SET Plan action 3.2

PED definition development V7.0
Discussion note & input processed

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PED framework collaboration 2021

PED Framework Development SET Plan Action 3.2 – JPI UE – EERA JPSC

Working proposal Dirk Ahlers, Shima Goudarzi, Simon Schneider, Han Vandevyvere, Annemie Wyckmans - 17.09.2021

Aspectual layers

- Governance
- Regulation
- Aesthetics
- Economy
- Social aspects
- Culture
- Competences
- Infrastructures / technologies
- Natural resources
- Spatial planning

Quantitative criteria

Core quantitative

Positive yearly energy balance
Net MWh/year
> System boundaries
> **Context factors**

Zero GHG emissions
Ton CO_{2eq}/year
> Conversion factors from energy

Optional quantitative

LCA **Optional**
Circularity **Optional**

Energy, mobility, ICT infrastructures: **no direct requirements** but interfering in context factors accounting

Economic **Optional** (e.g. # jobs created, societal LCC)

Qualitative criteria

Core qualitative

- good life for all
- social
- economic
- regulation
- culture
- aesthetics
- capacity

Expert judgement and/or stakeholder judgement on qualitative aspects

- set of essential criteria e.g. affordability, inclusivity, spatial quality,… including integrity check (no credit bargaining/trading)
- quantitative proxies can be used
- quantitative assessments of sub-aspects may be opportune, e.g. distance to services

Context factors

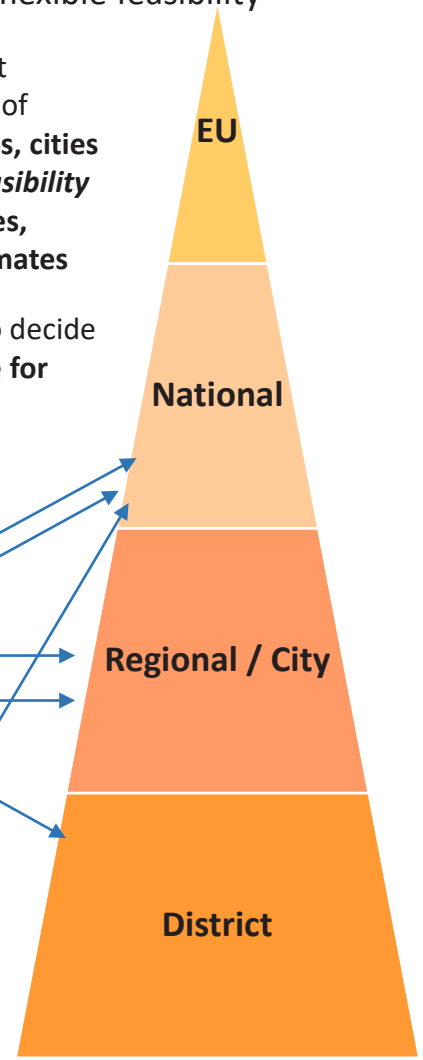
on different levels for flexible feasibility

Necessary due to different adjustment requirements of PEDs in **different countries, cities** and districts to ensure ***feasibility*** in different **urban densities, heritage contexts and climates**

It is however important to decide **which level is responsible for which context factors**

Context factors & associated functions:

- Urban density
- Heritage
- Mobility
- Climate / Embedding in regional/national energy system and context



