



# Positive Energy Districts: What and how in practice?

**ENERGY CITIES HUB: Fossil-free buildings and districts**

**TRANSITION LEADERS' PROGRAMME**

21st April 2022

## Agenda: 3 sub-topics

- **Governance models for PED** | With Chiara Cicchianni (Architecture Workroom Brussels), Hadrien Rouchette (Metropolis of Dijon) and Dieter Bruggeman (Vrije Universiteit Brussel)
- **Urban planning instruments to foster PED** | With Alice Detollenaere (City of Brussels), and Petra Schöfmann (Urban Innovation Vienna)
- **Criteria for PED development and evaluation** | With Wannes Vanheusden and Andries De Brouwer (3E)

A lively discussion of 45 min after the presentations!

## Energy Cities Hub: Fossil-free building and district

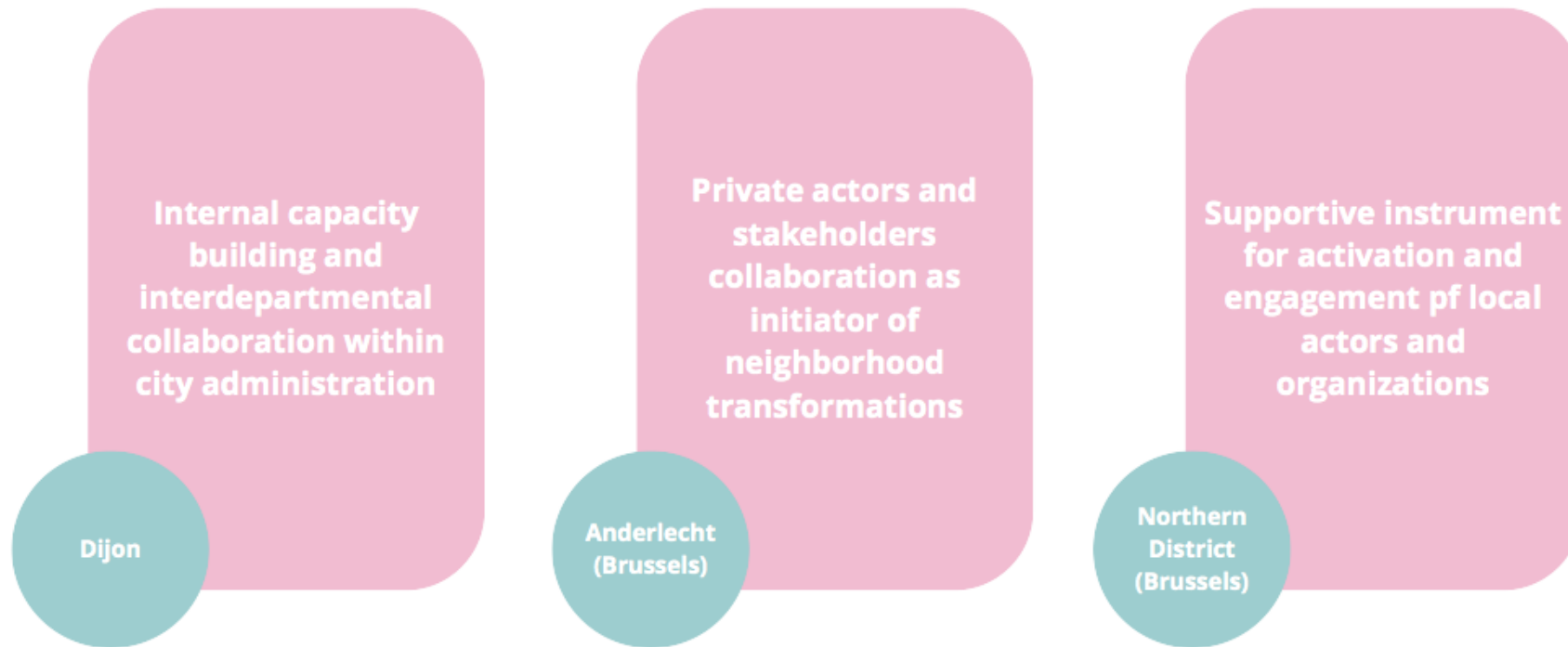
### Positive energy district : What and How in practice ?

