. all these roles should be carefully discussed and clarified.*
- *Different sectors and departments at municipalities have different roles. This also needs to be clarified and distinguished.*

- *Regarding the role of different actors, including municipalities, these questions are important: are you able to take this role? What is your experience with this role? What about the required capacity and capability? Do others trust you and your capability?*
- *As Sønderborg example shows, specific organization is needed to coordinate public and private actors*
- *Should specific roles be tailored to the government or can it be in joint collaboration with others?*
- *Municipality includes different group of people: civil servant, administration, experts and politicians. Each of them has their own agenda, expertise, responsibility, interest and time frame!*
- *We need to teach politicians! They need training schools.*
- *We need to remove silos*
- *We need to learn from each other and find a good mechanism for knowledge exchange*
- *We need to have right mindset, common interest and trust*
- *There is a lack of multidisciplinary and cooperation. The traditional set up does not work.*
- *We need to answer this question perfectly: what is citizen participation?*
- *What are the best practices? Why? What are the most important Do's and Don't*
- *The reason that some countries like Scandinavian are more successful is their energy, cultural, social and political infrastructures.*

PED Characteristics – D (Mark van Wees | AUAS, MariaBeatrice Andreucci – University of Rome):
Main Questions were:
- *Validation and impact towards societal goals*
- *Added value/additionality of PEDs in comparison with non-integrated multiple scale measures and innovation*
- *Off-set by the increased difficulty to adopt in urban policies and measures Research><policy gap*

Key ideas that have emerged from the discussion have been:
- *PED solution to what problems?*
- *PED too Holistic*
- *Drivers are unclear*
- *Possibility to replicate in different (e.g., demographic) contexts?*
- *Too much focused-on technology*

Learning by example - PED Database -E (Michal Kuzmic | University of Prague, Iulia Turcia |)
The session focused on presenting the PED Database framework and mockups. The participants adopted roles of researcher, practitioner and policy-maker to identify different perspectives and interests while working with the Database. This exercise highlighted the context specificity of PED cases and the importance of expert contact points available to support the practitioners. The database mockup as such was accepted very positively.

Energy Communities - F (Jurgen van der Heijden | Energie Samen Noord Holland – Taco Kuiper | Platform 31):
Great discussion. Points with different perspectives: To include or not commercial parties in energy cooperatives for the sake of innovations, funding, …

Societal Cost Benefits PED's -H (Jurgen van der Heijden | EnergieSamen – Taco Kuiper | Platform 31)

How can a cooperative create social value. Lot of discussion of how the energy cooperation Westerlicht generates social impact in the neighbourhood. Jurgen was able to draw from his own practical experience.

Having a PED and now…? -I (Willem van Winden & Sara Rueda Raya | HvA)

- *PED definition is unclear so far; however, it is flexible. It is evolving over time. It started with a focus mainly on energy, and it has evolved to include a social aspect.*
- *A key element related to that social aspect is sharing, but with a certain degree of independence. To achieve that balance between sharing and independency, communication must be taken into consideration.*
- *The concept of "community" has become the core of a PED. And since each community is different, it is essential to consider the context surrounding each community.*
- *The context is going to be essential for replicating and scaling up activities. When replicating/scaling up just "copy and paste" won't work successfully since each context is different.*
- *Our recommendation/conclusion is to find key elements that can be transferable but handle each context as unique.*

Guidance and tools to kick-off PEDs – J (Abel Magyari | ABUD, Judith Borsboom | Locality)
There are still some very important tools missing (Early project identification, cost-benefit analysis, social impact analysis, nature-based co mitigation analysis etc.). Furthermore lack of holistic tooling and clear ways to interpret outcomes with different visualization techniques is also identified as a barrier.
An open-source freely searchable and filterable database of tools should be able to help stakeholders identify the needed tools for their goals. Furthermore more modular tooling is needed in order to make sure everybody can find and bespoke the best tooling for their needs.

Role of national governments / Natural Gas Free Districts - K (Joram Snijders | Ministery of interior Affairs and Kingdom Relations, Heino van Houwelingen | Platform31)
The Dutch national level policy can be characterised by:

- *National level policy is guided by EU policy (e.g. target set at 60% CO2 reduction by 2030, to increase chances of reaching the EU goal of 55% reduction)*
- *Prior to current government agreement, the Dutch climate policy was defined through consultations among stakeholders / interest groups, in which the government participated (i.e. along the tradition of the Dutch Polder Model);*

