LIFE CIRCULENERGIES

WP2 – Innovative packages development and financing solutions

Mapping of business parks

Version: 1

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LIFE CirculEnergies project

LIFE CirculEnergies (LCE) brings together **4 multi-expertise partners** in the **low-carbon transition of territories** (GreenFlex, Tecsol, Valoen, and LLC & Associates), to engage **economic activity zones** (EAZ) in a **low-carbon** and **resilient ecological transition**.

As one of the **main economic activity hubs in territories**, EAZ need to reinvent their model, inherited from urban planning forms that no longer correspond to the challenges of tomorrow.

LCE aims to make those territories **attractive**, and **resilient** by developing "**turnkey**" **solution** packages that facilitate their **energy transition**. The solutions include support in all stages of a project (**study**, **design**, **financing**, **implementation**, and **monitoring**) and address key energy challenges of future activity zones: **energy sobriety, energy efficiency, renewable energy production,** and the development of **low-carbon energy** services such as **electric mobility**.

LCE presents an **innovative** approach by addressing the issues of EAZ comprehensively to offer relevant and environmentally **virtuous local energy loops**, while ensuring a **relevant** and **competitive** economic model. Beneficial new models of **local governance**, such as **energy communities**, are also integrated.

LCE primarily targets EAZ's **small** and **medium-sized** enterprises to support them in their **ecological transition**, although all actors are welcome to join the project.

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This project has received funding from the European Union's Life program under grant agreement No 101077067

The partners

GreenFlex

GreenFlex is a company that helps its clients thinking and deploying their ecological & energetic transition, through support & consulting services, data intelligence & financing solutions. Since its creation in 2009, GreenFlex has been to accelerate the energy and strategic transition of companies. GreenFlex helps them to be more competitive by reducing their costs or by growing their turnover by adding value. GreenFlex has developed a unique model which connects an eco-friendly approach with the economic reality of companies by bringing together three very different activities: Consulting; Project development and data intelligence; Financing.

Tecsol

TECSOL is an Engineering and design office (OPQIBI 2011 certification) with 40 years' experience in solar thermal and photovoltaic systems and is also a certified training organisation. TECSOL carries out feasibility studies and project management for local authorities and businesses on roof-integrated projects for industrial or commercial buildings, as well as ground-mounted projects and agrivoltaic greenhouses. The company's head office is in Perpignan, with branches in France in: Toulouse, Lyon, Bordeaux, Angers, Strasbourg, Perpignan, Orange and Ile-de-France.

Valoen

Valoen is a consulting firm located in Rennes (Brittany region). Valoen has been formed by two partners with 10+ years of joint work experience. The fields of expertise are the following: (1) land planning and use in business parks, (2) solar photovoltaics massification, (3) collective self-consumption and energy communities. Valoen has a sound experience in both business parks strategies and transactive energy models, fitting the objectives and issues addressed in LCE project.

LLC & Associates

LLC is a several times rewarded full-service law firm dedicated to providing legal services to public and private companies, local governments, and civil society stakeholders. LLC' scope of action covers the whole French territory (continental and overseas), both from the Paris office and through its local partners. The range of activities provided by the Energy and Business department based in Paris encompasses the whole legal playing field, such as contractual, corporate, tax, financing, regulation and public law and procurement.

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I. Introduction

A. Objectives of LCE

The overall objective of the LIFE CirculEnergies project is to catalyse the transition towards net-zero carbon and energy business parks by developing and implementing a comprehensive approach that will put SMEs on a new and sustainable path by offering turnkey solutions that contribute to energy efficiency, renewable energy production and consumption, and by promoting energy-related cooperation. The innovative LCE methodology is designed to identify and give life to this ambition, and the Project Development Assistance (PDA) will contribute significantly to the launch of this initiative.

LCE will make it possible to prioritise the assets in these business parks according to either their energy efficiency or their renewable energy production potential, and to implement successive aggregated investment programmes (the first exceeding the expected leverage of 1:17 between EU support and targeted investments) and energy monitoring services. This will reduce transaction costs and overcome the traditional barriers faced by SMEs in their energy transition, while providing a sustainable and robust roadmap for the net zero carbon and energy ambition.

LCE will, as far as possible, promote the development of Energy Performance Contracts (EPCs) for the resulting energy efficiency measures proposed to SMEs and other entities. LCE will also consider synergies and new models of collaboration, such as energy communities in business parks with public-private collaboration. It will bridge the gap between the local authorities, which are the initiators of the implementation of the business parks, and the SMEs, which are the end users of the public prescriptions and recommendations.