### **Governance Model for PEDs**

*how to engage local stakeholders, citizens and different actors in the decision - making process of PED development?*



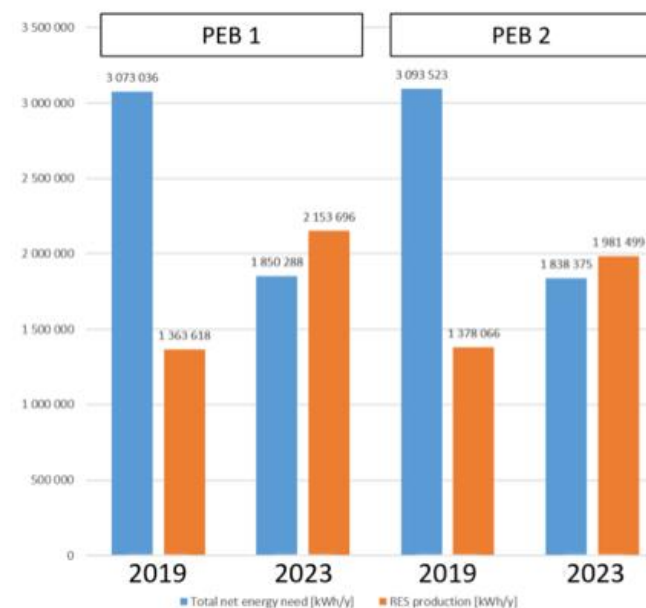
## Three different entry point for capacity building and governance models toward PED development:



# Dijon



2020-2025 - 53 partners,  
2 LHCs (Dijon, France & Turku, Finland), 6 Fellow cities  
Dijon: 5 residential buildings, 3 schools (1 100+ occupants)



	<u>Status quo</u>	<u>Target</u>	<u>Difficulties</u>	<u>Solutions</u>
Partner & <u>stakeholders</u> engagement	Project <u>started</u> online <u>october 2020</u> COVID <u>pandemic</u>	Healthy & trustful professional relationships. Clearly established responsibilities.	Some partners are far away from the project management and the issues at stake.	Quarterly meetings involving elected official responsible for the project and project management team, onsite when possible Monthly informal 1-to-1 update meetings with partners Organization of breakfast in the PED (at the neighborhood house) with the local stakeholders
City services engagement	Project <u>managed</u> by a <u>small team</u> in <u>urban planning department</u> Heavy <u>workload</u> for <u>every service</u> , <u>even before</u> the <u>starting</u> of <u>RESPONSE project</u>	6 teams <u>involved</u> in the <u>project</u> : <ul style="list-style-type: none"> <li>• <u>Energy dept</u></li> <li>• <u>housing dept</u></li> <li>• <u>financing dept</u></li> <li>• <u>local democracy dept</u></li> <li>• <u>digital dept</u></li> <li>• <u>Communication dept</u></li> </ul>	<u>Complex project</u> <u>needing much time</u> to <u>get onboarded</u> RESPONSE <u>project</u> not as <u>interesting</u> for <u>other</u> teams, in <u>other</u> directions Good service culture and a high sense of respect for strategic management decisions	Better quality reporting to top management in order to build support (helped the project management team to improve itself) Formal meeting involving top manager and the responsible services to revive services engagement
Communication	Weak integration of the project into the city's communication plans COVID pandemic	RESPONSE integrated in local communication to the general population, improvement of understanding of energy issues	RESPONSE management team did not have communication skills	Recruitment of a dedicated RESPONSE worker in the communication department



## Abattoir, Anderlecht, Brussels



- Redevelopment of urban manufacturing site
- The development of an energy masterplan for the site
- Introduction of new functions
- Connecting metabolic flows
- Co-production of PED project with the Cureghem neighbourhood
- A new role for site operator Abattoir nv

Abattoir, Anderlecht (Brussels Capital Region) BE





### **A new role for site operator Abattoir nv**

- Consume energy via distribution network
- Produce energy on site
- Optimize energy flows (also between different actors and areas on the site)
- Store energy on site
- Sell / exchange energy with
  - Manufacturing companies on site (existing Abattoir ecosystem)
  - New stakeholders on site (new, more independent functions)
  - Neighbouring large-scale consumers
  - Large-scale consumers further away in the neighbourhood
  - On-site energy services
- Help to facilitate the energy transition of Cureghem

unclear or non-converging regulatory frameworks make it hard for Abattoir nv to envision its (possible) role(s) in the supply of sustainable energy to the site's actors and the Cureghem neighbourhood.