- *Implementation has been heavily decentralised: put in hands of municipalities. Central government plays a supporting / facilitating role through a number of instruments, including in the areas of :*
    - *Subsidies and other forms of financial support*
    - *National level regulations (including setting of norms)*
    - *Knowledge / expertise (providing it, and facilitating the sharing of it)*
- *Comparison with other countries: DK and SWI both have emphasis on municipal level implementation. In Switzerland central level is less visible than the first sub-national level: the canton. DK has stricter guidance on district heating: they must be cooperative or municipal owned (never commercially operated).*
- *Participants compared the Dutch example with knowledge among participants of other country cases. They identified some important criteria for an effective rol of the national level government: transparency and predictability. And the absence of corruption (in some cases there is absolutely no trust so only grass roots initiatives are the only reliable option) and consistency across government departments (to avoid contradicting / working against a lofty energy transition policy).*
- *Observations on the role of the Ducht central government derived from the discussion:*
    - *The assumption that municipalities are best equiped to manage the heat transition within their own community is not always true. Smaller municipalities have to rely on expensive consultants that do not necessarily deliver the most suited output (e.g. the best business case) . Smaller municipalities also tend to rely on provincial advisory support while in theory the local heat transition in the built environment has been directly delegated from central government to municipalities.*
    - *Funding instruments are not easy to navigate by (smaller) municipalities*
    - *The question was raised (but not answered definitively) why the business case for Dutch district heating systems tend to be (much) more expensive then in countries like Denmark.*

Decision Dashboard for local energy systems -L (Avi Ganesan and Hugo Niessing | Resourcefully)
Presentation:

- *Resourcefully's approach to advising cities on the energy transition of neighbourhoods is data-driven: developing future scenarios of the local energy system together with local stakeholders and then modelling the energy and cost impacts of this transition and visualising it on the Dashboard to show how this affects self-sufficiency, CO2 emissions, household energy bills and grid capacity so that advice and decisions can be made based on a shared understanding of the future.*
- *The old adage is: "You can't manage what you can't measure." To help Amsterdam reach its solar PV installation target and engage citizens about how their neighbourhood power demand compares to their solar generation, Resourcefully together with Amsterdam Energy City Lab created a Neighbourhood Energy Monitor website to visualise this data – see https://aecl.nl*

Discussion:

- *Access to quality data is still an ongoing issue that needs to be solved. For example, DSO's are overwhelmed by data requests from local government, advisors and academics and are not set up to share this data due to privacy / commercial sensitivity / lack of detailed data or other reasons. A data platform and sharing mechanism are critical to allow cities to make decisions on the future energy system.*
- *Where real-world data is not available, it needs to be simulated using the best available information, so as not to make it a bottleneck for the transition process.*

- *Every neighbourhood is different in terms of demographics, type of buildings, urban zoning, mobility options, access to district heating or waste heat etc. and solutions need to be tailor-made to each unique situation.*
- *Visualisation of future scenarios with energy/cost figures is a powerful tool to engage local stakeholders to discuss concrete views of the future.*

REPORT 24 JUNE

Cost Action information
Scientific part
Database
Tools:

- 3 x challenges - Mismatch between tools and goals
- Framework of tools is developed based on characterization and tool chains.

Parallel session I: Speeddates on Need of Capacities
Main question: What capacity is needed and what conditions need to be in place to be able (for a practitioner or a researcher) to learn and develop these capacities?
Mode: Speed dates in small groups

Results of speed date sessions on capacities & competences needed:

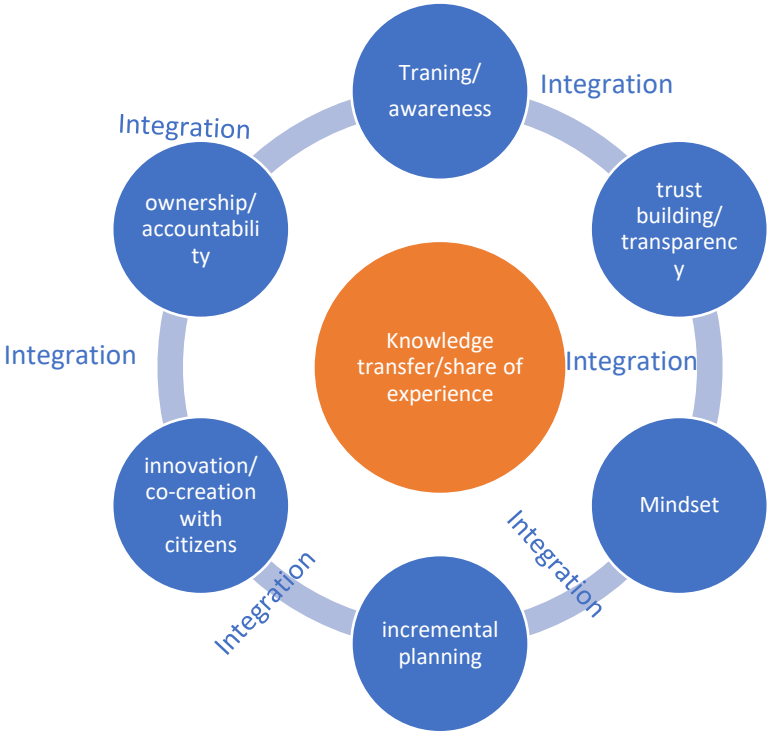
- *Ability to look at PED development from a multi-disciplinary and multi-stakeholder perspective. We need people who have a holistic view of the whole PED development and see how his/her individual contribution can be part of the big puzzle.*
- *Ability to work in a multi-disciplinary team, people who do not work in silos but instead can understand/discuss with team members from other disciplines.*
- *Ability to connect between technical and non-technical topics and tasks.*
- *Different stakeholders require different capacities*
- *Different levels (Country/City/Sector)*
- *Different phases of PED development (different capacities are needed)*
- *Context specificity*
- *Vision*
- *Relevance of Design (e.g., Reduction of energy demand comes first)*