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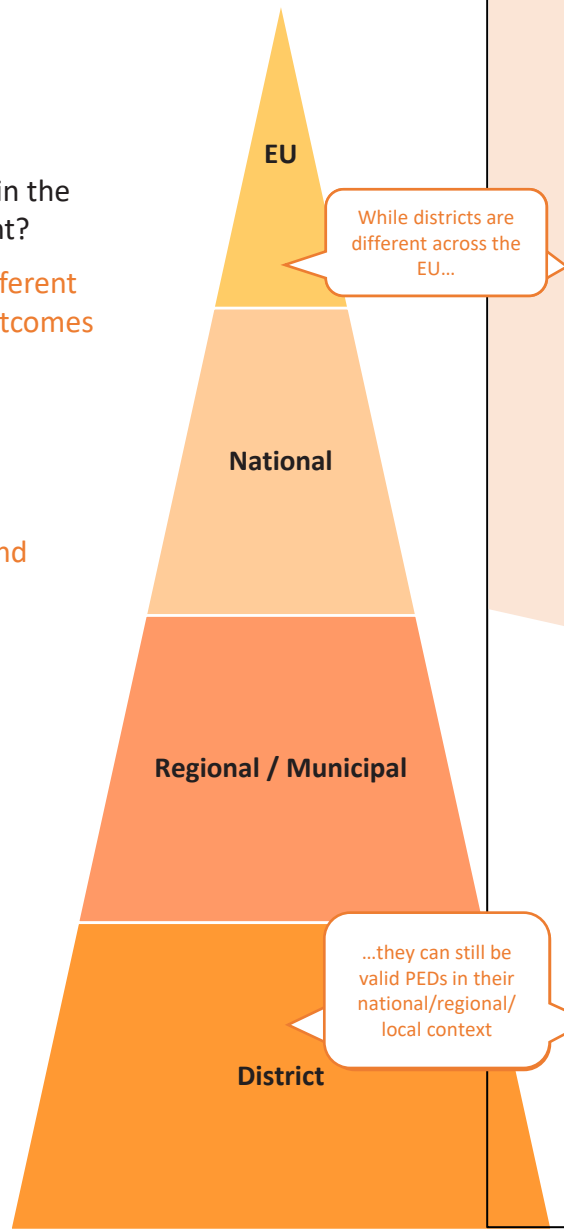
Adding “context factors” to the assessment of core quantitative criteria

How to account for these requirements in the definition of the quantitative assessment?

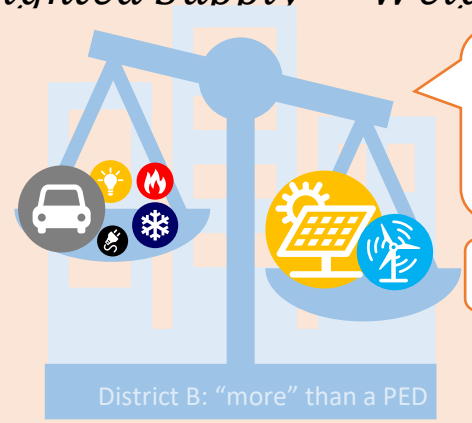
- Feasibility Comparability despite different local contexts and quantification outcomes
- Use of quantification as a steering mechanism towards EU/national /regional/municipal climate goals
- Urban feasibility: What is the role and purpose of a PED in a city?
- Quantitative definition assessment
- Enable political steering effect



Proposition: Balance definition with context factors:

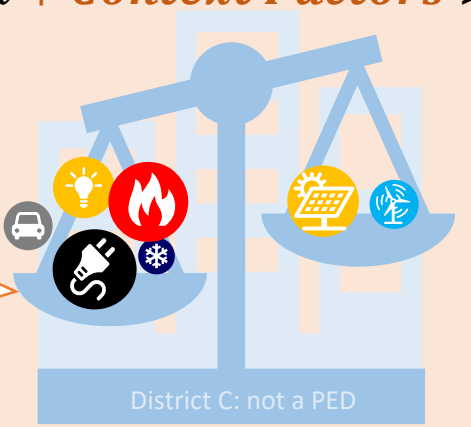
$$Weighted\ Supply - Weighted\ Demand + \boldsymbol{Context\ Factors} > 0$$

While districts are different across the EU…



PED feasibility depends on local contexts like climate, density and heritage

Can be “unfair”



Adding “context factors”

