



## State Forestry in Belgium since the End of the Eighteenth Century

Pierre-Alain Tallier, Hilde Verboven, Kris Vandekerkhove, Hans Baeté and Kris Verheyen

Forests are a key element in the structure of the landscape. Today they cover about 692,916 hectares, or about 22.7 per cent of Belgium. Unevenly distributed over the country, they constitute one of Belgium's rare natural resources. For centuries, people have shaped these forests according to their needs and interests, resulting in the creation of managed forests with, to a greater or lesser extent, altered structure and species composition. Belgian forests have a long history in this respect. For millennia, they have served as a hideout, a place of worship, a food storage area and a material reserve for our ancestors. Our predecessors not only found part of their food supply in forests, but used the available resources (herbs, leaves, brooms, heathers, beechnuts, acorns, etc.) to feed and to make their flocks of cows, goats and sheep prosper.

Above all, forests have provided people with wood – a natural and renewable resource. As in many countries, depending on the available trees and technological evolutions, wood products have been used in various and multiple ways, such as heating and cooking (firewood, later on charcoal), making agricultural implements and fences (farmwood), and constructing and maintaining roads. Forests delivered huge quantities of wood for fortification, construction and furnishing, pit props, naval construction, coaches and carriages, and much more. Wood remained a basic material for industrial production up until the beginning of the nineteenth century, when it was increasingly replaced by iron, concrete, plastic and other synthetic materials.

Evidently, forests were for a long time very important to the rural economy. Over the last few decades, however, societal interest in forests has diversified significantly due to the acknowledgement of the variety

of ecosystem services forests can deliver. This is clearly reflected in the recent changes and adaptations in forest legislation, with a focus on a multifunctional approach, in which economic, ecological and recreational functions are considered equally important. However, this new approach sometimes leads to conflicts between stakeholders, often despite the absence (or even misuse) of a decent historical perspective and reference.

This chapter describes the changes in state forests and forestry in Belgium over the past two centuries, a period in which forest extent, structure, distribution, management and ownership have been modified fundamentally.<sup>1</sup> The chapter will also reflect the changes in the constitution and territory of the country since the eighteenth century. Up to the French invasion of 1795, large parts of modern Belgium were ruled by the House of Habsburg and known as the 'Southern' or 'Austrian' Netherlands. This was a non-contiguous territory that consisted of what is now western Belgium as well as greater Luxembourg, bisected by the Prince-Bishopric of Liège. In 1797 (Treaty of Campo-Formio), Belgium was annexed to the French Republic and after the French Period it became part of the Kingdom of the Netherlands in 1815. Following the Belgian Revolution in 1830, Belgium split off from the Kingdom of the Netherlands to become an independent country.

The chapter will start with an overview of the (changes in) forest extent and ownership, and of the physiography of the Belgian forests since the late eighteenth century. In the next section, the major characteristics of forestry at the end of the *Ancien Régime* will be summarized to provide a necessary background for the subsequent development of the state forestry in Belgium. As forests underwent a shock treatment during the nineteenth century, situated in the crossfire between different actors, such as steel-furnace operators, wood merchants, farmers and financial speculators, and the liberal laissez-faire policy of the state, we will open the following section by elaborating on the context in which forests and forestry operated at that time. Subsequently, the developments of forest policy, forest administration and policy instruments since Belgian independence in 1830 will be described.

## Forests in Belgium

The most important source to reconstruct the forest landscape at the end of the *Ancien Régime* is the Cabinet Map of Count de Ferraris<sup>2</sup> (the

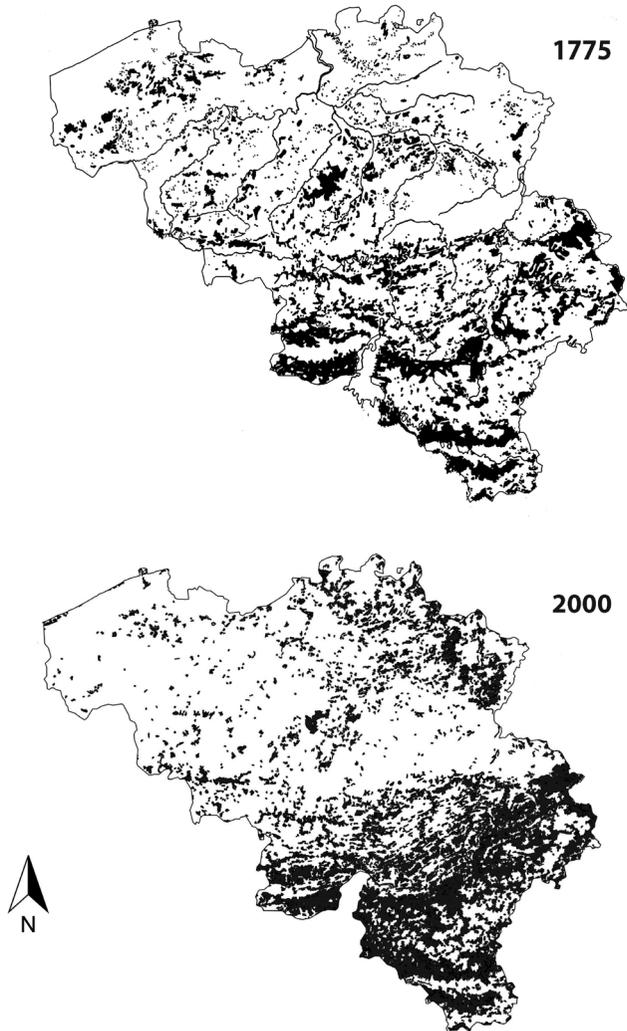
first detailed topographical map of Belgian territory, made between 1771 and 1778). Despite some imperfections, the Ferraris map offers a fairly reliable view on the distribution and dimensions of woodland and forest in the second half of the eighteenth century. A brief comparison between this map and the modern situation reveals three important aspects (see Map 3.1):