- *On one hand we need to have long-term planning, on the other hand, we need to embrace uncertainty and be flexible and resilient. In this regard, incremental (step-by-step) planning is what we need.*
- *Our planning cannot be totally planned or be top-down, we need to give space for innovation, co-creation and creativity and ideas by other people, especially citizens.*
- *Such processes will create the sense of ownership among people and increase the level of accountability.*
- *Within projects you need a change management organization that brings together different disciplines: complex systems management, urban buildings, energy planning, occupants' behaviour, micro communities, platform/token economics, energy regulations and law and building code, governance networks and organisation, environmental justice, ICT (DSS and algorithms) . This organisation is the facilitator/intermediary – many competences needed*
- *Better understanding of citizen demographics, needs & expectations: communication to non-experts, knowledge on PED contexts, know how to empower people*
- *Generic flowcharts depicting PED development including legislative/regulatory package*
- *More insight is urgently needed into the varying legislative/regulatory conditions per country: how does the PED landscape across Europe look like from that perspective?*

Main Addressed Issues	Who	What	Shortcomings
LEGISLATION & REGULATION	(Municipalities, NGOs, Housing Associations, building administrators, OSS)	How it is possible for relevant stakeholders involved in the process to deal with fragmented rules e.g. on Energy communities	• Fragmented Local regulation • Granularity of Legal framework • Who is leading the process
FINANCIAL AND BUSINESS MODEL	(Municipalities, PA, Private investors, PPP, Housing Associations, building administrators, tenants/ owners/final users)	How to make relevant lessons learnt from case studies on Turnkeys model and PPP model for leveraging common interest on benefits	• Awareness about potential benefits • Relatively newness of some aspects and fundings schemes • Relatively different interest from each involved stakeholders VS common interest
THEORY OF CHANGE **APPROACH**	(P.A., tenants/ owners/final users, Technician …)	Impact pathway for common knowledge and understanding among the actors	• Common knowledge and same vocabulary' understanding among all actors • Storytelling, road maps, process maps

Regarding what conditions need to be in place and what can be done:

- *The integration between several topics is also necessary to safeguard the effectiveness (see figure below).*



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- *We need training schools to increase the awareness among different group of societies, including the experts. Knowledge alone is not enough. Experts need to be trained to learn how to transfer the knowledge.*
- *Not everyone needs all the knowledge, but they need to trust the people with knowledge. Therefore, trust building, and transparency is the key.*
- *Any kind of change requires the right mindset. We need to understand the mechanisms behind forming a mindset.*
- *The PED development team needs to set a common vision that all members share.*
- *Higher education (e.g. bachelors/master courses) for engineers, architects and planners should be interdisciplinary. Students should have the opportunity to learn basic knowledge and work with peers from relevant disciplines during their course.*
- *Educational materials such as the MOOC for PED presented by Atelier can be a good starting point for people who want to get some basic knowledge on the PED topic.*
- *The COST Action can provide the opportunity for interdisciplinary learning and working for young researchers/professionals through training schools.*
- *A helpdesk/[platform/support network is needed for easy access to technological and non-technological experts, peer2peer exchange, knowledge brokerage and interaction management*
- *Catalogue of PED typologies: showing examples of different scales, contexts, neighbourhoods including neighbourhoods characteristics and showing what you can do where*
- *PED travel agency offering visits to different sites*

Some groups focused on specific topics: Based on an ad hoc three-dimensional model of PED stakeholder engagement, combining into one diagram the inter-sectoral, inter-disciplinary and process dynamic axes. In the follow-up discussion the participants came up with the learning loop consisting of three elements: technological innovation → business model development →

regulatory adjustment. The main problem is when imbalance occurs between these three elements rendering either one of them more advanced than the others. Another key issue discussed was the citizen participation and importance of psychological ownership of the PED by citizens.