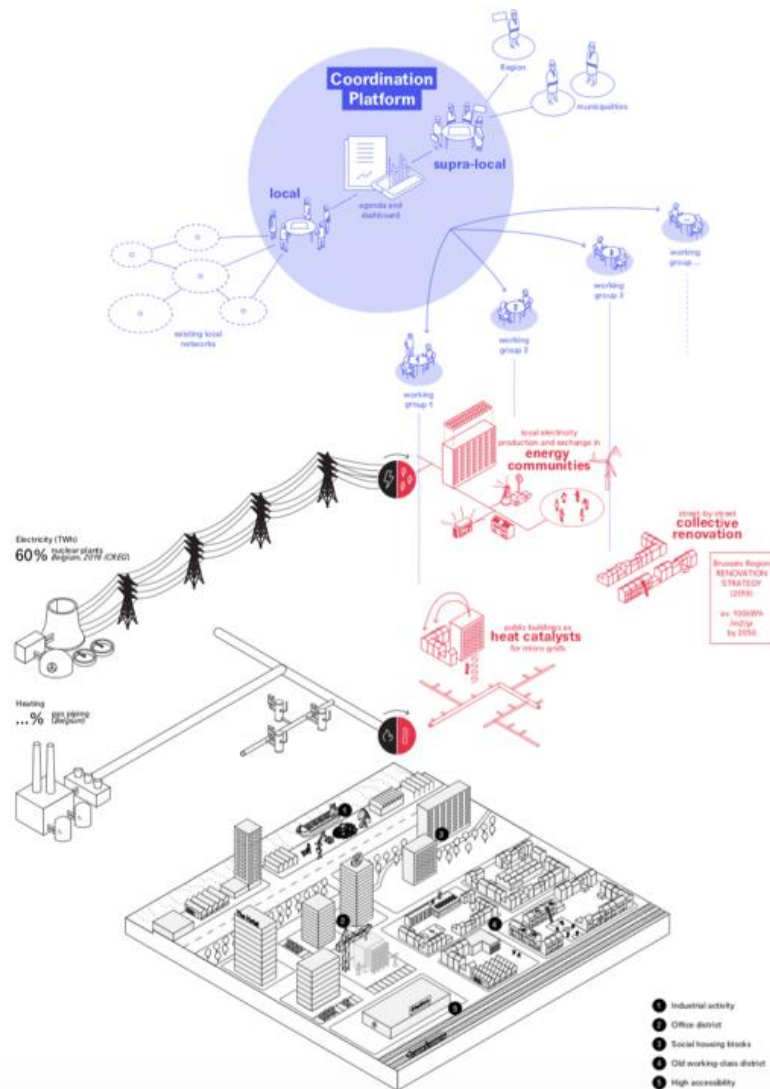
## Northern district, Brussels



Northern District Brussels (BE)

- different spatial contexts  
with a mix of old and newer buildings  
very dispersed ownership
- need for a decentralised energy solutions  
no one-for-all strategy  
complementary use and production profiles
- test of a platform to coordinate many  
different actions  
matchmaking and agenda-setting

## Northern district, Brussels



**1.** Bring together diverse local actors to test the Coordination Platform workspace and formats.

**2.** Connect local ambitions and regional strategies to accelerate and facilitate local transformation

**3.** Looking more closely at the local potentials, starting from the energy potential, the socio-economic potential, and the actors in the field to start envisioning possible pilot projects to be tested.

**4.** Nurturing and further reinforcement of the community by sharing knowledge and building a common view on the energy transition in the Northern District.