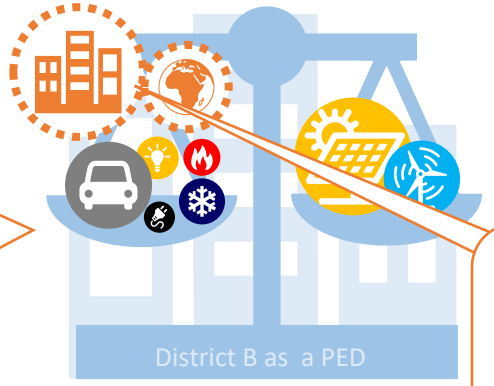
defined politically on

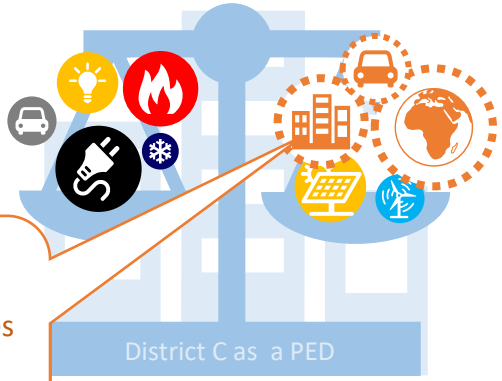
national / regional / municipal level

to the energy/emission balance

- “Urban Density”
- “Mobility”
- “Climate”

…they can still be valid PEDs in their national/regional/ local context





Context factors are **designed** to offset context (dis)advantages that should not influence PED feasibility (political decision)

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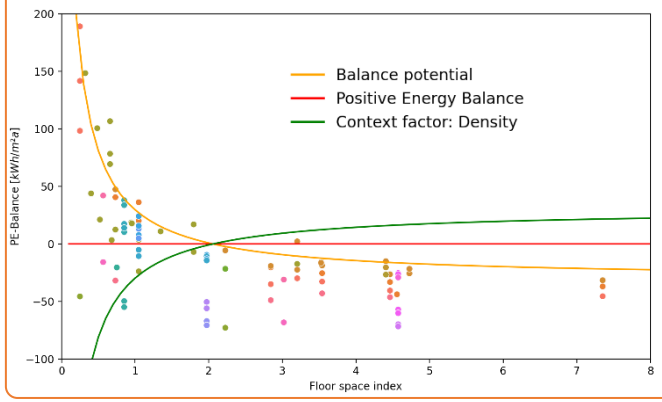
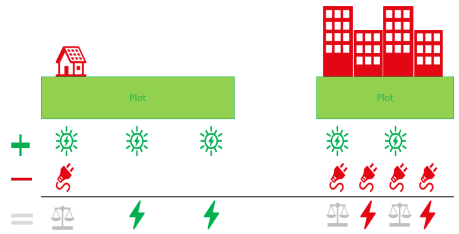
Example “Context factors”

Urban density

Reversely proportional function: the higher the urban density, the more compensation credits for onsite RES





Mobility

May be useful when wanting to include mobility in the balance without increasing ambition and difficulty

Can be calibrated with sectoral targets for mobility.

Which and how much mobility to include in the district’s energy balance? Foresee a local charging load for EVs (e-bikes, e-scooters, e-cars and public e-transport share) (1) per inhabitant and (2) per user? (#MWh/year inhabitant and #MWH/year user – ‘every day mobility’)

(Conversion factors)

Typically already in use in most definitions, using different weighting systems of energy flows

Heritage

Reversely proportional function: the more heritage and difficulty of renovation, the more compensation credits for onsite RES.

Can be used to define effort-sharing between green field and brown field developments.

Climate / Connection to national climate goals

Balancing energy/carbon trade-off on PED (district) > PEC (city) > PER (region) level.

Adjustment for ‘difficult’ climates. The more ‘difficult’ the more compensation points. E.g. northern cold and dark with high heating demand - - - (few electricity generation potential in these periods) versus southern warm and light with cooling demand + + (PV available while solar load is on its highest). National or regional context factors account of these challenges and propose a fair effort sharing scheme for a given region or country.

Can be used to define a target balance for districts in a future carbon-free energy system

(* at present, assuming no need for context factors in qualitative assessments – to be further discussed)