The LCE will focus primarily on medium and semi-industrial business parks, i.e. business parks with an area of around 5-10 ha and a minimum of 20 and a maximum of around 100 companies. This range of business parks is sufficiently important to identify the technical and economic potential for the production and share of renewable energy, as well as an economic balance for other energy services, and excludes larger industrial parks that host larger companies. Such a target for our project offers a very high potential of replicability, in France and in EU countries. This project is being developed at a TRL of 7, taking into account the references of the project partners, and is expected to reach a TRL of 8 at the end of the project.

While LIFE CirculEnergies will focus on the project development assistance (PDA) phase, the partners of the LCE consortium are ready to continue the implementation and monitoring of the projects that will emerge thanks to the investment program, by proposing a project management support on the whole value chain to the different stakeholders that will engage in investments following the LCE project.

B. Presentation of this deliverable

The objective of this deliverable is to identify existing initiatives, projects and organisations and to identify the social determinants related to energy services in order to develop a unified mapping of business parks in pre-identified cities and municipalities.

The LCE consortium has developed a methodology to define the most relevant business parks in a given area. This method intersects the perception that the consortium will have, considering the data collected and the analysis performed, and the perception of the local authorities. This methodology is described in this deliverable.

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II.Materials and methods

The methodology presented in this deliverable is based on data from 14 Public Intercommunal Cooperation Institutions (PICE): 8 are PICE that signed a letter of interest or support during the LCE project elaboration process, 6 are PICE selected after a web conference organised in January 2023. These PICE are shown in Figure 1.

Together they represent a total of 382 towns, a surface area of 6,460 km2 (54% of the Île-de-France region) and a population of 2.1 million (the population of Paris).