## **Energy Cities Hub: Fossil-free building and district**

### **Positive energy district : What and How in practice ?**

#### **Working table questions:**

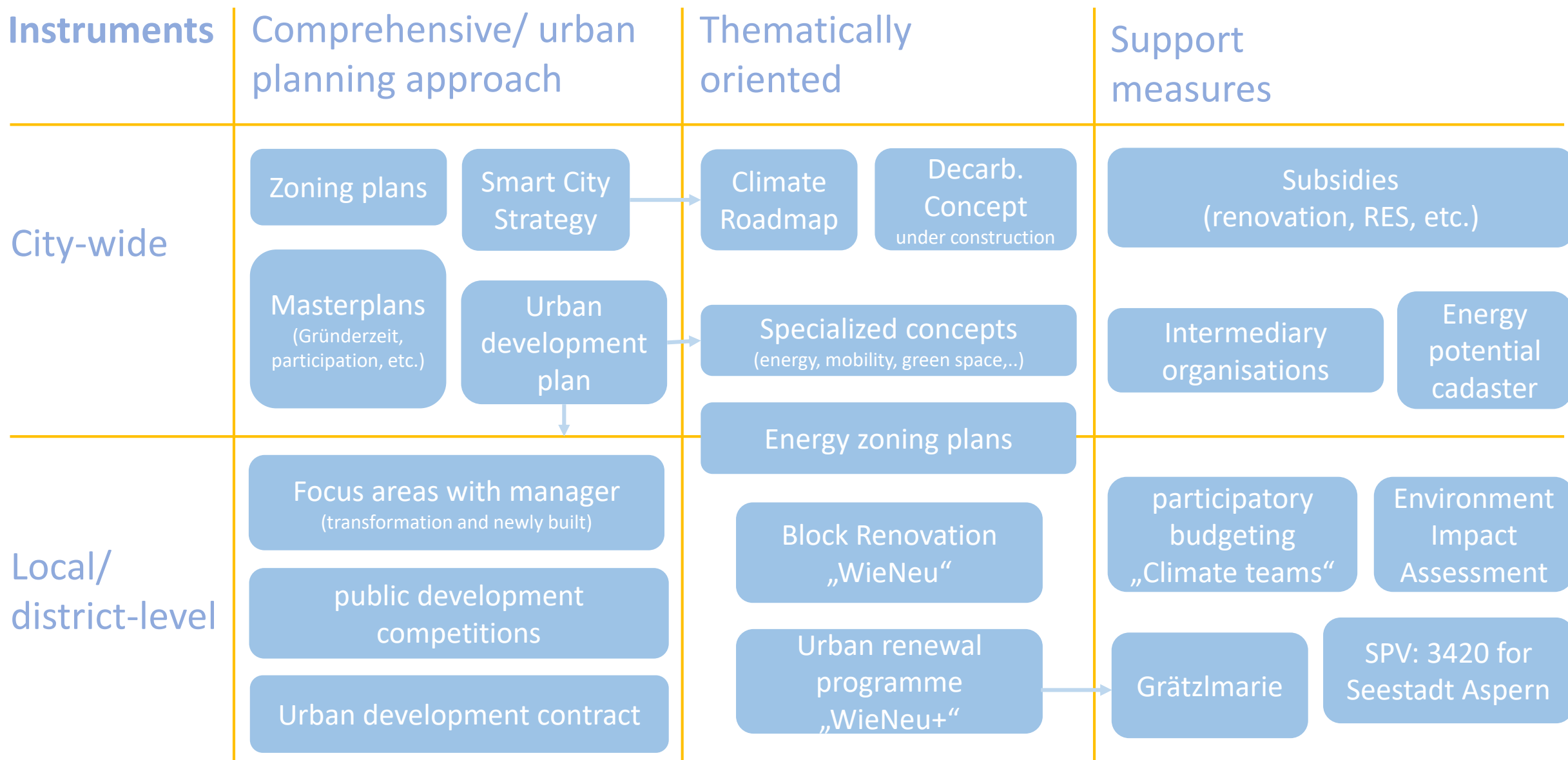
- 1** What role can public authorities play as initiator and facilitator of local transformation? how can they set a supportive framework for local stakeholders to collaborate, and set local test and experimentation? how can they build internal capacity (between diverse departments) and with different public authorities (at different levels) to envision an integrated program for the district transformation?
- 2** What role can a private entity take in the supply of (sustainable) energy? What can such an actor do on its own site? What role can it take in the energy supply of its neighbours? How to connect private initiative with 'the city'?
- 3** How to use the energy transition as a lever for the sustainable redevelopment of the neighbourhood: What kind of relation should be established between public authorities, neighbourhood actors and, potentially, the private market ? and how to mobilize and activate citizens in this process?

# Urban (planning) instruments to foster PED

Energy Cities Forum Brussels 21.-22.04.2022

Alice Detollenaere, Technical Coordinator for Brussels, *City of Brussels* (BE),  
Petra Schöfmann, Senior Expert, *Urban Innovation Vienna* (AT)





