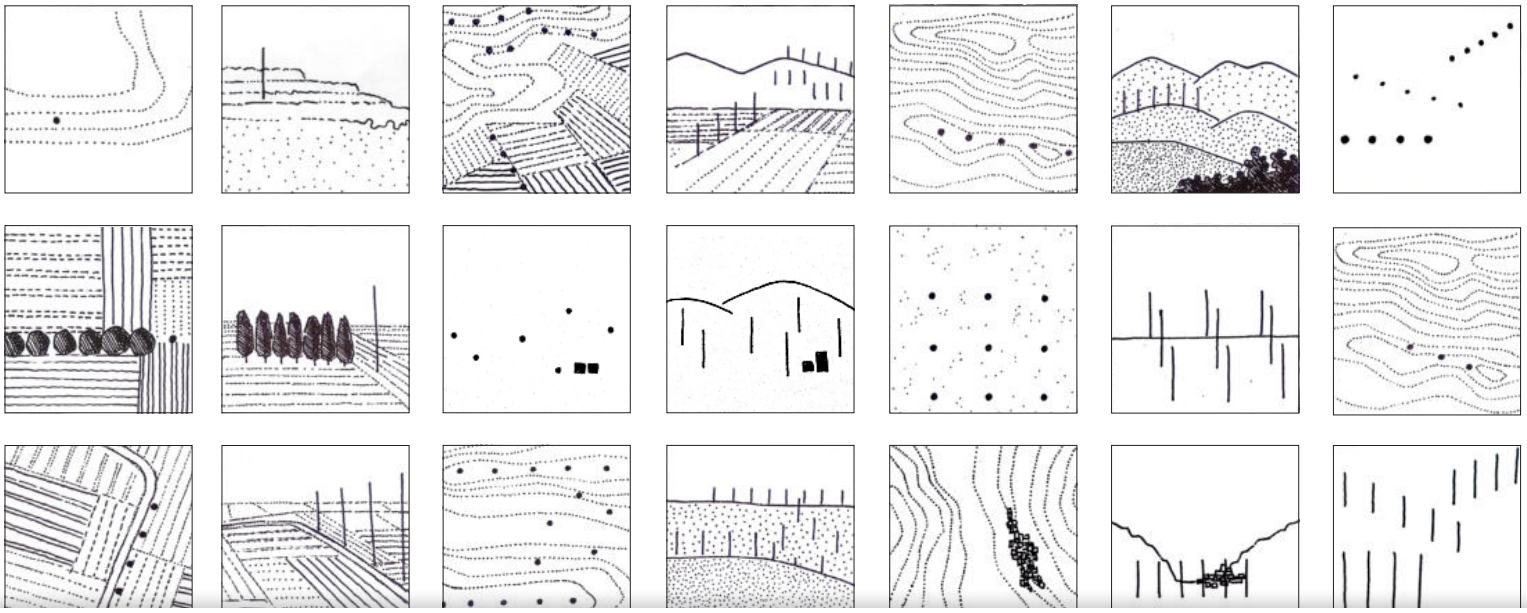


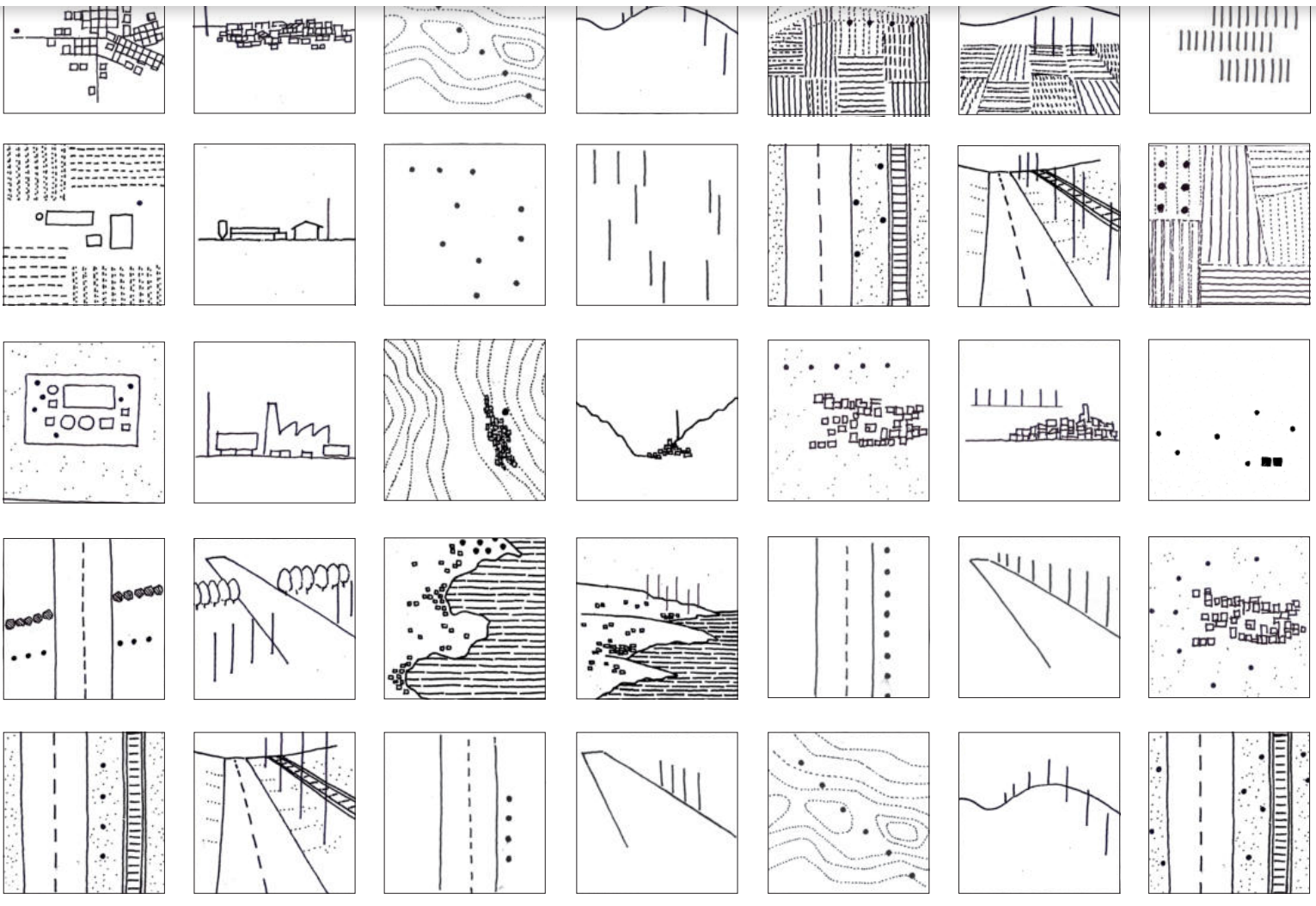
WIND ENERGY AND LANDSCAPE

GUIDELINES FOR AN APPROPRIATE SITING IN CATALONIA

Summary

Generalitat de Catalunya
Departament de Territori i Sostenibilitat

Observatori del Paisatge



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Photographs:
Landscape Observatory of Catalonia

SUMMARY

Below is a summary of the main content of the document "Wind energy and landscape: guidelines for an appropriate siting in Catalonia":

Starting context

1 Catalonia **is fully immersed in an energy transition**. In this transition, renewable energies, especially wind energy, take on such special importance that they shape **new energy landscapes never before seen**.

2 Regardless of their size, wind turbines make up a group of **necessarily visible infrastructure** and their impact on the landscape depends on the relationship between their design and layout and the landscape character. Wind turbines **do not necessarily need to be incompatible with the values** and qualities of the landscape.

3 The Landscape Observatory of Catalonia has created the **"Wind Energy and Landscape: Guidelines for an Appropriate Siting in Catalonia"** document commissioned by the General Directorate for Environmental Policy of the Catalonian Government's Ministry of Territory and Sustainability. **The wind energy harmonisation is key to achieving the aims set by the European Landscape Convention**, which the Catalonian Parliament signed in December 2000, and also to complying with the principles of Law 8/2005 on the landscape. In addition, the relationship between landscape, energy and climate change is one of the pillars of the Landscape Observatory of Catalonia's new roadmap, "Catpaisatge2020: Country, Landscape, Future".