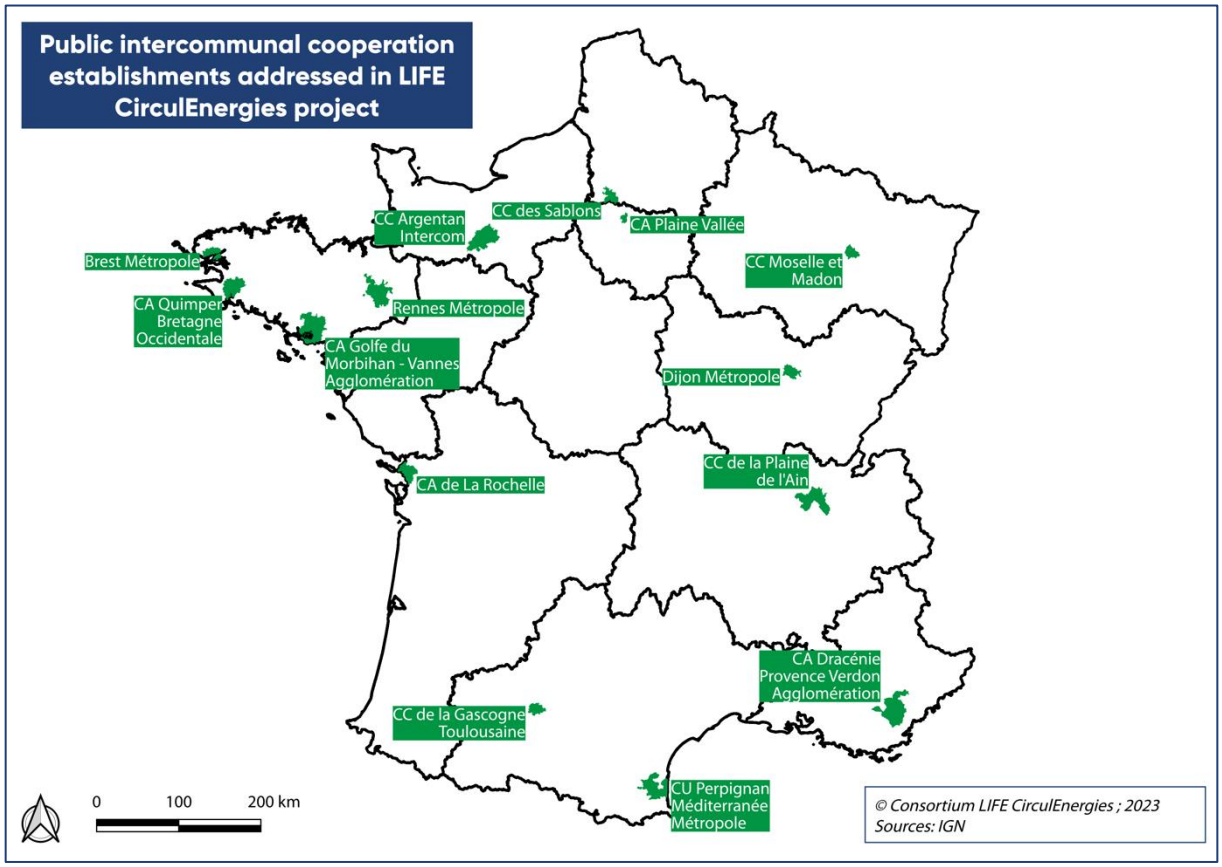

Figure 1: PICE addressed in LIFE CirculEnergies project (after first contact).

The methodology used to select the most relevant business parks for these PICE was carried out in 5 steps, described in Figure 2. This process involves the PICE to ensure the creation of synergies between the LCE project and local initiatives and projects.

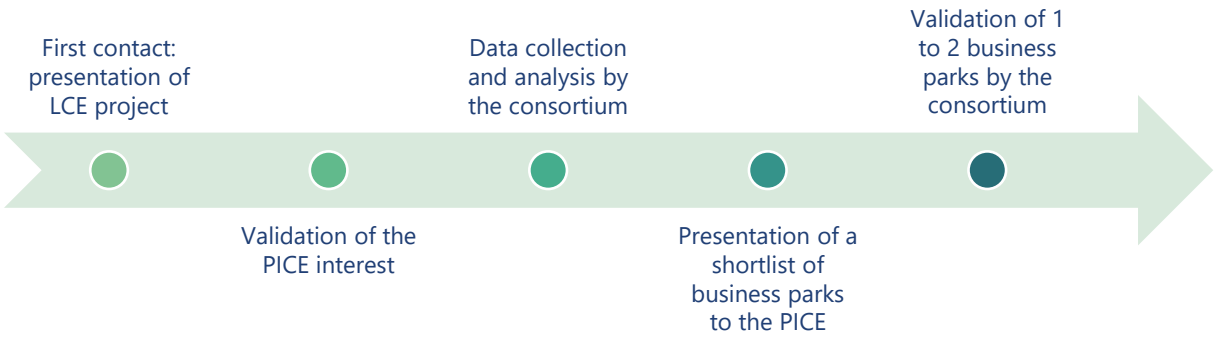

Figure 2: Method for the selection of the most pertinent business parks on a PICE.

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A. Presentation of the LCE project

The first step was to contact each PICE that expressed interest in the LCE project to identify the relevant departments that could be involved in the process.

Economic development, spatial planning and energy and environment departments were the most commonly targeted.

A meeting (face-to-face or online) was then organised to present the LCE project, identify existing initiatives, programmes and organisations, and describe the process of selecting business parks.

B. Validation of the PICE interest

After the first meeting, the consortium asks for a decision of the PICE to go further in the process, before committing time to produce an identification of business parks. This step may seem unnecessary in a project led by and aimed at private companies. However, the consortium strongly believes that PICE has the best knowledge of their companies. They can also play an important role in the following steps: trusted third party, technical or financial support, communication, coherence with land planning, etc.

This step was finally relevant: 7 PICE were rejected for various reasons (lack of interest, conflict with other ongoing initiatives, or interest in only part of the solutions proposed in the LCE project).

This resulted in the 14 PICE shown in Figure 1.

C. Data collection and analysis

Once the interest of the PICE has been validated, the consortium starts the data collection, which is structured in three phases.

Phase 1: Identification of the business parks in a PICE

Database of business parks (OpenStreetMap)

There is currently no public database of industrial parks at the scale of France. LIFE CirculEnergies decided to use OpenStreetMap©4, an open geographic database updated and maintained by a community of volunteers. The business parks are territorial objects, identified by name (not systematically) and displayed on the map in pink.

The car parks and charging stations are also tagged on OpenStreetMap and are used for this study.