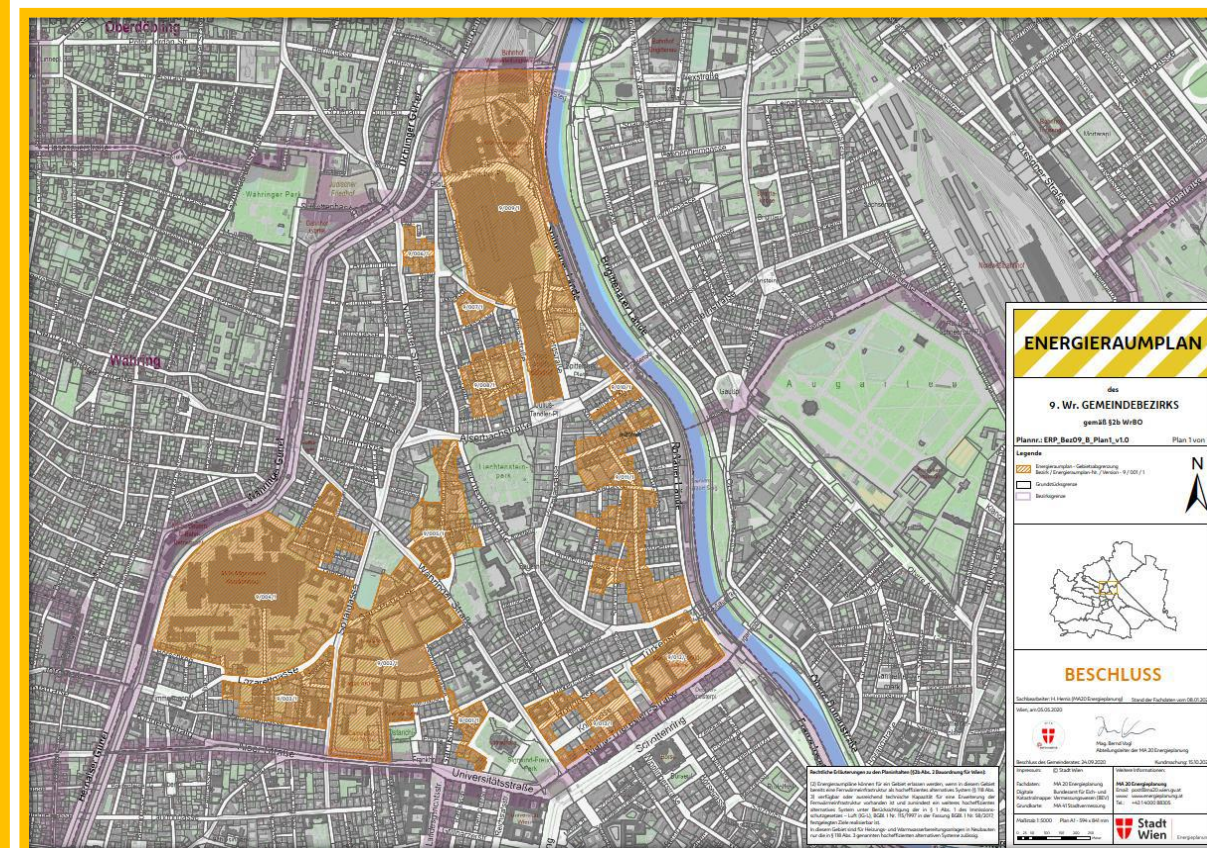


## Energy Zoning Plans

- 2020 Coalition Agreement: Decarbonisation until 2040
- Avoidance of fossil fuels in new buildings
- Planning reliability for developers, energy suppliers and grid operators
- Disintegration as well as avoidance of additional energy infrastructure (gas + districts heating)
- Enactment of energy zoning plans according to Viennese Building Code by City Council (§ 2b (2) WrBO)

## Energy Zoning Plans

- New buildings within designated areas must use highly efficient, alternative systems for heating and hot water preparation (DH and renewable solutions)
- 60-80% of new buildings will be affected by the regulation
- Decarbonisation of the existing building stock: **Energy Zoning Plans 2.0**