4 The document **aims to serve as a basis for public employees, professionals and developers, as well as local communities and institutions**, when deciding on the locations and optimum conditions for developing new wind projects with landscape quality as the main final objective.

5 The document **begins with the concept of landscape that emanates from the European Landscape Convention**. Therefore, it does not address issues related to the technical design of wind turbines nor strictly natural aspects.

6 The document **focuses solely on terrestrial landscapes** and does not consider the potential implementation of wind energy off-shore.

The development of wind energy in Catalonia and its relationship with the landscape

7 Different administrations of the Government of Catalonia **have successively approved a series of plans to implement wind energy**: the Wind Farm Plan of Catalonia (1991-1995), the Wind Farm Master Plan of Catalonia (1997-2010), the Sectoral Spatial Plan for the Environmental Implementation of Wind Energy in Catalonia (2002) and the Plan to Determine Priority Development Areas (ZDP) (2012).

8 In the first half of 2013, Catalonia had **43 wind farms**, with an installed electric potential of 1,272.32 MW and 812 wind turbines **located in 43 municipalities and 11 counties**. In late 2012, these windfarms were responsible for **9.6% of the installed electric potential in Catalonia** (32% of all renewable energies). During 2012, wind farms produced 2,647 GWh, which amounts to **6% of the electricity produced in Catalonia** (38.1% of renewable energies).

9 **Consideration of the landscape in the process to implement wind energy in Catalonia**, with regard to both layout and design, has occurred in relative detail through the same wind sector planning, spatial plans (through landscape directives coming from the Landscape Catalogues) and urban planning (through landscape impact and integration reports).

10 The **guidelines** proposed by the planning documents aim to give the wind turbines a clear and legible image, prioritise compact installations to reduce the space affected, support the wind turbines along the main lines of the landscape (topography, plots of land, infrastructure, etc.), use layouts of regular wind turbines, attempt to avoid scenic areas and landmarks of symbolic value and ensure that the wind turbines are as far as possible from population centres and inhabited buildings.

The development of wind energy, a type of paradox

11 **Today, the deployment of wind energy in Catalonia is undergoing a kind of paradox** between acceptance of its effects on a global scale and its rejection, often due to its impact on local landscapes.

12 **Wind energy-related infrastructure has a strong presence** that, despite its technological, avant-garde, innovative and sustainable image (due to its value in producing alternative energy and taking advantage of renewable resources) and its decidedly contemporary identity, **may often be contrasted with the territory in which it is installed**.

13 **A good balance between landscape and wind infrastructure helps to modify the negative perception that the population often has of it**.

14 **A certain distancing has occurred between local communities and energy policies due to a lack** of tools and strategies for informing and communicating with the population, as well as civic participation in planning and executing the projects.

15 In European countries such as Germany, Denmark and The Netherlands, **the landscape has become a key element for gaining social acceptance of wind energy**. The participation of local communities and institutions in **seeking out suitable places for wind turbines** (so that the wind turbines participate in a new identity of the place built by the population, without being perceived as diminishing the quality of the landscape), or in **profit-sharing**, demonstrates the best way to guarantee the success of the energy transition. Far from slowing down the implementation of wind energy, as most stakeholders involved might think, **these cases have become exemplary success stories**.

16 The controversy surrounding wind energy would probably be less important if a transition took place from the current centralised energy model located in certain landscapes to another more decentralised and co-participatory model as outlined in the Energy and Climate Change Plan of Catalonia 2012-2020.

Towards a new perspective and new governance of wind landscapes

17 The energy transition in which Catalonia is immersed provides **an opportunity to learn and apply new ways to relate to contemporary landscapes** in order to build a new viewpoint of this type of renewable energy, which should be based on the following principles:

17.1 Understanding the development of wind energy as a strategy to **add value to the land and to situate wind turbines in the everyday landscape**. If designed harmoniously, **they may become a new point of reference in the landscape and an element of its identity**.

17.2 **Avoiding large concentrations of wind turbines in certain areas**, due to their accumulative effects on the landscape, and **move towards a more decentralised model** (as has occurred in countries like Denmark, Germany and The Netherlands) where the electricity distributors to the existing power grid are used.