1. Overall, the total forest area according to the Ferraris map was quite similar to the current situation, although the old core forests were somewhat less expanded (about 100,000 ha.)
2. The ‘backbone’ of the actual forest structure, mainly in central and southern Belgium, already existed in the eighteenth century.<sup>3</sup>
3. Still, important shifts in land use took place, with a sharp decline in forest areas on fertile soils in the north-western and central part of the country, and large-scale afforestation, especially in the south (Ardennes) and the north-east (Campine region). These afforestations were primarily performed on heathlands, moorlands and wetlands, which as a consequence have dramatically decreased over the last 150 years.<sup>4</sup>

Over a timespan of 250 years, a remarkable shift in the distribution of forest area has taken place. An analysis for northern Belgium revealed that less than 15 per cent of the current forests are ancient forests with a continuous forest land use over this period.<sup>5</sup>

Not only did the location and extent of the forest area change over time, ownership underwent important shifts as well. These changes are both linked to political developments and decisions (confiscations, sequestrations and privatization) as well as social and economic development in rural areas (deforestation for agriculture, afforestation of heathlands and wetlands).

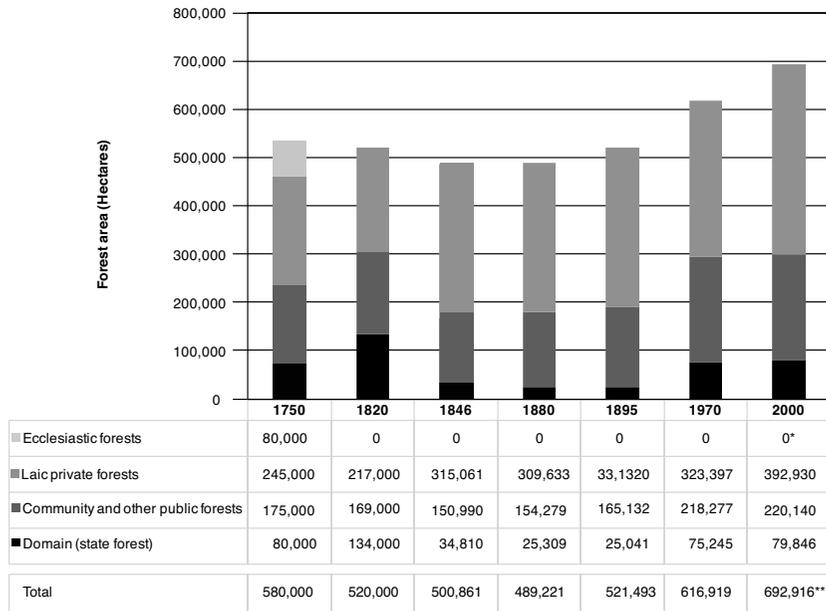
The total forest area at the time of Count de Ferraris was estimated at 580,000 hectares.<sup>6</sup> This area can be subdivided between different owner categories (Figure 3.1).<sup>7</sup> Over the past two hundred years the share of state forests at first increased due to the confiscation of ecclesiastical and aristocratic forests by the French Revolutionary government after 1795, but then decreased dramatically due to a radical privatization policy of the Dutch after 1815, and this continued under the newly installed Belgian government after 1830. Finally, the share of state forests increased again through new confiscations after the First World War, the acquisitions of private forests, and the afforestation of heaths



**Map 3.1** Forest cover of Belgium c.1775 and in 2000.

Forest map 1775 modified from E. Clicheroux, 'L'évolution de la forêt en Belgique', *Bulletin de l'Institut de Recherches Economiques et Sociales (Leuven)* 22 (1956), 537–78, with permission. Forest map 2000 by Jan Oosthoek based on the CORINE Land Cover 2000 dataset, European Protection Agency.

and moors. The area of community-owned forests slowly declined until the mid nineteenth century, primarily through deforestation for agriculture. Since then the area substantially increased through the afforestation of common lands. The area of private forest grew rapidly during



**Figure 3.1** Global changes in the forest area (hectares) in Belgium, and the share of different owner categories between the eighteenth and twentieth century.

\* Some monasteries managed to recover some of their forests by donation or reacquisition. The total area only amounts to a few thousand hectares, and is included in the surface of ‘private forests’.