Parallel session II: Contribution to development of capacities by Working Group

Goal: How can we create impact on these needed capacities / What do we need to develop in the Cost Action (for the Training School and other deliverables. / What appointments do we make, what are next steps?

Results per WG

WG1:

The WG1 leaders opened the floor for strategic discussion on upcoming results of the WG1. The discussion revolved around the three main courses of action: the ongoing work on the PED Database and the work on the PED definition with the latter focusing on review of different calculation methods. For the future work it was suggested to highlight the storytelling outputs focusing either on implementation of individual technology and/or PED case study. This way, it was argued, the WG1 results may support the PED replication efforts.

WG2:

We first shared some of we discuss about one specific solution in relation to the outcome of the former sessions. We discussed that we need to have an independent entity who can coordinate the process and take responsibility for following up the points that were identified in the previous sessions.

We tried to map the characteristics that this entity needs to have.

- *It was argued that this entity needs to be public sector to safeguard the public interest. However, due to the lack of trust to the public sector, NGO may be a better alternative. Further studies are needed to investigate this point deeper.*
- *This entity needs to have a close interaction with an interdisciplinary board of experts, which may be suited best in the academia. This interaction can lead to open innovation.*
- *There is a need for recognition of market needs. We may have the right knowledge, information, intention, or solution but there may be no need in the market for it.*

WG4:

- *Top-down or Bottom-up (can we afford Bottom-up?)*
- *Multidisciplinary approach is needed (e.g., relevance of design)*
- *Urgency versus complexity*
- *Not only Technology!*
- *Start early with education*
- *Multiscale / multilevel (governance) approach*

Annex

Program 23 June

<table>
<tr><td>9:00-9:30</td><td>Registration at Amsterdam University of Applied Sciences</td></tr>
<tr><td>9.30-11:30</td><td>Start plenary programme (live stream)</td></tr>
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Welcome by host Anjel Punte (Platform31) and Dr. Geleyn Meijer (Rector Magnificus, Amsterdam University of Applied Sciences) and Frans Verspeek (City of Amsterdam)
The Sønderborg Experiences by Peter Rathje (City of Sønderborg, Denmark)
PED in practice - short interviews with:

Dorota Chwieduk (Warsaw)
Marcello Turrini (Vienna)
Florin Paven (Alba)

Technology and PEDs – a forced marriage? By Renée Heller (Professor Energy & Innovation, Amsterdam University of Applied Sciences)
Round table discussion and debate with the audience

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<tr><td>12:00-14:00</td><td>Interesting PED excursions in Amsterdam near the venue, including lunch
<table>
<tr><td>1. LIFE Platform and Amsterdam ArenA football stadium</td><td>By foot</td></tr>
<tr><td>2. Donut Economy Strategies</td><td>By bicycle</td></tr>
<tr><td>3. Zandkasteel</td><td>By foot</td></tr>
<tr><td>4. Schoonschip</td><td>By bus</td></tr>
<tr><td>5. De Ceuvel / Republica (Buiksloterham)</td><td>By bus</td></tr>
<tr><td>6. Demo Residence Reigersbos 70</td><td>By bicycle</td></tr>
<tr><td>7. JUST PREPARE</td><td>By foot</td></tr>
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<tr><td>14:30-15:30</td><td>Parallel sessions – round 1
<table>
<tr><td>A. PED development process</td><td>Room 2004</td></tr>
<tr><td>B. PED and energy and building technology</td><td>Room 2008</td></tr>
<tr><td>C. Role of local government</td><td>Room 2020</td></tr>
<tr><td>D. Positive energy districts: key characteristics</td><td>Room 2024</td></tr>
<tr><td>E. Learning by example: PED database for inspiration</td><td>Room 2030</td></tr>
<tr><td>F. The role of energy communities</td><td>Room 2070</td></tr>
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<tr><td>15:30-16:00</td><td>Break</td></tr>
<tr><td>16:00-17:00</td><td>Parallel sessions – round 2
<table>
<tr><td>G. Having a PED, and now…?</td><td>Room 2004</td></tr>
<tr><td>H. Societal cost benefits of PEDs</td><td>Room 2008</td></tr>
<tr><td>I. The role of data in PEDs</td><td>Room 2020</td></tr>
<tr><td>J. Guidance and tools to kick off PEDs</td><td>Room 2024</td></tr>
<tr><td>K. National government / Programme Gas Free Districts</td><td>Room 2030</td></tr>
<tr><td>L. Decision Dashboard for local energy systems</td><td>Room 2070</td></tr>
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<tr><td>17:00-17:30</td><td>Plenary session with pitches on parallel sessions</td></tr>
<tr><td>17.15–17.30</td><td>Recap of the day and Programme for 24th of June</td></tr>
<tr><td>17:30-19:00</td><td>Networking with drinks and buffet</td></tr>
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Program 24th June