See below an example of the "ZI Les Perruches" industrial estate:

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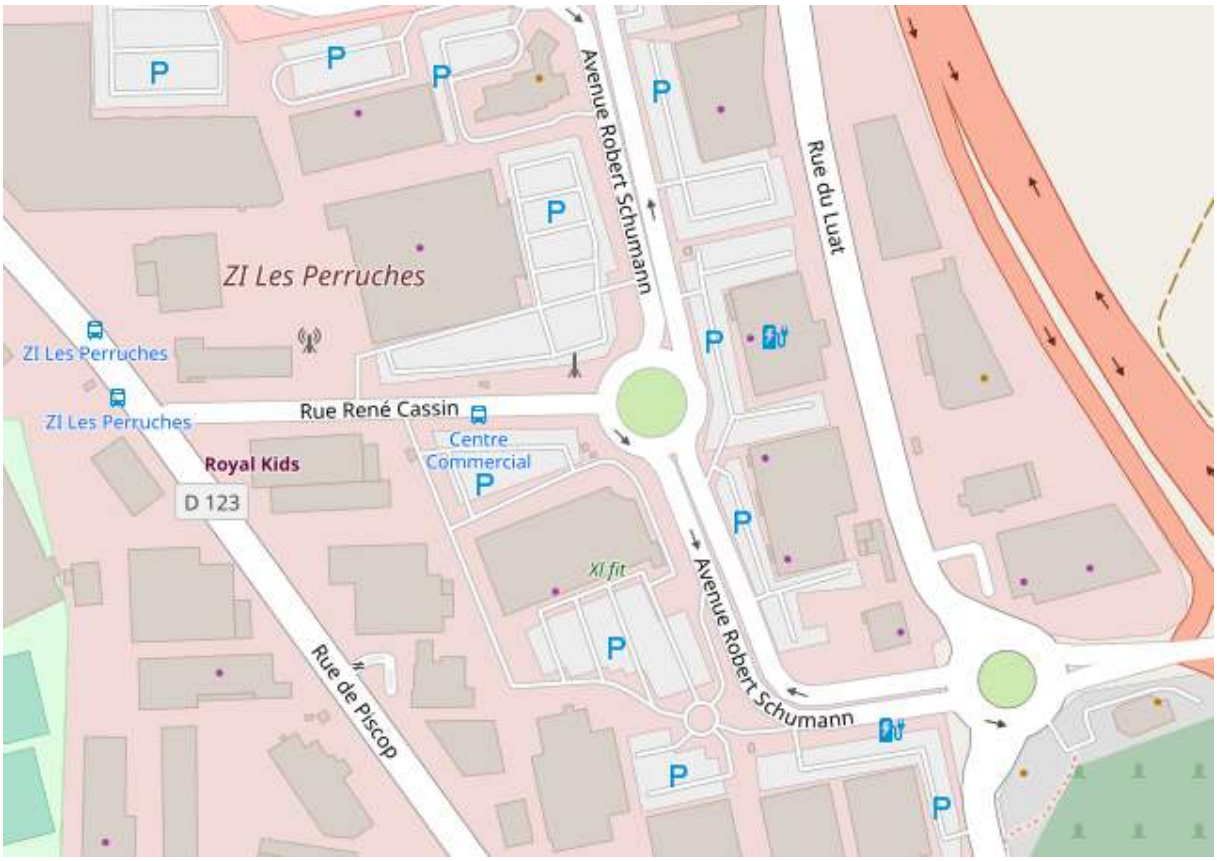

Figure 6 - Example of a business park on OpenStreetMap

Phase 2: Mapping on a geographical information system (GIS) tool

The consortium then collects several inputs for each PICE, with the use of QGIS[1]:

- Aerial photographs and standard map, from an IGN2 WMS interface.
- Administrative boundaries, from an IGN WFS interface.
- List of identified business parks in the PICE (see Phase 1).
- Potential risks (cavities, flood zones, ground movements, main pipelines, etc.), from the Géorisques3 WFS interface.
- OpenStreetMap data (parking, cycle paths, aerodromes, and heliports), obtained through different interfaces.
- Other IGN data (aerodromes, heliports, hydrographic areas, and buildings), from the IGN BD TOPO® product, accessible through a WFS interface.
- Existing electric vehicle charging stations, from the national consolidated datasets.
- Public easements, from an IGN WFS interface.

[1] QGIS is a free and open-source Geographic Information System. See more at: https://www.qgis.org/en/site/

[2] Institut national de l'information géographique et forestière, a French public administrative establishment dedicated to data production, diffusion and representation.

[3] Géorisques is an online platform, produced and operated conjointly by the Ministry of ecological transition and the BRGM (a French public administrative and commercial establishment for the Earth sciences applications).