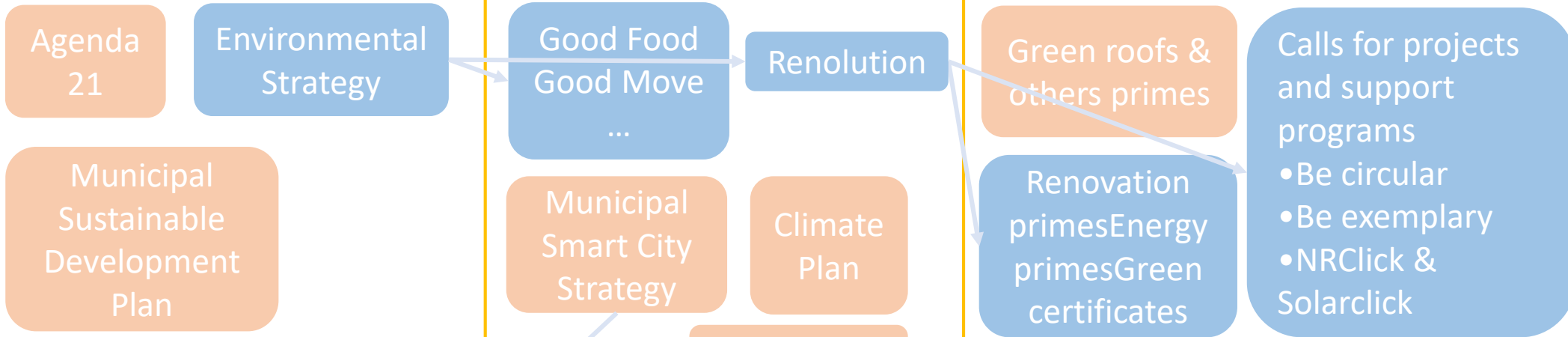
## Instruments

### Comprehensive/ urban planning approach

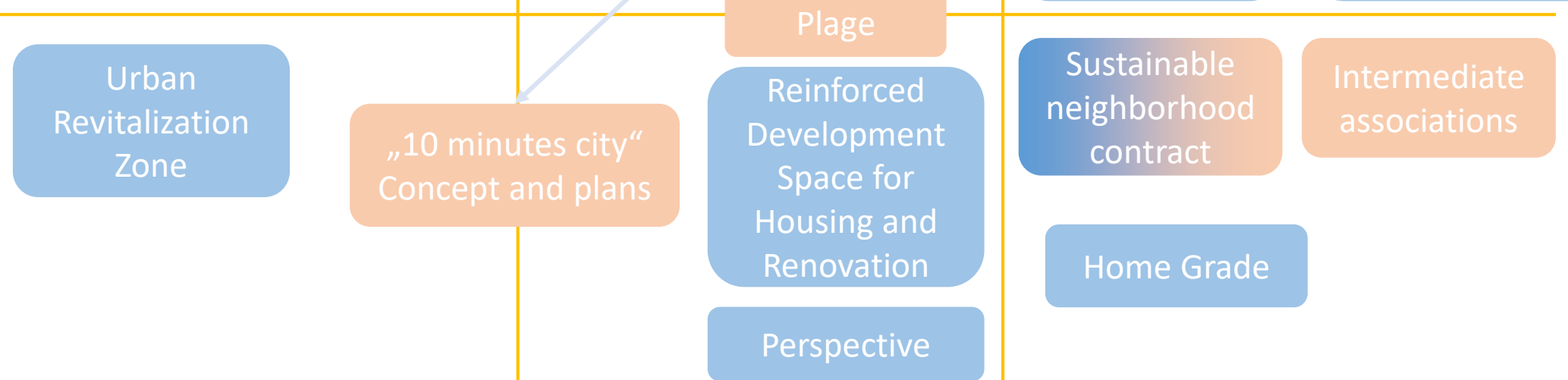
### Thematically oriented

### Support measures

## City-wide

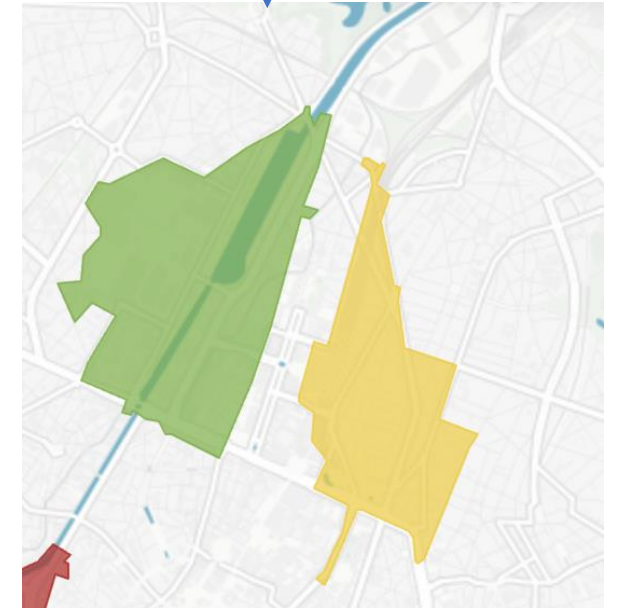
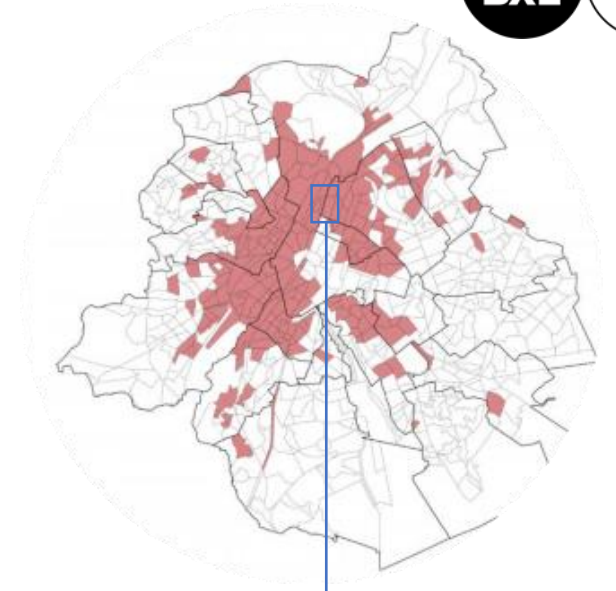


## Local/ district-level



## Sustainable Neighbourhood Contract

- Action plan concluded between the Brussels Capital Region, the municipality and the inhabitants
- Improving the living environment of a precarious neighborhood
- The municipality receives a specific budget and has four years to implement its revitalization program





# Energy and renovation primes

- Primes for insulation, renovation, HP, gas boiler, ... up to 70% of the costs!
- Online demands via Homegrade
- The Energy Bonuses primes have an environmental and social purpose. The premium is increased for households with lower incomes is low and for owner lessor.
- The premium is also higher for condominiums, schools, sports centers social and adapted work companies.