\*\* 544,800 ha in the Walloon Region (of which 254,800 ha in public forests – domain and other – and 290,000 ha in private forests), 146,381 in the Flemish Region (43,449 ha in public forests – domain and other – and 102,930 ha in private forests) and 1,735 ha in the Brussels Region.

the period of privatization. The increase appears equivalent to the area lost in state forests. However, this total figure masks important deforestations by the new owners of privatized state forests, as this area was compensated by other new afforestations by private owners.

Finally, the forest structure and composition also changed drastically. By the end of the eighteenth century, forests were usually treated as coppice and coppice with standards. High forest and conifer stands were uncommon. Over the past two hundred years, productive sites have either been deforested or transformed into high forest. The majority of afforestation on poor soils was done with conifers. Also, poplar plantations were created in alluvial coppice and grasslands, especially in the second half of the nineteenth century. At present, conifers make up

47 per cent and poplars 5 per cent of the total forest area. Considering the actual forests in Belgium today, very few still resemble the forest stands of the eighteenth century.<sup>8</sup>

As explained above, forest area, extent, ownership and composition have changed dramatically over the last two hundred years. These developments are the result of interactions between environmental factors and human interference. Whereas forest extent and composition was originally predominantly ruled by climatic, soil quality and phytogeographic factors, strong human interference was increasingly imposed on them.<sup>9</sup>

Primary factors determining the extension, development and species composition of forests are climate (altitude, aspect, temperature, insulation, and annual rainfall) and soil (acidity, shallowness, moisture content etc.). Although quite small and lacking important altitudinal differences, there is a remarkable diversity of abiotic conditions in Belgium.<sup>10</sup>

This diversity of conditions results in very different forest types, with highly variable floristic and faunistic composition. It would therefore be too simple to describe the whole of Belgium's forests as homogeneous. On the other hand, a detailed description of the most common types for every region or subregion would go beyond the scope of this chapter. For an overall description, we will limit ourselves to the most important differences.

The factors of climate and soil listed above, and also diversity in local socio-economic circumstances, contributed to the differentiation. Human influence has increasingly modelled and shaped forests, their distribution, composition and organization. Anthropogenic factors that are of influence are numerous and interdependent, which makes it difficult to discern the principal ones. Nonetheless, population density appears to be the most important one. The total population in Belgium has risen from about 2.5 million in 1784, 3.5 million in 1815, just over 4.3 million in 1846, over 7.4 million in 1910, to over 11 million in 2016.<sup>11</sup> Closely related to population growth, land ownership (common or private) and agricultural developments have also changed over time. Their influence on vegetation and rural landscape, and forests in particular, is very different from region to region, and closely related to the underlying soil conditions. Important differences in the level of economic development (e.g. level autarchy, share and composition of labour in primary, secondary and tertiary sector) and infrastructure (location of cities, ports, residential areas, industry, road and railway

system, airports etc.) also play an important role, and help to explain the differences in the orientation of the production, distribution and condition of rural areas.

Based on these statements, the country can primarily be split up into three main regions:

1. *Lower Belgium* (the north of the country) is a flat, densely populated and highly industrialized area with a low forest index (about 10 per cent) and small and scattered forest areas. The climate changes from west to east from Atlantic to Subatlantic, and the topsoil is mostly of quaternary niveo-aeolean or alluvial origin, and includes sea and river polders (clay), poor sandy soils in the north and the east, and richer sand-loam in the west and south. Forests are mostly found on the poor sandy soils, and consist primarily of pine plantations and mixed forest.
2. *Central Belgium* is also characterized by high levels of urbanization and industrialization. The altitudinal range is between 50 and 200 metres above sea level, with extensive plateaus and hilly areas. Climate also varies from Atlantic to Subatlantic, and soil consists primarily of rich and productive (both for agriculture and forestry) loess-soils. The forest index is also low, with many isolated forests, mainly on slopes and in hilly areas. This area, however, also includes some of the larger, ecologically as well as economically important, ancient state and private forest complexes. The forests consist mainly of broadleaved stands, primarily beech and oak.
3. *Upper Belgium* is the most southern part of the country and has a more rural landscape with a lower level of industrialization and lower population density. Altitude ranges from approximately 150 up to 700 metres above sea level. Climate is more continental, and soils are mainly erosion soils of primary origin. The majority of the forest is concentrated here, and the forest complexes are large and interconnected. This results in a relatively high forest index (about 30 per cent). Spruce plantations cover about 40 per cent of the area, followed by oak and beech woodlands.<sup>12</sup>]/nl[

This overview is just an abstraction of the wide variety of sites and conditions, and of the local, regional, national and international human factors that have influenced forests.