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As the installation of PV near an aerodrome or heliport can cause visual disturbance to an aircraft pilot, photovoltaic projects can be submitted for approval by the French Directorate General for Civil Aviation (DGAC). This authorisation can be required up to a distance of 3 km, as shown in Figure 3. A circle of 3 km radius is therefore calculated around each airfield and heliport to alert the consortium to this potential constraint.

If a business park is located (wholly or partially) within this circle, a specific glare study may be required, which will add cost to the feasibility studies. This may therefore limit the interest in a business park compared to others that are not close to an aerodrome or heliport. This proximity needs to be studied in more detail for heliports, where the distance (and area) depends on the agreed approach and departure trajectories, which are not easily accessible through a GIS interface.

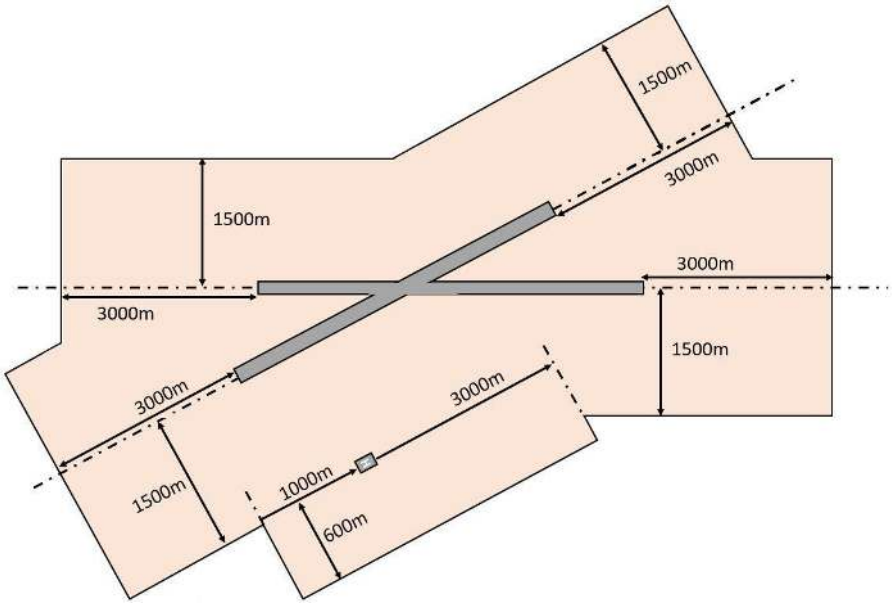

Figure 3 : Zones where an approval of the DGAC can be required; the "H" is for a heliport (source: DGAC technical information note; oct. 2022).

Finally, the most appropriate perimeter for the business parks is selected, depending on the quality of the source data from the various interfaces or databases:

- BD TOPO®.
- Géorisques.
- OpenStreetMap.
- Local or regional open data.

All the layers are collected and a visual inspection is made in QGIS to select the most relevant ones. It is important to mention that the PICE (or other competent authorities) have to make an inventory of their industrial estates: parcel definition, occupants and vacancy rate. This must be done before the end of August 2023 and updated at least every six years. Therefore, the methodology could be improved in the near future.

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Phase 3: Analysis for the selection of business parks

A multi-criteria analysis is carried out on the basis of the previously collected data, leading to a pre-selection of 3 to 5 business parks in the PICE.

The four main criteria used are the following:

- Number of SMEs in the industrial park: as the LCE project focuses on SMEs, this criterion is essential and therefore has the highest priority.
- Age of the industrial estate: The age, determined by the year in which the company was first installed, can lead to energy efficiency potentials. A minimum age is defined in each PICE, taking into account the data collected for the PICE (see Phase 1).
- Within a 3 km radius (airfield or heliport): see phase 2.
- Number of public easements: not all easements have the same impact on potential projects (mainly PV and EV charging stations); this is taken into account in the analysis.

This analysis is performed with all data organised into groups of layers in QGIS. The pre-selected industrial estates are identified with a categorisation.

D. Presentation of a shortlist of business parks to the PICE

Following the data collection and analysis, a shortlist of business parks has been identified. For each, a consistent layout is defined in the QGIS environment to provide a consistent mapping. This mapping is then used to produce a map for each preselected business park.

A meeting is organised with PICE. A brief presentation of the methodology is given before focusing on the maps produced. A discussion with the PICE is essential for each pre-selected business park to identify the existing or future initiatives and projects that could create synergies or conflicts with the LCE project.