 <b>Primes RENOLUTION</b>		Attention, les informations présentées dans ce tableau le sont à titre indicatif et restent sujettes à modification.						
		BONUS	TYPE DE BÂTIMENT	DESCRIPTION DES TRAVAUX OU ÉTUDES CONCERNÉES	UNITÉ	MONTANT DE LA PRIME par catégories de revenus		
						I	II	III
A : Services et études								
A1	Audit énergétique	Tous	La réalisation d'un audit énergétique, selon le cahier des charges minimum du guide, de l'entiereté d'une maison unifamiliale, d'un immeuble à appartements ou d'un bâtiment non résidentiel.	€ / bâtiment	400 € par maison unifamiliale ou 3.000 € par bâtiment (immeuble à appartement ou non résidentiel)			
A2	Étude acoustique	Résidentiel	La réalisation d'une étude acoustique par un bureau d'étude et concernant des travaux liés aux Primes Isolation acoustique des murs (P6) et isolation acoustique de plancher (H2).	% montant octroyé		2		
A3	Étude matériaux de construction (TOTEM)	Résidentiel	La réalisation d'une étude de conception, selon le cahier des charges minimum du guide, pour un bâtiment (ou unité de logement) du secteur résidentiel.	€ / logement	200 € par logement individuel			
A4	Suivi architecte et ingénieur	Résidentiel	Le suivi par un(e) architecte (mission complète), ou un(e) ingénieur(e) en stabilité, ou un(e) expert(e) chargé(e) d'une étude façade, répondant aux critères établis dans le guide.	architecte : ingénieur stab. étude façade :	8 2 2			
B : Installation de chantier								
B1	Protection et échafaudage	Résidentiel	La pose d'un échafaudage, le placement de bâche ou de tout autre élément de protection nécessaire à la réalisation des travaux correspondant aux Primes RENOLUTION de la catégorie Toiture (E) et Façades (F), à l'exception de la prime Isolation acoustique des murs.	€ / m <sup>2</sup>	20	30	40	

Tableau synthétique				Résidentiel Unifamilial			Résidentiel Collectif			Tertiaire et Industriel	
				Cat. A	Cat. B	Cat. C	Cat. A	Cat. B	Cat. C	Cat. A	Cat. C
<b>A : Primes aux études &amp; audits</b>											
A1	Audit et Étude énergétique	R	max 50 % de la facture ou max 70 % de la facture pour Cat. C	€	400	500	3000	3750	3000	3750	/
A2	Étude de conception TOTEM	R	max 50 % de la facture	uniquement pour les ménages	€	200	200				/
<b>B : Isolation et ventilation</b>											
B1	Isolation du toit	R	max 70 % de la facture pour Cat. C	R ≥ 4 m <sup>2</sup> K/W	€/m <sup>2</sup>	20	30	50	20	30	50
				Bonus - matériau isolant naturel + 15 €/m <sup>2</sup>							
				par l'intérieur R ≥ 2 m <sup>2</sup> K/W	€/m <sup>2</sup>	20	25	38	20	25	38
				par l'extérieur R ≥ 3,5 m <sup>2</sup> K/W	€/m <sup>2</sup>	55	65	94	55	65	94
				en coulisse R ≥ 1 m <sup>2</sup> K/W	€/m <sup>2</sup>	8	10	15	8	10	15
				Bonus - matériau isolant naturel + 15 €/m <sup>2</sup>							
B2	Isolation des murs	R	max 50 % de la facture ou max 70 % de la facture pour Cat. C	dalle de sol R ≥ 2 m <sup>2</sup> K/W	€/m <sup>2</sup>	20	25	38	20	25	38
				plafond de cave R ≥ 3,5 m <sup>2</sup> K/W	€/m <sup>2</sup>	20	25	38	20	25	38
				Bonus - matériau isolant naturel + 15 €/m <sup>2</sup>							
B3	Isolation du sol	R	max 70 % de la facture pour Cat. C	dans nouveaux châssis avec U ≤ 1.1	€/m <sup>2</sup>	10	15	25	10	15	25
				dans châssis existants avec U ≤ 1.2	€/m <sup>2</sup>	10	15	25	10	15	25
B4	Vitrage superisolant	R	max 70 % de la facture pour Cat. C	système D	€	2500	3000	3500	2500	3000	3500
				système C centralisé	€	1250	1500	1750	1250	1500	1750
B5	Ventilation mécanique performante	R	max 50 % de la facture		€	2500	3000	3500	2500	3000	3500
<b>C : Chaleur</b>											
<b>C1 : Chaudière, générateur à air chaud ou calorifère gaz performants</b>											
				jusqu'à 40 kW	€	700	800	1200	700	800	1200
				+ à partir de 40 kW	€/KW	5	5	5	5	5	5
				+ tubage (max 10 mètres)	€/m	50	60	70	50	60	70
				+ sortie mazout/charbon : remplacement poêle charbon/mazout	€	600	700	1000	600	700	1000
				+ sortie mazout/charbon : remplacement chaudière mazout	€	300	350	500	300	350	500
<b>C3 : Régulation thermique</b>											
				thermostat d'ambiance ou optimiseur	€	25	30	100	25	30	100
				vanne thermostatique	€	10	20	30	10	20	30
					€	4250	4500	4750	4250	4500	4750
				+ sortie mazout/charbon : remplacement poêle charbon/mazout	€	600	700	1000	600	700	1000
				+ sortie mazout/charbon : remplacement chaudière mazout	€	300	350	500	300	350	500
<b>C4 : Pompe à chaleur - Chauffage</b>											
					€	1400	1500	1600	1400	1500	1600
				+ sortie mazout/charbon : remplacement poêle charbon/mazout	€	600	700	1000	600	700	1000
				+ sortie mazout/charbon : remplacement chaudière mazout	€	300	350	500	300	350	500
<b>C5 : Pompe à chaleur - Eau Chaude Sanitaire</b>											
					€	1400	1500	1600	1400	1500	1600
				+ sortie mazout/charbon : remplacement poêle charbon/mazout	€	600	700	1000	600	700	1000
				+ sortie mazout/charbon : remplacement chaudière mazout	€	300	350	500	300	350	500