17.3 **Welcoming the participation of local communities and institutions in planning and managing wind power**, and not only in the towns and cities were the wind turbines are installed (involving decisions on suitable places for wind turbines, profit-sharing, etc.). Moreover, this is a way to **bring local energy production closer to centres of consumption** and to use the landscape to **teach** about the origin and costs of obtaining and managing energy.

17.4 **Taking advantage of the existing wind potential in properties with economic activity** (power generated near the place of consumption), as well as in **certain peri-urban areas** or along **major communication routes** (all areas that already have access to energy and evacuate it easily). Well placed, they may **even transform the perception that the population often has of spaces of low interest** or places where it is difficult to recognise landscape consistency or values.

17.5 Considering the wind energy planning ideas proposed in the **Landscape Catalogues** and the **Landscape Directives**, as well as in other tools of concertation, like **Landscape Charters**.

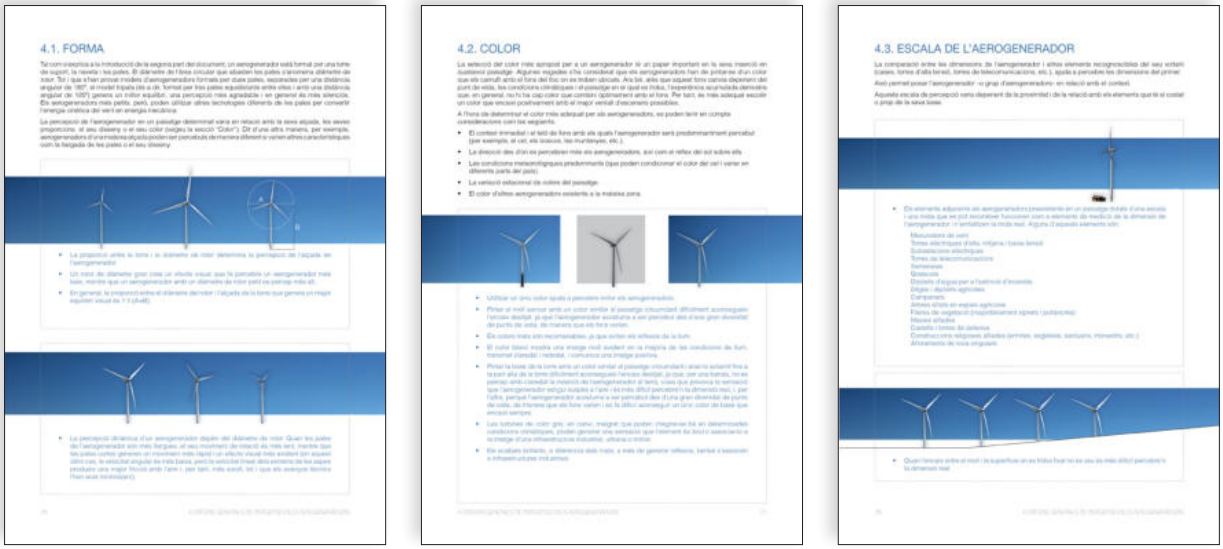
17.6 Establishing **criteria for spatially planning the implementation of wind power** that consider the characteristics, qualities and values of landscape diversity in Catalonia, the landscapes' capacity for installing wind energy and the involvement of local communities and institutions.

17.7 **Using all educational tools and strategies, as well as possible information and communication strategies** to foster greater acceptance among the people of well-integrated wind energy in harmony with the landscape.