This will lead to the selection of 1 or 2 business parks for the PICE, where further studies will be carried out within the consortium after a more detailed analysis of the potential per business park.

E. Validation by the consortium

After the meeting with the PICE, the consortium will set up a validation process to ensure that all consortium members agree on the selection of 1 or 2 business parks.

The member involved in the selection process will present the process followed and the discussion with PICE before presenting the selected sites. All other members can then ask further questions about the process.

The PICE is then informed of the consortium's decision, which will lead to more detailed data collection for the selected business parks.

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III.The Results

11 partners signed letters of interest or support for the preparation of the LCE project; 3 were not selected for the methodology presented in this deliverable.

After the web conference organised in January 2023, the consortium received several requests from different cities, PICE and even regions. We selected 13 of them, where the method presented in this deliverable was applied. After the second step of interest validation, 7 of these 13 candidates were discarded, resulting in the **14** identified PICE.

We identified **462** business parks in these PICE, with an average of **33** business parks per PICE. Data collection and analysis led to **48** shortlisted business parks (1 to 6 per PICE). Some of these results are summarised in Figure 4. The proportion of shortlisted industrial sites is **10%**.

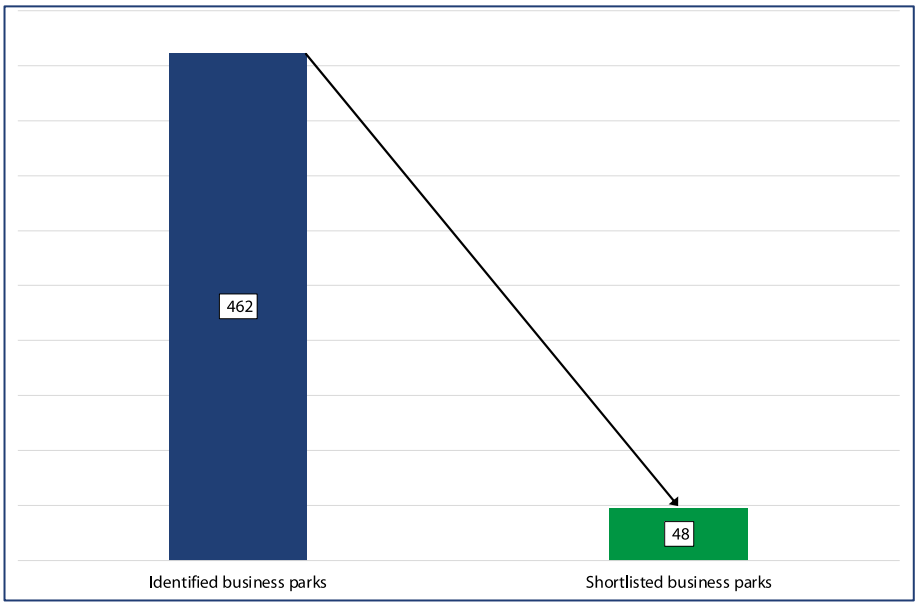

Figure 4: Impact of the method applied, leading to 10% of shortlisted business parks.

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IV. Discussion and conclusion

The method used in the selected PICE has led the consortium to identify two main criteria: the number of SMEs per business park and the age of the business park. The other criteria are also important, but to a lesser extent; they are used more to select the 1 or 2 business parks within the shortlist presented.

Through this method, the consortium has also found that knowledge of the business parks (and, to a greater extent, of the area) is important. For example, one of the shortlisted business parks was not selected because a complete restructuring is planned within 2 years.

Moreover, in the context of rising energy costs and raw materials, a strong synergy with the LCE project and local public initiatives was identified. In all the territories, the SMEs have asked their public authorities to help them face this crisis with short and medium term solutions. The turnkey solution proposed by the LCE project can be part of the solutions offered by the PICE.

Therefore, the participation of local authorities in the process of selecting business parks is crucial. However, their participation must not distort the process and lead to the selection of business parks where the relevance of the LCE turnkey solutions is questioned.

The LCE project consortium has demonstrated its ability to design an industrialised method to target the most relevant business parks where a turnkey solution combining energy efficiency, PV production and sharing, and EV charging stations can be of great interest to SMEs. The further steps of the project will be used to define whether this solution can lead to net zero carbon business parks.

The main results of this methodology are organised in a QGIS project available via this link:
Selected_PICE_Deliverable_2.1.gpkg

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