## **First Steps towards a State Forestry on Belgian Territory**

### *Pre-nineteenth century Forestry*

Three main characteristics of forestry in pre- and early modern Belgium can be distinguished. First, the concept of public or state forests did not exist. Forests were owned by the sovereign, by the nobility, by churches or abbeys, or by private individuals. Closest to the idea of state forests were the common 'community' woods. A uniform legislation for the whole of the territory did not exist. Compared to France and its authoritative law of 1669, there was no similar centralized forest policy for the whole of the actual Belgian territory. Legislation was embedded in local traditions and regulations of regions, counties and duchies – for example, the Sonian Forest Book of Ordinances (*Keurboek van Zoniën*) in the duchy of Brabant (fourteenth century and 1564), the ordinance of March 1519 in the County of Namur, and the ordinances of 1617 and 1754 concerning forests in Luxembourg. The first national forest code was not adopted until 1854 (see below). Secondly, forestry was based on tradition, practical know-how and experience – in other words, on tacit knowledge. Belgian scientists did contribute to the development of scientific publications in the area of botany and dendrology, but little to forestry.<sup>13</sup> However, Belgian foresters were familiar with the French authors such as Duhamel du Monceau and Buffon in the eighteenth century. Innovations concerning forest management, the introduction of exotic tree species and the use of tree nurseries were often exemplary for the central government. Among the inspiring innovators in forestry, the Duke of Arenberg was probably the most influential one. Thirdly, forests served several functions, such as the production of wood, and leisure for the nobility (e.g. hunting, horseback riding). Appreciation of aesthetical and ecological values developed from the nineteenth century onwards.

The territory was more or less divided into two distinct ways of forest exploitation: an intensive type in the north (Lower and Central Belgium) and an extensive type in the south (Upper Belgium). Differences in the availability of alternative fuels (i.e. coal and peat), the forest index, the population density, and the persistence of common rights might explain these two distinctive types of forestry.

Common rights were codified and restricted much earlier in the intensively managed, sparsely forested and more densely populated northern lowlands (with the exception of the Campine region in the

north-western part of Belgium). For example, common grazing was progressively restricted from the twelfth century onwards.

The concept of ‘state forestry’ is linked to the rise of nation states in the nineteenth century. This includes state forests: belonging to the public domain and therefore accessible to the public; being managed by a public authority by means of a public administration, with costs and revenues linked to the state budget; and conforming to uniform regulations or legislation. These characteristics are not applicable to pre-nineteenth-century forestry. What we now call state forest is not comparable to forests owned by the crown during the Middle Ages or the Early Modern period until the eighteenth century. Woods belonging to the crown generated personal income for the sovereign (the Spanish and later Austrian Habsburgs). Although his property might have been more extensive than those of other noblemen, the sovereign took profit from his domains just like other nobles. All large landowners, including the sovereign, appointed several estate agents who were responsible for the daily care and management of the estates. As a consequence of their seigniority (*droits du seigneur*) landlords promulgated even their own legislation and regulations with regard to forest management. Actually, the idea of state forests and public property was not introduced until the end of the eighteenth century, together with the nationalization of noble and monastery domains and the introduction of public law by the French Revolutionary government.

However, not all forests could be considered purely private property. Exceptions to private ownership were common woods and common rights. Common woods were managed by a (small) community or by a group of individuals. This type of ownership mainly occurred in the southern part of the country.<sup>14</sup> Common rights applied to private forested areas, and mostly belonged to the inhabitants of surrounding parishes. They had been acquired in early times, and continued to be applied for many centuries. For example, inhabitants had the right to gather dead wood or to graze their cattle in the forests. Common rights were often an issue of negotiations between forest owners and rights owners, to reach a common agreement in the interest of both parties.

### ***French Period (1794–1814)***

The French period had a profound effect on the political, economic and social history of the territory. Considering forestry, four essential elements can be highlighted.

First, the political instability and succession of regimes that characterized the first years after the French Revolution in 1789 had immediate repercussions on forest practices. Left behind without instructions, the forestry personnel took their pay from the forest, in quite a similar way to the country dwellers, who had never been keen on forest regulations. Several decades were needed to wipe out the effects of abuse during these pillaging years. However, clear-cuttings and different kinds of plundering did not happen systematically. Although the losses in domanial, municipal and private forests were numerous and important, they cannot be labelled as exceptional. Similar events took place during other crisis situations and wartime.<sup>15</sup> Without underestimating the extent of the damage done, it is appropriate to draw attention to the influence of the image of 'revolutionary devastation of forests' in historiography. In this context we can name the French historian Jules Michelet,<sup>16</sup> and, to a lesser extent, Paul Verhaegen<sup>17</sup> in Belgium.

Secondly, the period is also characterized by the instability of forest legislation undergoing a swift succession of modifications. Political thinking was divided. On the one hand, members of government wanted to install a solid and centralized forestry administration, to improve management techniques (regulate cuttings, sowing procedures, plantings), and to educate forest personnel; they also planned to restrict common rights and access, and to combat offences. In short, they wanted to get forestry in line with the French ordinance of 1669. On the other hand, private owners were allowed to manage their forests in total liberty (although this was only tolerated for a short period). Budgetary problems and growing needs for wood (oak for the fleet in Boulogne in particular, but also for fences and fortifications) led to extraordinarily heavy cuttings and finally clear-cuttings.

Thirdly, and in spite of the elements put forward in the two paragraphs above, the French period distinguished itself by a certain stability. There was no mention of far-reaching disorder or essential modifications in forest stand management. Few wood sales and few redistributions of common woods took place. In a certain way, the eighteenth-century management was continued.