Guidelines for siting wind turbines in the Catalonian landscape

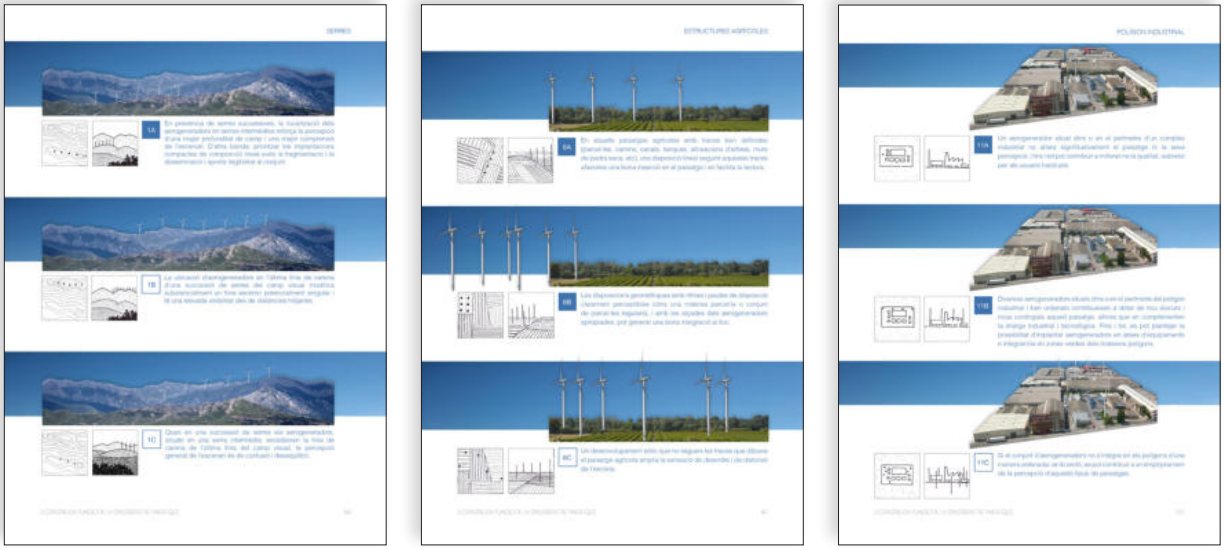
18 Installing wind turbines in a landscape suddenly generates a **change in the original relations of visual balance to create new ones**. If wind turbines are **well designed and located**, the capacity of the landscape to include these installations and social acceptance of them will increase.

19 Placing wind turbines in a landscape properly requires, first and foremost, the **application of general principles and criteria of visual perception** that do not depend on the features of a specific landscape such as **colour**, **scale**, **layout**, **rhythm** or **light signalling**.



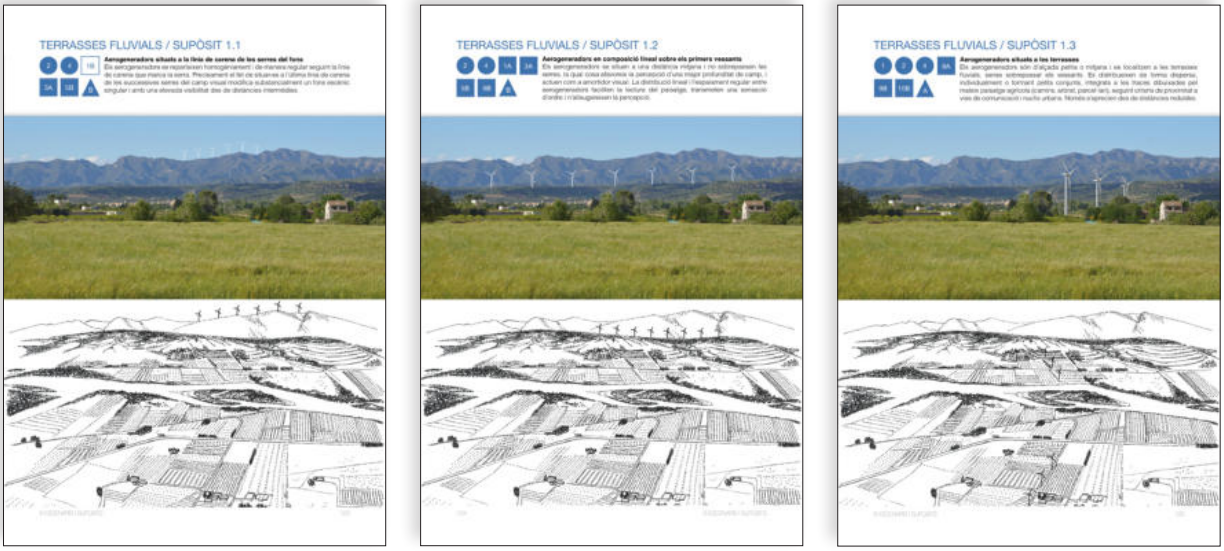
Sample of some criteria from chapter 4.

