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THE NETHERLANDS

Erik Mostert

Introduction

The Netherlands is a small country with a surface area of some 40,000 km² and a population of 17.5 million, located on the shores of the North Sea, in the delta of the Rhine, the Meuse and the Scheldt rivers. A thousand years ago, the area consisted of sparsely populated marshes and bogs in the north and the west, and poor sandy soils in the south and the east (Van de Ven, 2004). Since then, many works of water management have been undertaken, and the country presently is one of the most highly engineered, densely populated and richest countries in the world, taking eighth place on the Human Development Index (UNDP, 2020).

In this chapter, the different roles that water played in the development of the Netherlands will be discussed, using mostly historical literature. While the older literature focused on institutional development, in particular the development of the regional water boards (e.g. De Vries Azn., 1876; Beekman, 1905–1907; Fockema Andreae, 1934; 1952), the more recent literature pays much attention to the ecological, economic, political, and cultural context (e.g. Van Dam, 2004; Jensen, 2018; Van Tielhof, 2021). In this chapter, these two perspectives will be combined since the institutions and their context influenced each other profoundly.

Despite the small size of the Netherlands, regional and local conditions differ a lot (Van Bavel, 2010). Usually, most attention is paid to the low-lying western part of the country, in particular to Holland, the economic and political heartland of the country.¹ In this chapter, a more marginal area that developed later will be discussed as well: the Dommel basin in the south. Both areas will be used to show that water can play very different roles in development and that development is always multi-sectoral and multi-scalar.

From Swamps to Riches

According to an old saying, God created the world, but the Dutch created the Netherlands (Niemeijer, 2016). Yet, while they did shape their own environment, they did not create it out of nothing and sometimes they destroyed it as well.

After the last glacial period, around 10,000 BCE, the level of the North Sea rose and the Netherlands were separated from England. When the sea level rise slowed down, around 3000 BCE,

dunes developed and behind the dunes peat soils formed, consisting of half-decomposed plant remains. In some areas these soils grew well above the surface water level and acidic raised bogs developed, as in the central part of Holland. Near the estuary of rivers, the peat often eroded and salt marshes developed (Van de Ven, 2004).

The peat areas could not support a large population, but from the 9th century CE onwards many were drained to make agriculture possible. Starting from a baseline, for instance, a riverbank, the area was cleared and drainage ditches perpendicular to the baseline were dug. As water was removed from the soil, air could penetrate and the peat started to shrink and decompose, resulting in land subsidence. This caused new drainage problems. The initial response was to drain new areas further inland, but this was possible only as long as undrained land was available (Besteman, 1997; Aten, 2007; Van Tielhof, 2007). In addition, dams, culverts and locks were constructed to prevent the inflow of water, and new drainage canals were dug to provide shorter evacuation routes for the water with a higher gradient. From the early 1400s onwards, artificial drainage was introduced, at first by means of windmills and from the late 18th Century onwards using steam pumps, diesel pumps and electric pumps. Furthermore, dykes were built or strengthened.

To meet fuel demands for domestic heating, brickmaking and brewing, much land was used for peat mining, which resulted in the creation of many lakes. Until salt began to be imported from southern Europe, around 1500, peat was also mined for salt production. Peat that had been flooded by seawater was burned and from the ashes salt was extracted. If mined close to dykes, this could weaken these dykes and result in flooding and loss of land, especially when the costs of dyke maintenance were high and agricultural prices were low. But as soon as land was lost to the waves, silt and clay would start to be deposited, and after several decades new dykes could be constructed and the area was turned into fertile agricultural land (e.g. Van Dam, 2003; Leenders, 2004).

It is not known how the first drainage works were organised, but we do know that in the late 9th century a dynasty of territorial lords settled in the area: the Counts of Holland. The Counts of Holland successfully claimed rights over all "wild" areas, including fens and bogs. They often transferred the right to exploit these areas to their vassals or to groups of free investors for services rendered or against payment. The upkeep of the necessary infrastructure, such as dykes and sluices, was the responsibility of the individual landowners and users (e.g. Henderikx, 2001). They were controlled by the local government, consisting of the representative of the count, the "schout", and the aldermen or "schepenen", who represented the local community but were usually appointed by the schout.

As the land continued to subside and the scale of the drainage and flooding problems increased, local water management no longer sufficed and from the 11th century onwards, regional water boards were established to oversee works of regional interest. The initiative for their establishment came either from the count, who granted them rights and a charter, or from the interested communities or local elites (Van Tielhof, 2021: 33–38). From the 16th century onwards, the regional water boards increasingly executed the works themselves and charged the landowners and users for this. Also at the local level contributions in-kind were increasingly replaced by charges.