However, two important changes need to be mentioned. One of them is the merger of all forests previously owned by the crown (80,000 ha) and more than 60,000 hectares of confiscated ecclesiastical forests to form the newly established domanial (state) forests. As a consequence, the total area of the latter reached more than 138,000 hectares (Figure 3.1).<sup>18</sup>

The second one is the unification of the forestry administration and the integration of management practices. The old administrations that were scattered in different duchies and principalities lost their autonomy. From now on, laws and regulations for state forests were identical in every region, and management was organized and centralized by the state. State forests were indeed considered of high economic and strategic importance to the revolutionary and later imperial government. In privately owned forests, however, management was poor, with the exception of some larger landowners who practised an efficient and well-considered silviculture. The poor management was a result of a conjunction of circumstances, notably a lack of knowledge concerning silvicultural practices (among some of the owners), the fragmentation of the forest patrimony, and limited control.

Fourthly, financial reports of domanial forests varied extremely in quality from one department to the other. Results seemed to be particularly poor in the southern departments of the territory, although this peculiarity was compensated by the large number and the extent of domanial forests in that region. A partial explanation for this situation is the replacement of charcoal by pit coal at the end of the French period. This affected the steel industry in the southern departments and their long-time focus on the production of wood charcoal.

### *Dutch Period (1815–1830)*

The brief Dutch period is characterized by profound economic and social changes that influenced the condition and area of forests, as well as their distribution between private and public owners. When King William I of the Netherlands (1772–1843) was crowned in 1815, private forests made up 40 per cent of the total forested area in the southern provinces (i.e. more or less present-day Belgium). Notwithstanding the problems in forestry mentioned earlier, the sale of wood from domanial forests was important for the treasury. But in less than fifteen years William I accomplished a remarkable reversal in forest ownership: the total surface of public forests decreased from 60 to 40 per cent, while private forests rose from 40 to 60 per cent. It started with the restitution of sequestered forests to their former owners,<sup>19</sup> and the donation of almost 1,000 hectares of domanial forests in Brabant to the Duke of Wellington, along with the title Prince of Waterloo to honour his victory. Confronted with financial difficulties, the king induced the sale of some domanial woodlands (between 600 and 1,000 hectares).

A third, decisive step encompassed nothing less than the confiscation of all domanial forests to foster two institutions – known as the General Society (*Société Générale*) and the Amortization Syndicate (*Syndicat d'Amortissement*) – which were to realize the king's ambitions: modernizing the economy through credit development, creation of infrastructure and supporting entrepreneurs.<sup>20</sup>

The General Society was a financial investment company that was assigned 28,008 hectares of the most precious domanial forests of the kingdom as capital warranty, while the Amortization Syndicate was a governmental agency responsible for the privatization of the remaining 100,000 hectares of domanial forests.

Between 1825 and 1829 more than 69,000 hectares were sold.<sup>21</sup> If it had not been for the Belgian Revolution of 1830, probably all the domanial forests would have met the same fate. Although certain members of the nobility could partake, this important transfer of 'wood capital' proved to be especially beneficial to members of the industrial and commercial bourgeoisie. The latter took advantage of this occasion to gain control over an indispensable primary resource, to make a financial investment and to obtain prestigious and powerful property. A result of the sales was the deforestation of large areas of productive forest for agriculture. But agricultural speculation was not the first motive of most buyers and it is incorrect to pretend that the majority of the sold forests were deforested. The larger part was maintained.

As a result of privatizing its forests, the state lost its power to regulate the wood market and to affect the policy of private owners. This fact is even more serious when taking into account that legislative measures provided to ensure the conservation and durability of woods in general became a dead letter. Hence, the failure of William I and the Dutch government as forest policymakers is clear.

## **State Forestry in Belgium (1830–2000)**

### *Changes in State Forest Area*

In September 1830, following the last sales of state forests by the Amortization Syndicate, the area of state forest comprised approximately 27,705 hectares (Figure 3.2). During the following decade, the area increased again from 28,350 hectares in 1831 to 36,637 hectares in 1845, due to sales that had been recalled and returned to the state because of buyers unable to pay off their debts.

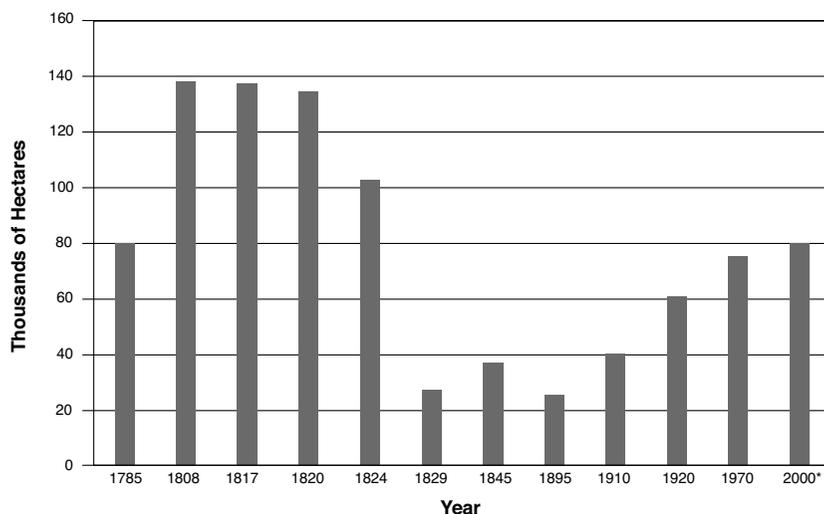
It should be noted that in the meantime the General Society sold most of the forest capital it had obtained to private investors; an estimated 20,000 hectares of the most valuable forests in Belgium were sold. Furthermore, the remaining 4,386 hectares of the highly productive Sonian Forest (about 60 per cent of it was sold and mostly deforested) was rebought from the General Society by the Belgian state in 1842. However, in the 1840s the government proposed to restart alienating national goods in order to pay off its increasing debt. Between 1845 and 1855, more than 8,000 hectares of state forests were privatized. After 1855, the government put an end to its politics of massive alienations. However, the state forest area continued to decrease, reaching a minimum of 25,000 hectares in 1897. By that time, members of parliament, in turn inspired by the forest administration and large private forest owners, convinced the government that the time had come to rebuild the state forestry domain. Hence, in the following twelve years, 7,343 hectares of forest and land for afforestation were acquired, to which another 7,000 hectares donated by King Leopold II must be added. On the eve of the First World War, the state forestry domain covered about 40,000 hectares.