<table>
<tr><td>09:00-10:00</td><td>COST Action MC meeting (for COST Action members only)</td></tr>
<tr><td>09:30-10:00</td><td>Welcome coffee for other participants</td></tr>
<tr><td>10:00-11:20</td><td>Start plenary programme (live stream)
Welcome by host and recap first day
COST Action researchers' presentations on real-life implementation/applied tools relevant to practitioners (database, tooling, labs for PEDs)
Beril Alpagut – "Supporting the decision-making processes towards Positive Energy Districts implementation: Practical example of the PED Database"
Judith Borsboom Abel Magyari, Savis Gohari – "Framework and overview of Tools and Guidance for Positive Energy Districts"
Marije Poel and Viktoria Balla Kamper - "Learning Platform for practitioners"
Oscar Secco – "Lessons learned from PED Living labs"
Aleksandar Anastasovski - "Technologies for PEDs in industrial areas"</td></tr>
<tr><td>11:20-11:50</td><td>Break</td></tr>
<tr><td>11:50-12:30</td><td>Parallel session (part I) – Needs for capacity building and development of competences for planning and implementing PEDs
<table><tr><th>Group</th><th>Room</th><th>Group</th><th>Room</th></tr><tr><td>Group 1</td><td>2004</td><td>Group 5</td><td>2030</td></tr><tr><td>Group 2</td><td>2008</td><td>Group 6</td><td>2050</td></tr><tr><td>Group 3</td><td>2020</td><td>Group 7</td><td>2058</td></tr><tr><td>Group 4</td><td>2024</td><td>Group 8</td><td>2070</td></tr></table></td></tr>
<tr><td>12:30-13:30</td><td>Lunch</td></tr>
<tr><td>13:30-14:30</td><td>Parallel session - part II – How can we create impact on these needed capacities and what do we need to develop in the Cost Action
<table><tr><th>Group</th><th>Room</th></tr><tr><td>Group 1: Michal Kuzmic</td><td>2004</td></tr><tr><td>Group 2: Savis Gohari</td><td>2008</td></tr><tr><td>Group 3: Oscar Seco</td><td>2020</td></tr><tr><td>Group 4: Maria-Beatrice Andreucci</td><td>2024</td></tr></table></td></tr>
<tr><td>14:30-15:00</td><td>Plenary session: Takeaways for a PED Training school
Closing ceremony</td></tr>
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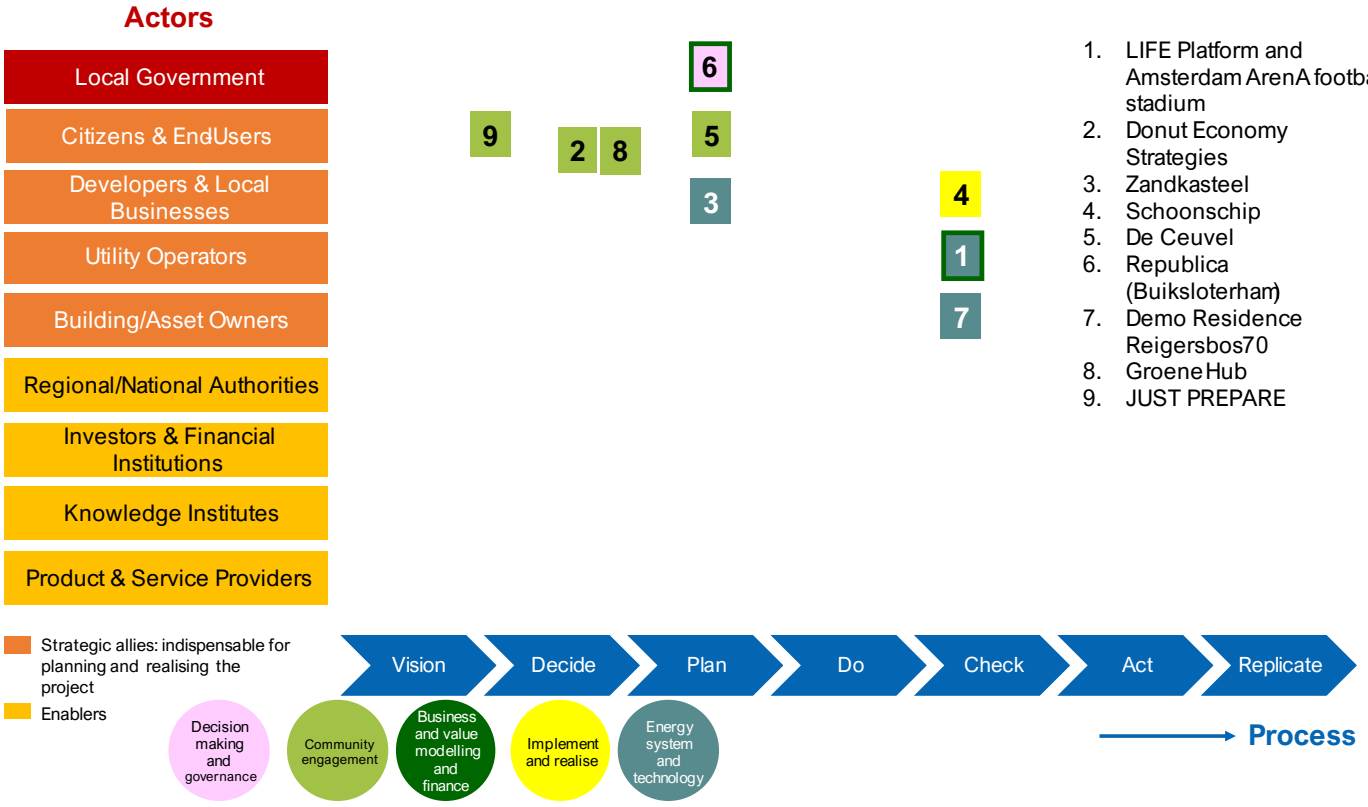
Excursions descriptions