Land drainage and the subsequent agricultural development stimulated the growth of market towns and cities, often located at strategic places on waterways, for instance at a dam in a river (e.g. Amsterdam and Rotterdam). As employment possibilities in agriculture were limited, many people turned to fishing or commercial shipping (Borger, 1997; De Neve & Van Heezik, 2007). Commercial shipping was stimulated greatly by the geographical location of Holland in the delta of the Rhine and Meuse rivers and by the early development of commercial markets in Holland, and from the 15th century onwards Holland was dominant in North Sea shipping (Van Bavel,

2010). From 1600 onwards, shipping outside Europe developed as well. In America, Africa and Asia, several trading posts and colonies were established, and in Holland, several waterways were improved and new canals were dug to facilitate passenger transport by barges and promote trade and industry (De Neve & Van Heezik, 2007). The profits of commerce and trade were often invested in land reclamation projects. In the first half of the 17th century alone, some 270 km² of lakes were reclaimed (Van de Ven, 2004; Aten, 2007).

Water and in particular transport over water also played an important role in the industrialisation of the Netherlands in the late 19th century. They continue to be important to this day. The port of Rotterdam is currently the biggest port outside of Asia. Moreover, there is still a serious risk of flooding in much of the country. Furthermore, water is essential for the production of drinking water and for agriculture, which has a production value of 27 billion Euros and uses 66% of the land surface (2015 data: CBS, 2021). In addition, there is much water recreation and the biggest nature areas are open waters, such as the Wadden Sea.

Water also has a cultural significance. According to a popular theory, the Dutch "struggle against the water" has shaped the Dutch national identity. It required initiative, ingenuity and perseverance, which laid the foundation for later national successes. In addition, it required cooperation. This would have resulted in an egalitarian society and democratic institutions, such as the water boards. In this context, the commercial and bourgeois ("burgerlijk") character of the country is often mentioned as well and this too is linked with water, especially with shipping and trade (Huizinga, 1968; Schama, 1987; Mostert, 2020a).

This theory, however, is an oversimplification. There have been many examples of cooperation in Dutch water management, but also many examples of conflict, for instance of polders² refusing to contribute to the upkeep of the dyke of another polder that protected them as well (Maas, 1963; Mostert, 2012). Moreover, the water boards were not democratic in the modern sense. Until the mid-19th century, board members were co-opted or selected from the same families that ruled the cities and were on the provincial councils. At the local level, a broader group of people could hold office, at least initially, but later involvement often was restricted to large landowners only (Van Tielhof, 2021).

For centuries water in the Netherlands was managed in the absence of a Dutch nation and a Dutch national identity. Politically, the Netherlands became a nation in the late 16th century, when the different territories in the Netherlands joined forces in their struggle against the Habsburg kings of Spain, who by means of marriage and inheritance had become the rulers of these territories. Culturally, the Netherlands became a nation only later as a result of increasing interaction between the territories and the development of a national press in the early 18th century (Van Sas, 2005).

Water was first advanced as part of the national identity in the late 18th century by the "Patriots", who called for a regeneration of the Dutch nation and demanded more political power (Schama, 1977). They presented the Dutch fight against the water as one of the major feats of the nation. Since then, water has been used many times by different social groups as a source of national pride and identity, especially in times of social change, such as the economic crisis of the 1930s and the Second World War. Since 1990, "water" is very popular again, possibly in reaction to the erosion of traditional bonds in the post-war era and neoliberal politics with its international outlook and emphasis on individualism (Mostert, 2020a).

The Dutch water identity has also been used as an argument in favour of large hydraulic works. For example, in the late 19th century the Zuiderzee works were discussed, involving the construction of a 32 km long closure dam (the Afsluitdijk) to improve protection against flooding and facilitate the construction of large new polders. The government and many MPs saw these works as too expensive. According to the Zuiderzeevereeniging, an association lobbying for these works,

however, history had shown that the Dutch people “consider building dykes and land reclamation as their vocation; it is in their character”. The Zuiderzee works would be a national interest on which all parties across the political spectrum could agree (Van der Houven van Oordt, 1898: 165). More recently, the Dutch relation with water has been used as an argument to promote the export of Dutch water expertise (e.g. Kuper, 2020).