After the First World War, as a result of the Versailles treaty, Belgium received well-forested German land in eastern Belgium (Eupen, Malmédy) resulting in an increase in the total Belgian forest area of 33,000 hectares (of which 11,000 hectares was state forest).<sup>22</sup> In addition, the Belgian state sequestered forests owned by people linked with Germany (the forests owned by the Duke of Arenberg in particular), which was mostly incorporated in the state domain (in total 9,597 hectares).

Acquisitions and afforestation of unproductive terrains over the course of the nineteenth century increased the total domain to 75,245 hectares in 1970 (Figure 3.2).<sup>23</sup> After the state reform in 1980, the state forests were regionalized, which means that their ownership and management is now attributed to the regions (Flanders, Wallonia, Brussels-Capital Region) in which they are situated.

### ***State Forestry in Context: Infrastructure, Market, Modern Sciences, Statehood and Private Entrepreneurship***

Over the course of the nineteenth century, and especially after 1850, the Belgian forests continuously changed. These transformations included their location, extent, structure and composition, and the management regimes that were applied.



**Figure 3.2** Changes in the state forest area (hectares) between 1785 and 2000.  
\* 13,277 ha of which are state-owned natural reserves.

A number of factors were progressively inducing this change. The first was a combination of urbanization and better infrastructure. Due to improvements and extensions of the road, canal and railway networks, the forest regions gradually became less isolated. This also generated a change in wood markets, which had long been rather local in nature. However, the benefits for forest owners were rather limited as this process also opened up the markets for imported wood. After 1870 the wood market was dominated by massive imports of low-priced hardwoods from Hungary and Russia, and softwoods from Scandinavia.

The second factor was the exponential increase in wood consumption. Despite the decline of charcoal-based metallurgic industries, the consumption of wood products significantly increased during the nineteenth and twentieth centuries. Numbers are lacking for firewood, but vast quantities of wood were needed for mining (600,000 m<sup>3</sup> in 1894),<sup>24</sup> railways (52,500 m<sup>3</sup> in 1894),<sup>25</sup> construction (500,000 m<sup>3</sup> in 1894) and furniture (150,000 m<sup>3</sup> in 1894), and by paper mills from the end of the nineteenth century onwards.<sup>26</sup> To these six major uses, one has to add other sectors such as the production of playing cards (50,000 m<sup>3</sup> in 1894), clog making (80,000 m<sup>3</sup> in 1894), box industry (50,000 m<sup>3</sup> in 1894), match industries (50,000 m<sup>3</sup> in 1894), hop-pole production (30,000 m<sup>3</sup> in 1894), coopery (15,000 m<sup>3</sup> in 1894), and smaller-scale industries such as the production of brushes and telegraph poles.

The third factor was a large increase in wood imports. Belgian forests, mostly managed as coppice or coppice with standards in relatively short rotations, could not deliver the vast quantities of round and industrial wood required from the second half of the 1830s onwards. The country needed the wood for its coalmines and railways, as discussed above. In 1834 there was still a small net export of wood, mostly to neighbouring countries, while the pattern reversed from 1835 onwards. An exponential increase in wood imports is evident from the beginning of the 1870s. In the wake of the First World War, imported wood constituted approximately two-thirds of the total consumption of wood products, and for the round woods this ratio was even five-sixths. It appears that Belgian wood consumption per capita was the highest in Europe at that time.<sup>27</sup> It is clear that, from 1835 onwards, the economic development of the country depended on imported timber. By imposing tariffs on sawn wood, the government stimulated the import of non-processed logs; and by doing so, saw mills – which were mostly located in Flanders near the main ports – were favoured. Hence, the principal wood markets became those of Bruges, Antwerp, Ostend and Brussels. Almost immediately after the rise of wood imports, the first complaints emerged from forest owners. Until 1870 the market for all wood products was very strong and hence the complaints were rather marginal and limited in nature. Later on, however, the situation changed quickly. Between 1870 and 1914, local wood markets collapsed several times as the importers flooded the country with wood from Hungary, Slavonia and Galicia (Austro-Hungarian Empire), Russia, Sweden and Norway, where huge quantities were bought at low prices. However, protests by forest owners received little attention as the policymakers were convinced that industrialists should be able to buy their resources at the lowest price. In this context, it is easy to understand that the forest owners turned to the production of pit props and abandoned the production of large-sized round woods. It also explains why – even today – the most important secondary wood processing industries are located in Flanders (80 per cent of the employees in the sector), near the ports, and not in Wallonia, where the majority of the forests are situated.<sup>28</sup>