We have plotted the excursions against two axes: 1) main actors, and 2) where in the process the project can be placed.



1. LIFE Platform and Amsterdam ArenA football stadium — By foot

The LIFE (Local Inclusive Future Energy) platform is the smart management of energy at district level that can help prepare Amsterdam Zuidoost for the future without unnecessary investments in the current energy grid. The LIFE platform offers users the opportunity to store energy. Choices for storage or conversion will be supported by information on economics, sustainability, or energy grid capacity. Furthermore, the project ensures that the energy that is generated in Amsterdam Zuidoost – and not immediately used – can be stored locally, such as in the Johan Cruijff ArenA battery. Key result of this project is a district-scale ICT-based smart energy management platform (LIFE) connected to a wide variety of energy devices/assets. This project will show us many distinct aspects of PEDs, including the smart energy technology, data platforms, citizen engagement, and ICT solutions.

This innovative sustainable energy platform is co-developed by several actors together. Next to that, the ArenA is one of the few football stadiums in the world that is 'giving back' to the neighborhood and is thus serving a social function. In that sense, this project can be an example for football stadiums around the world. For safety reasons, people with pacemakers cannot enter the room in which the battery will be shown.'

Keywords: sustainable energy platform on district scale, co-development, social transition

2. Donut Economy Strategies — By bicycle

The whole area of Amstel III is changing rapidly, with 10,000 new homes being realized before 2027. Over the next 20 years, the number of people living in Amsterdam-Zuidoost will double. In this excursion, participants will get to hear how a business area in Amsterdam-Zuidoost, Amstel III (30 hectares) is being developed according to the donut economy principles. The mission of this project, called 'Wooden City', is to create sustainable business areas, to build high-rise office buildings and in doing so attract technological companies to base themselves in this area. This project is still in the decision phase, and conversations with the

municipality are continuously held. It became clear that to tackle the challenges of the 21st century, more cooperative models are necessary. The development of this area is in that sense a prototype of such a cooperative model. The sustainability standards that are being adhered to this project are a combination of municipal policy and the ambitions of the developer. In the donut economy studies conducted for this project, social challenges and employment opportunities are combined, connecting social and sustainable goals.

Keywords: just sustainable area development, PED example

3. Zandkasteel By foot

Zandkasteel (sandcastle) used to be the head office of the Dutch bank ING and was one of the most sustainable buildings in the world in the 80's. Now the 90,000 m^2 area is being transformed into residential apartments, cafés and restaurants, offices, and an international school. Zandkasteel wants to transform the area using circular and sustainable concepts and aims to achieve the highest possible circular renovation score. The transformation consists of retrofitting the facades and getting thermal insulation up to modern standards. Afterwards the transformation of the former office building will take place, which consists of updating and improving the existing installations and appliances to meet current industry standards. Also, the building will be disconnected from natural gas. City heating and cooling will be provided by Vattenfall, heating will be 'harvested' from a heat plant, cooling will come from a lake, both nearby. Other options are also considered, like geothermal heating, biomass, and residual heat sources. In this excursion, the developer of this project will give you an insight into the considerations they make when applying sustainability measures.