The Dommel Basin³

In the preceding section the discussion has shifted almost imperceptibly from Holland to the Netherlands, but the Netherlands are larger than Holland. In this section a river basin from another part of the Netherlands is discussed: the Dommel basin. The Dommel has its source in Belgium and then flows northwards into the Netherlands until the city of Den Bosch, where it joins the Aa River and changes its name to the Dieze. Five kilometres downstream of Den Bosch it discharges into the Meuse. The basin area upstream of Den Bosch is circa 1,800 km², of which 400 km² are located in Belgium and 1,400 km² in the Netherlands (Bongaerts, 1919).

The Dutch part of the Dommel basin is presently part of the province of North-Brabant, but between 1648 and 1795 it was part of Staats-Brabant. Staats-Brabant was a kind of domestic colony of the Netherlands that was not represented at the national level. Most inhabitants were Roman Catholic, who until 1795 were not allowed to hold public offices (Van den Eerenbeemt, 1996). The agricultural conditions were bad. The upstream parts of the basin consisted mostly of heath on poor sandy soils, interspersed by narrow river valleys with swampy meadows. Around 1800 there were ideas to develop agriculture, but the soils were too poor and the costs of importing fertilisers, such as domestic refuse from Holland, were too high, given the poor transportation possibilities at the time. The economy in the basin was essentially a peasant economy, with most of the farm produce being consumed on the farm itself (Crijns & Kriellaars, 1987).

The valley of the Dommel flooded regularly, but until around 1900 only summer floods were seen as problematic as these resulted in a loss of the hay harvest. Winter floods were seen as increasing the fertility of the soils (Bongaerts, 1919; Deckers, 1927). In the 1840s flooding increased as a result of the construction of 4,000 ha of water meadows upstream in Belgium. These meadows were flooded in winter with Calcium-rich water from the Meuse, imported via the newly dug Kempens Canal, and in spring the surplus water was discharged onto the Dommel, which caused flooding downstream.

Even more important for flooding were the introduction of artificial fertilisers in the late 19th century and urbanisation. Artificial fertilisers made it possible to convert large tracts of heathland to agriculture (Crijns & Kriellaars, 1987; Crijns & Kriellaars, 1992; Bieleman, 2010). To improve field drainage, ditches were dug, resulting in higher runoff peaks and more flooding downstream. Urbanisation was the result of industrialisation, which was stimulated by the construction of shipping canals from 1825 onwards and railways from 1860 onwards (Van den Eerenbeemt, 1996). Between 1842 and 2020, the population of Eindhoven, the largest town in the basin, increased from 3,000 to 227,000, and the population of Tilburg, on the edge of the basin, increased from 14,000 to 194,000. The resulting increase in hard surfaces further increased runoff peaks.

To cope with the flooding problems, several river regulation works were executed. Between 1875 and 1893, many small river bends were cut off and obstacles removed; between 1907 and 1911, an extra river outlet was constructed, the Drongelens Canal; between 1931 and 1941 the Dommel further upstream was connected to the Wilhelmina Canal, a recently completed shipping canal; and between 1933 and 1936 a large river bend in the village of Boxtel was cut off (Bongaerts, 1919; Roeffen, 1963). Moreover, many land re-allotment projects were executed,

especially in the 1960s and early 1970s, to reduce the number of land plots and increase efficiency in agriculture (e.g. Lohman, 1963). As part of these projects new drainage ditches were dug and the receiving brooks were regulated to cope with increased runoff peaks. This further increased discharges onto the Dommel and consequently plans were developed to channelise the main river.

To execute the first river regulation works and charge the beneficiaries, the Province of North-Brabant established a regional water board in 1863 (Roeffen, 1963). Initially, only the owners of the flood-prone land, some 4,300 ha. in total, were charged and could vote for the water board, but in 1921 the water board was extended to cover the whole basin and a few years later the owners of houses and other buildings were charged as well (Bongaerts, 1919; Deckers, 1927). Even so, the river regulation works projects would not have been possible without large subsidies from the State and the province. The first river regulation works (1875–1893) were subsidised for more than 50%, the construction of the Drongelens Canal was paid for completely by the State, and subsidies for post-war land re-allotment projects were typically in the order of 75%.

To cope with increasing water pollution problems, the water board got a new task in 1950: wastewater treatment. Representation of the municipalities on the board was increased to one-fifth of the seats and industry also got one-fifth of the seats. This increase in representation did not immediately lead to more attention for the “urban” interests of nature, landscape and recreation. Already before the Second World War there were protests against the river regulation works and land re-allotment projects, and sometimes plans were modified to accommodate the interests of nature and landscape. However, during the economic crisis of the 1930s, the Second World War and the early post-war years, agricultural interests prevailed. This started to change only around 1970. Plans to channelise the Dommel were effectively opposed and from 1990 onwards river restoration works were executed, nowadays as part of the implementation of the European Water Framework Directive (Ditteren et al., 2009; Mostert, 2020b).