The fourth factor that shaped the distribution, extent, structure and management of the forests was the decline of the trade in tanbark, used for tanning hides into leather, and firewood. The trade of tanbark saw a very strong rise at the end of eighteenth century and the beginning of the nineteenth century. At that time, large quantities of bark were used in the tanbark industries of places such as Stavelot, Liège, Namur,

Dinant, La Roche, Clervaux and Vianden, or exported to France, Prussia and – after the fall of Napoleon – to England. In the first quarter of the nineteenth century, the development of chemical tanning products, or tanning extracts from foreign wood, sets the stage for the decline of the tanbark trade<sup>29</sup> and the gradual abandonment of oak coppice south of the River Meuse, where this practice was very common. Furthermore it became increasingly difficult to find tenants for the common lands (where the bark was produced) or buyers for the firewood. Hence, the option to gradually or directly convert coppice into high forest or to conifer plantations became more appealing.

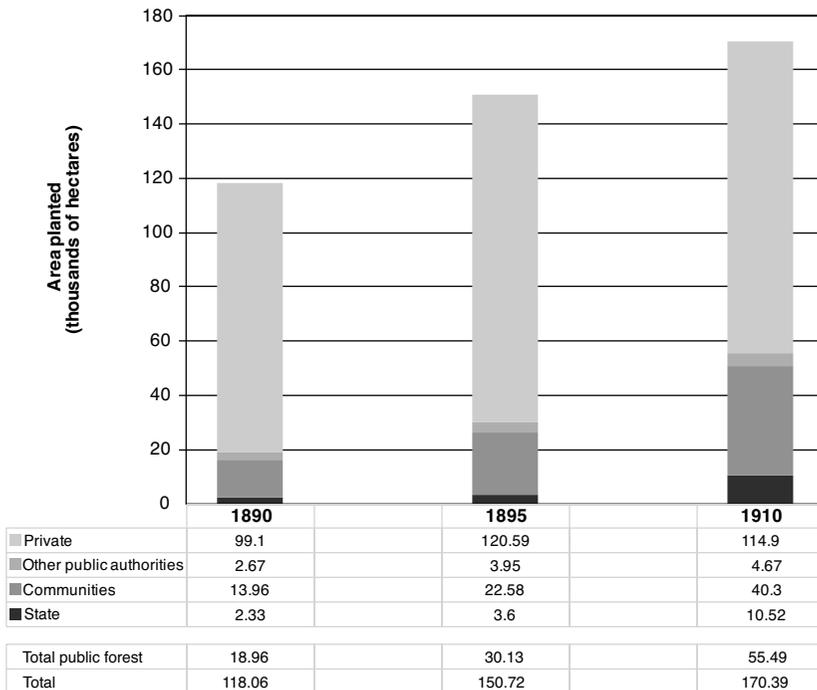
As in other countries, rehabilitation of unproductive lands and the promotion of conifer species were important in the development of state forestry.<sup>30</sup> Already during the second half of the eighteenth century, many ordinances put pressure on local authorities to revalue their common lands, as they were considered unproductive – ordinances for the duchy of Brabant (1772), the county of Hainaut (1757) and the county of Namur (1773–1776).<sup>31</sup> The ordinances encouraged the subdivision of common lands into smallholdings in private ownership by farmers, and to curtail common user rights.<sup>32</sup> However, these measures only had a minor impact on forested common lands, because they mostly did not apply to woods or forests. In fact, the authorities were inclined to protect forested areas, and even stimulated the afforestation of grazing areas, as the production of wood was considered vital to the economy.<sup>33</sup>

In 1843 reclamation of unproductive lands was put on the agenda again, when the minister of the interior started an inquiry on the topic.<sup>34</sup> In the discussion that followed, forests played only a secondary role. The act of 25 March 1847 on the reclamation of unproductive lands enabled the government to force communities to sell their unproductive lands. At the same time, the government provided a framework that gave communities the opportunity to reclaim unproductive lands themselves. The latter was probably a result of the fact that the 1847 law did not apply to private individuals who sometimes owned vast areas of unproductive lands – for example, half of the unproductive lands in Luxembourg were in private hands.

The impact of this law was initially rather limited due to strong resistance against reclamation and afforestation (with conifers) in certain regions such as the Ardennes. By contrast, in the Campine region the resistance was not as strong, and private individuals were able to buy vast tracts of lands. In the south of the country, the resistance decreased

when it was realized that afforestation was the best and most valuable use of the land. The coordination of the operation was switched from the Ministry of the Interior to the Forestry Administration (1856) which took over management of the nurseries again and, in a few years, delivered between 14 and 54 million plants for free.<sup>35</sup> Sometimes the impact of these measures was exaggerated, although it is true that the initiatives generated a certain dynamic, and have assisted in changing the mentalities.