Keywords: urban transformation and repurposing, circular renovation, sustainable heating and cooling concepts

4. Schoonschip By bus

Schoonschip (Clean Ship) is a floating neighbourhood in Amsterdam Buiksloterham. Since 2020, 46 households have made their home in this ecological, social, and sustainable neighborhood. The buildings have been constructed using sustainable materials, they do not use natural gas, and heating is generated through sun boilers and heat pumps that draw heat from the surrounding waters (aquathermal). Energy is generated through solar panels on the green roofs and each home has a battery for temporary energy surpluses. The whole neighbourhood is connected to a smart grid which enables each home to exchange electricity whenever it is needed. The community shares electric cars and bikes for its mobility needs. The neighbourhood works together as a community to advance this innovative concept of living, helping further develop the concepts of smart grids, new forms of sanitation, shared mobility, ecology, water quality, and communication. The next step is to expand to other areas of the neighbourhood.

Keywords: energy community, bottom-up initiatives, smart grid, sustainable housing, shared mobility, water innovations

5. De Ceuvel By bus

The Ceuvel is Amsterdam's first circular working space, a testing ground for sustainability and innovation with a vibrant community of entrepreneurs and artists with a green heart, who have helped build their workplace with their own hands. The Ceuvel houses a cultural center for sustainability, a café-restaurant, a floating hotel, and spaces for rent. The area upon which the Ceuvel was built used to be a heavily polluted shipyard that has since been converted into sustainable workplaces. To purify the soil, a 'forbidden garden' of soil-cleaning plants has been created around the boats.
De Ceuvel is a playground for sustainable technologies. This 'Cleantech Playground' has been developed to show alternative ways of dealing with waste. Various small-scale technologies can be seen on the site, which show the value of waste materials in a creative way. Noteworthy are the compost toilets, because a sewage system was impossible due to the polluted ground; heat pumps that provide every boat with warmth; helophyte filters, that cleanses the kitchen waters through bio filtration systems next to the boats; and at least 150 solar panels that generate an average of 36,000 kWh on a yearly basis.

Keywords: energy community, circular living and working, sustainable soil regeneration, sustainability innovations

6. Republica (Buiksloterham) By bus

Republica (part of H2020-SCC01 project ATELIER) is going to consist of multiple residential buildings, a hotel, and creative spaces, with streets and squares running through the 20,000 m^2 area in Amsterdam Buiksloterham. The to-be-developed area will generate its own energy through solar panels and a heat exchange installation, and will use recyclable building materials, green rooftops, a rainwater swimming pool, façade gardens and nesting spots for swifts and bats. Republica aims to become an energy producing community that stores and sells surplus energy through a digital platform. Several small and larger circular products and systems will be implemented in Republica, e.g., water buffering and the reuse of heat from shower water. In this excursion with presentation and guided tour we will show you the plot of land that will become Republica, of which the first constructions can be seen.

Keywords: energy community, circular economy, sustainable development, urban planning, multi-functional

7. Demo Residence Reigersbos 70 By bicycle

To create a climate-neutral neighbourhood, at least 90% of the existing housing accommodations must be renovated. Housing association Stadgenoot in Amsterdam wants to retrofit at least 10,000 of its buildings to make them climate-neutral using a sustainable retrofitting method. The first dwelling has been done in Demo Residence ('Demowoning') Reigersbos 70, which Stadgenoot has chosen to serve as a demonstration project for the neighbourhood. The house is monitored to gain insights into the performance of its façade and installations after the retrofitting. These insights can help to determine what the effect of the retrofit could be for comfort and quality of life, also looking at where improvements are possible. How to involve residents in the renovation process? How to develop a service organization (renovation as a service)?

Keywords: climate-neutral retrofit concepts, citizen engagement, retrofitted demo residence, project with 10 homeowner associations with mixed ownership of citizens and housing association

8. Groene Hub By bicycle

The Groene Hub (Green Hub) is a practical learning community for social and sustainable frontrunners that are working together to create a healthy and sustainable neighbourhood and local economy. The energy transition will become an important driver of change in neighbourhoods that was not to achieve energy savings, sustainable energy generation and to develop heat networks. Our philosophy is that the process starts with the residents that want to make their neighbourhood more sustainable. We enable them through our so-called Donut Deals that are aimed at improving the social, ecological, and economic situation of the whole area. Through *Gaasperdams Groen Gas (Green Gas)*, the Green Hub tries to find innovative ways to utilize green gas created from our own excrements in a high-pressure fermenter. Its aim is to reduce energy consumption by 50% through its own production and energy saving methods with quick wins (so called Quickfit-measures)

Keywords: Energy Community, bio-fermentation, cleantech, Donut Deals, bottom-up initiatives