The change around 1970 can be explained by broader socio-economic developments in the post-war period in the Netherlands. Working hours were reduced and paid holidays were introduced, and the population of the ever-larger towns finally had time to visit the countryside and enjoy nature and the landscape (Maas, 1963). In addition, the general level of education had increased a lot and traditional authority was increasingly questioned (cf. Welzel et al., 2003).

Ironically, while there used to be a shortage of nutrients in the basin, there is currently an overabundance. Between 1950 and 2020, the number of pigs in the province of North-Brabant increased from 270,000 to 5.7 million and the number of chickens from 3.6 million to 26.5 million (Crijns, 1998; CBS, 2021). This resulted in large amounts of manure and severe surface and groundwater pollution (as well as deforestation, erosion and social problems in the countries where the fodder for the livestock was grown). The problems were first recognised in the late 1960s, but the agricultural sector in the Netherlands is well-organised and well-connected with politics, and therefore it took until 1984 before any regulatory action was taken (an act to limit the increase in livestock). Since then, regulation has become stricter, often in reaction to European Union directives, such as the Nitrates directive (91/676/EEC), and decisions of the European Court of Justice (e.g. Keessen et al., 2011; Squintani, 2019).

Unlike in Holland and the Netherlands more generally, water does not have a large cultural significance in the Dommel basin. The area is not generally known as the Dommel Basin, but as part of the “Meierij” or the “Kempen”. In the 1920s and 1930s, a strong regional identity developed, but it was province-wide and not based on water, but on an image of traditional village life and Roman Catholicism. Despite urbanisation and secularisation, this image still persists (cf. Janssen, 2006).

Discussion

The two cases presented in this chapter show that water can play quite different roles in development, even in a small country such as the Netherlands. In Holland, land drainage and flood protection were essential for the transition to an agricultural economy, and its location on the North Sea coast in the delta of major rivers was essential for the development of shipping, trade and industry. In addition, water became part of the self-image of the country and this self-image was in turn used to promote large hydraulic works. In the Dommel basin, the introduction of artificial fertilisers was essential for agricultural development, which brought with it the need to drain land and caused flooding and water quality problems. These problems were exacerbated by industrialisation and urbanisation. Industrialisation and urbanisation were stimulated by the construction of shipping canals and later rail and road transport, but shipping and trade never played such a large role as they did in Holland, nor did water become part of a regional identity.

Simplifying the differences, we can state that in Holland water management triggered development, while in the Dommel basin development triggered water management. Yet, there are also many similarities. In both areas water management needs led to institutional changes to meet these needs, such as the establishment of water boards. Furthermore, in both areas development took place in a broader social, economic and political context and was influenced by factors such as the emergence of new markets, technical innovations and the establishment of the European Union. And finally, in both areas development was not exclusively national. Development started well before the Dutch nation came into being, especially in Holland, and also afterwards many relevant developments took place at other levels, ranging from the local level to the EU level and the global level.

Despite the wealth of information available on the importance of water for the development of the Netherlands, relatively little is known about the cultural dimension of this relation. For ten years now, the role of flood disasters in the development of a national culture has received a lot of attention (e.g. Bosch, 2012; Sundberg, 2015; Jensen, 2021), but less attention has been paid to drainage and land reclamation, even though they have played an important role in the self-image of the nation. Interesting questions include whether land drainage and land reclamation actually stimulated the development of a national culture or were used only strategically as arguments; whether in the process social and political differences were glossed over; what impact the national culture had on water management practices and national development; and which groups benefited and which did not or less. Moreover, interesting international comparisons could be made, for instance with Spain (e.g. Swyngedouw, 1999).

Notes

- 1 "Holland" is the name of the historic County of Holland, which coincides more-or-less with the present provinces of North-Holland and South-Holland. It is sometimes used as a synonym for the whole of the Netherlands.
- 2 "Polder" can mean both an area and the board in charge of water management in that area. Polder areas are hydrologically isolated from their environment with an artificially controlled water level. They include peat areas drained by means of windmills or pumps, reclaimed lakes and coastal areas that have been enclosed by dykes.
- 3 This section reuses parts of Mostert (2018, section 4).

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PART III

Governing Water and Development