20 The r**elationship between wind turbines and the landscape varies countrywide**, according to the landscape character of each place and the population's relationship to it. Based on the map of 135 landscapes, which represent 135 different landscape features, **users may take advantage of the knowledge and experience** gained to improve the location of wind turbines in the landscape and, in brief, **create new cultural landscapes** based on the landscape criteria discussed in chapter 5.



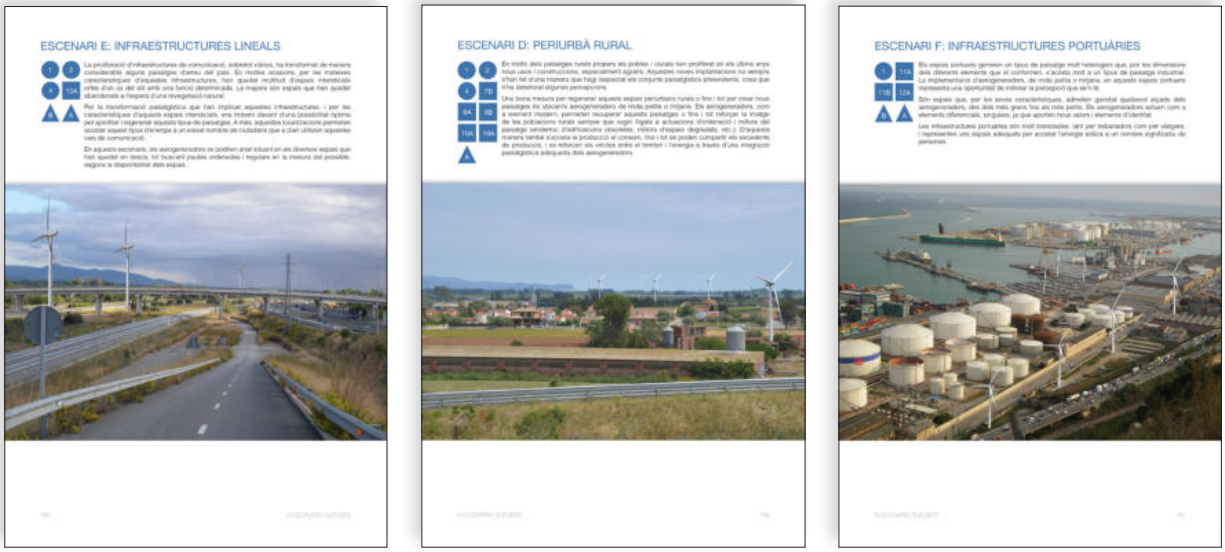
Sample of some criteria from chapter 5.

21 In scenarios representative of the landscape diversity of Catalonia, such as **river terraces, rolling agroforestry mosaics, flat agroforestry mosaics, agricultural plains, coastal mountains, single settlements in agricultural environments, rolling agroforestry mosaics with urban development** and **grain-producing terraces**, it is possible to improve the integration of wind power projects already underway and make them compatible with new models of layout for wind power based on small wind power infrastructure integrated into everyday landscapes that do not require the construction of large supporting infrastructure, according to the criteria discussed in section 6.1.



Sample of one of the eight scenarios representative of landscape diversity in Catalonia.

22 Catalonia has not yet sufficiently appreciated (and should start to do so) the potential of these wind turbines to provide more quality of life and identity to **commercial, logistic and industrial areas** of low interest, **chemical energy parks, peri-urban residential areas or disordered rural suburban spaces and spaces situated between linear infrastructure or port infrastructure**, which are places where it is difficult to recognise landscape consistency or values. Based on the criteria discussed in section 6.2, **wind turbines may bring aesthetic or identity-based values** or even become **new factors of economic attraction**.



Sample of three of the six landscape scenarios linked to everyday spaces on a small scale.

23 Installing wind turbines involves a series of supporting elements that **must be minimised to maintain the essence of the landscape and make it more legible**. This includes access roads, platforms, transformer and service buildings, connection to electricity distribution and fences.