

## Case study: Province Flevoland

### Problem description

According to the agreement between the Dutch provinces and the national government, the Province Flevoland is obliged to install a capacity of 220MW produced by windmills by the year 2010. Currently, more than 400 windmills are installed in the province, they have a total capacity of over 340MW. This is enough to supply 187,000 households with energy, while there are only 140,000 households located in this Province. Thus, the target of 220MW for 2010 is already reached before 2003.

Nevertheless, there are quite some additional private initiatives for the extension of the windmill parks, they consist both large scale windmill parks and smaller parks. For instance, in May 2004 an Environmental Impact Assessment has been started for a combination of five windmill parks in the north-eastern part of the Province (Noordoostpolder). Depending on the number of windmills and the capacity of each windmill, the total capacity of the project is between 324MW and 465MW. This major project is an initiative of private parties who have bundled their forces in 'Koepel windenergie Noordoostpolder' (umbrella organisation wind energy north-east polder). Two out of five windmill parks will be located in the lake IJsselmeer (the former Zuiderzee).

How can this success be explained? The Province of Flevoland is manmade by land reclamation from the lake IJsselmeer. In 1932, by the completion of the Afsluitdijk, the former Zuiderzee (Southern Sea) became an inner lake; lake IJsselmeer. The Province of Flevoland consists of three polders: the north-east polder (1940), the east polder (1957) and the south polder (1968). In 1986 the polders formed together the twelfth province of the Netherlands: Flevoland.

Given the fact that the province consists of three polders, the province is rather flat and –given the location near lake IJsselmeer – windy. Furthermore, most of the province is sparsely populated and use for agricultural purposes. Only a large part of the southern polder is urbanised. It is the overflow area of the city of Amsterdam, which consists of new town Almere. Thus, apart from this urbanised part of the southern polder the province Flevoland is pre-eminently suitable for the location of windmill parks.

In principle, the initiative to develop a windmill park is entirely in the hands of private initiatives. The role of the municipality and province is limited to facilitate the projects by licensing. Regarding most projects, landowners – often farmers – take the initiative to install windmills and they see this as a valuable source of income. They bundle their forces and develop a windmill park. In most cases not only landowners but also other stakeholders can become shareholder. Given this bottom up approach we selected a relatively small project to test the eight steps of our proposed multicriteria approach.

Our case study concerns a small windmill park - 6 windmills - in the municipality of Dronten. Dronten is one of the six municipalities of the Province Flevoland, and is located in the east polder. As stated above, in principle the location of windmills is based on private initiatives. However, this has led to a rather dispersed location of solitaire windmills over the territory of this municipality. All different types of windmills, in various colours, and rather disorderly placed over the surface of the municipality has led to a visual intrusion of the landscape. Therefore, in 1997 the municipality developed a windmill location plan for the municipality (Gemeente Dronten, 1997). In this plan the municipality proposed 20 locations for lines of windmills. The lines

where along natural lines in the landscape such as land division patterns, roads and in particular small canals for water management. Over time, based on proposals made by private parties, other lines were added to this windmill plan. In addition to this plan, no building licenses will be given for solitaire windmills, and the existing solitaire windmills have to be removed when they are depreciated.

In November 2000, 10 farmers took the initiative to develop a line of windmills that was proposed in the windmill plan on a small canal between their land. Five farmers had their farmland on one side of the canal and five on the other side. The line of windmills would be located on one side of the canal.

In this case study we will describe the evaluation process for this project. Given the size of the project no environmental impact assessment was obliged.