9. JUST PREPARE By foot

JUST PREPARE is a consortium of researchers, municipalities, companies, and civil society organizations that conducts research into the social, societal, and technical aspects of the energy transition. Specifically, this project focusses on an effective and just energy transition in underprivileged neighborhoods. Discussions about the energy transition in Amsterdam Southeast often revolve around poor and unemployed residents with little confidence in the authorities, who should also benefit from the changes. In these neighbourhoods we see a mismatch between the retrofit of poorly insulated houses and the actively involved residents. This does not help the energy transition. On the other hand, these motivated 'green' residents from Amsterdam Southeast can be a good example which can boost the local motivation to act on energy. In addition to this challenge of just energy, there are also certain migrant groups that the government finds difficult to reach. Lector Stan Majoor from the Amsterdam University of Applied Sciences will take us on a citywalk through the neighbourhood in Amsterdam Southeast and tell us about the energy transition challenges in underprivileged neighbourhoods

Keywords: citizen engagement, energy poverty, a just energy transition, awareness raising

Parallel sessions 23th June

Round 1

A	**PED development process** **The realisation of positive energy districts (PEDs) comes with process steps, that are somehow familiar with standard district development processes, but with some specifics, like monitoring, prosumer engagement and interdisciplinarity.**	**Moderator: Judith Borsboom** **Pitch: Christoph Gollner**
B	**PED and energy and building technology** PEDs can be delivered by many technologies, ranging from energy production, insulations, energy networks, data systems and building integrated innovations. The choice will be determined by the local context and require an integrated design with the technical building blocks. Only then will a positive energy balance be delivered.	Moderator: Renée Heller Pitch: Renée Heller
C	**Role of local government** Local government can have various roles, varying from orchestrator and facilitator to financer and owner. In one city the administration might choose for different roles in other districts, due to the activities of other actors. Each role requires different competences.	Moderator: Savis Gohari Pitch: Frans Verspeek
D	**Positive energy districts: key characteristics** The introduction of positive energy districts resulted in a debate on its definition. Which geographical boundaries, time horizon and functions do you consider? Despite these frames, still several elements will characterise PEDs. For those who are quite new to the subject, this session provides an overview of what a PED is.	Moderator: Maria-Beatrice Andreucci Pitch: Mark van Wees
E	**Learning by example: PED database for inspiration** The COST Action network is collecting existing PEDs, both realized and in development. The aim of this database is, among other things, to inspire others. The disclosure of information and the search engine in this database will be based on end user wishes.	Moderator: Michal Kuzmic Pitch: Iulia Gurcia
F	**The role of energy communities** Thousands of energy communities exist across Europe, of which hundreds in the Netherlands. The EU obliges a 50% share for local energy community, that is the case for PEDs as well. They can act in various roles and participate in the development of PEDs. What can be their contribution towards more local energy systems as part of the PED development? Jurgen van der Heijden is a prominent energy community member and has strong ideas about the role of energy communities in the energy transition.	Moderator: Taco Kuiper Pitch: Jurgen van der Heijden

Round 2

G	**Having a PED, and now…?** **Realizing one positive energy district is not enough to reach the climate goals. Scaling up PEDs is necessary, whether it is in the same city or in other cities. Upscaling does not happen automatically, but what windows of opportunity do exist? How can you do it and what needs to be considered in the first district to enable the uptake?**	**Moderator: Willem van Winden and Sara Rueda Raya**
H	**Societal cost benefits of PEDs** One of the urgent questions to act for climate is how to act for a just energy transition. Looking into the potential value of positive energy districts, the risk of value creation can be turned into an opportunity to fight energy poverty. The societal costs of PEDs can be positive, at least by keeping the energy-related financial streams within the city or district. Linked with JUST PREPARE	Moderator: Taco Kuiper Pitch: Jurgen van der Heijden
I	**The role of data in PEDs** Data and ICT are important in positive energy districts. For citizen engagement, data visualisation and ICT-supported participation can be key. In the energy system it is especially important to use energy data for peak shaving, smart grids, and energy trading. And new ICT technologies will enable and capture value, e.g., block chain, value personal data, etc.	Moderator: Viktor Bukowski Pitch: Viktor Bukowski
J	**Guidance and tools to kick off PEDs** If you start developing a PED, you can follow some defined process steps (see session A). In each of these steps, both technical and non-technical tools exist that can help practitioners to get to the next stage. The COST Action work creates more insights into what is useful for whom at which moment during PED planning and implementation.	Moderator: Abel Magyari Pitch: -
K	**Role of the national government and national policies** The national government plays a pivotal role in providing incentives, e.g., via the tax system, revolving funds, post-Covid recovery. They are responsible for regulatory frameworks as well. What is the Dutch policy landscape? Which Dutch policies support PED development, and which other European approaches exist?	Moderator: Heino van Houwelingen Pitch: Joram Snijders
L	**Decision Dashboard for local energy systems** Local energy communities in need of decisions on investments for the energy system can be supported by a decision dashboard. This dashboard shows the energetic impact, the possibilities, and opportunities of energy flexibility – like storage and conversion – and the impact on costs and financial benefits.	Moderator: Avi Ganesan Pitch: Hugo Niesing