## Workshop part

Q&A on the presented instruments

Do you have additional types of instruments? (filling up the table together)

Which instruments can be used for newly built areas and which for transformation of existing ones? What are differences or similarities?

# Criteria for PED development and evaluation

Energy Cities Forum 2022

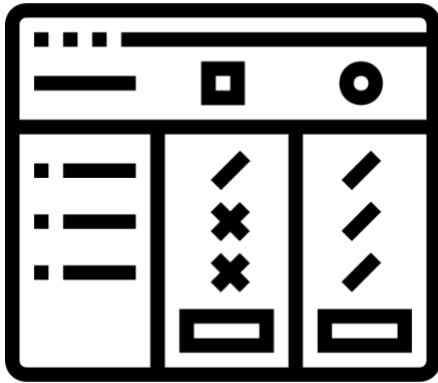
Wannes Vanheusden  
Andries De Brouwer

21/04/2022

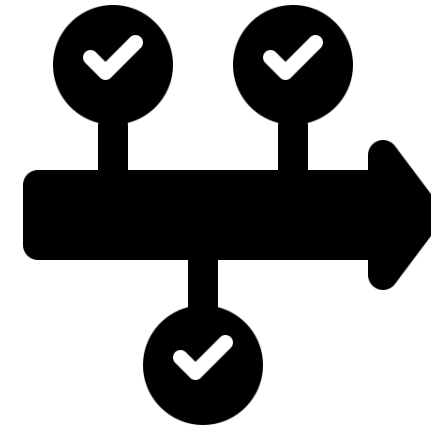
Brussels



# Importance of criteria and monitoring



Monitoring allows for comparability  
between projects



Monitoring allows for a process-oriented  
approach that tracks the progress and evolution  
of districts to become PEDs

## What progress “criteria” to measure?

# Easy question at first sight...

$$\begin{aligned} & \textit{Positive Energy District (PED)} \\ & = \\ & \textit{Local production} > \textit{local consumption} \end{aligned}$$

## Energy-technical

Just monitor production and consumption and you're done... but questions quickly arise:

1. What is the perimeter of the district? – *Is a hospital for the entire city (fully) included?*
2. What type of energy is included? – *Are plug loads, transportation, etc. included?*
3. Do we have data on all energy consumption? – *What about heat pumps, pellet burners, etc?*

## Socio-organisational

A PED is more than just a technical concept, it requires support by government and acceptance by citizens

1. What social/organisational/economic indicators are important?
2. How do you measure this?

# Criteria for PED development and evaluation

## Working table questions

1. Which (socio-organisational) indicators are important to measure PED development?
  - i.e. stakeholder engagement, quality of life, affordability, etc.
2. How do you measure these indicators?
  - Likert scales, jury, etc.
3. How to collect the information/data?
  - Surveys, expert interviews, data from statistical agencies, etc.



## Time for a discussion (until 16.30)

- **Governance models for PED | Newspaper room**
- **Urban planning instruments to foster PED | Auditorium**
- **Criteria for PED development and evaluation | Newspaper room (corridor)**

16.45: Inspiring Speech: “Hot wars: geopolitics of climate change”, in the Auditorium