Among other factors the distribution of seedlings resulted in the promotion of conifers, which occupied 118,060 hectares in 1890 (Figure 3.3). Private landowners were in the first place responsible for the planting of conifers (99,100 hectares in 1890), while the public sector followed only later, probably because the conversion of unproductive lands and forests depended entirely on the disappearance of common rights.



**Figure 3.3** Changes in the area planted with conifers (hectares) between 1890 and 1910. Figures mentioned in the circular letter of L. Blondeau, general director of the administration of Waters and Forests, from 16 January 1935. Leuven, Flemish administration of Forest (Brabant). ‘Si tu veux du chêne, fais du pin’.

Other factors that shaped and restructured Belgium's forests were the joint battle of private and public foresters, the reorganization of the forest administration, the creation of the Central Forestry Society (*Société Centrale Forestière de Belgique*, which became later the *Société Royale forestière de Belgique*) and the High Council for Forests. After a few years, collaboration between private forest owners and officials from the forestry administration allowed the two parties to draw attention to forestry matters. The reorganization of the forestry administration (see below) guaranteed a better management of the public forest. The creation on 22 February 1893 of the High Council for Forests, composed of forest owners and scientists, established a link between the forest administration and private forest owners.<sup>36</sup> A representative organization of private forest owners was established on 24 April 1893: the Central Forestry Society. The society was an initiative of some foresters of large private forests and high-level officials of the forestry administration. One of its major outlets was their highly regarded journal,<sup>37</sup> edited by forestry engineers.

The development of the natural sciences and organization of the agricultural and forestry education had also a large impact on the forests in Belgium. Over the course of the nineteenth century the natural sciences (geology, botany, climatology, meteorology, hydrology, etc.) became firmly established in Belgium.<sup>38</sup> This general increase in knowledge allowed the development of a thoroughly scientific silviculture. However, Belgium lagged behind in this field due to the lack of an institute for education in agriculture and forestry. The situation improved with the establishment of the State Institute of Agriculture in Gembloux (*Institut Agricole de l'État à Gembloux*) in 1860, based on the model of similar schools in France (Grignon and Nancy) and Germany (Tharandt and Hohenheim).<sup>39</sup>

Nevertheless, it was only in 1876 that the first chair in silviculture was created in Gembloux (held by E. Parisel).<sup>40</sup> Two years later, the University of Louvain created a forestry school based on the model of Nancy as part of the Faculty of Sciences, and appointed Lecart – who was the administrator of the properties of the Prince of Arenberg – in the chair of silviculture. In Gembloux, a true specialization in silviculture was only established in 1899. This explains why, earlier on, foresters were obliged to take their courses in the forestry schools of Nancy or Tharandt. Starting from 1896 the forest administration also invested in research by creating a research unit and a forest museum in Groenendaal, as well as arboreta and tree species experiments all over the country.

One of the biggest changes in forest management was caused by the development of an intervening state, charged to protect the general interest. Since the beginning of the nineteenth century, politicians had debated whether the state or private owners should manage and profit from the forests. Nevertheless, the state continued to privatize about 100,000 hectares of state forest. Along with the privatization, an increasing shortage of round wood was noted due to the large demands of a developing industrial society. Hence, wood imports increased substantially and the resulting deficit in the trade balance for wood products was used as an argument by those who were in favour of a reorganization of the 'Forest and Water' administration. From then on, the state needed to find a balance between the demands from the private sector on the one hand and the general interest on the other. In this context, the High Council for Forests argued in 1894 that it was necessary for the state to conserve and enlarge its forests, to create protective forests against adverse climatic conditions or to protect water courses, to buy barren or 'waste' land for afforestation, and to reserve annually a certain budget to re-establish a national forest domain.<sup>41</sup> From the second half of the nineteenth century the recreational use of forests started to develop, particularly within a group of privileged people.<sup>42</sup> This new lobby did not share the ideas of the forest administration on the subject of management methods, and encouraged a change. Organizations such as the 'League of Friends of the Trees' (*La ligue des amis des arbres*) in 1905 and the 'League of Friends of the Sonian Forest' (*Ligue des Amis de la forêt de Soignes*) in 1909 took up care for nature and the preservation of natural sites.<sup>43</sup> When Colfontaine forest was threatened to disappear in 1907 due to speculation, an impressive press campaign mobilized citizens and succeeded in convincing the government to acquire the area for the state. Societies for nature preservation would gradually become important actors as well. Forests became more and more a source of well-being and recreation<sup>44</sup> for large sections of the population, and a valuable good that should be preserved and cared for.

The transfer of knowledge was also important, and nineteenth-century developments in France and in the German states affected Belgian forestry, whether it was the drafting of the Forest Code, the organization of agricultural and forest teaching, cultivation of the unproductive lands or the reorganization of the forest administration. For instance, the Forest Code of 1854 was partly based on the French Forest Code of 1827, and the transfer in 1885 of the forest administration from the Ministry of Finance to the Ministry of Agriculture was

similar to what had happened previously in France (1877), Austria and Italy.<sup>45</sup> Publications on forestry exhibited foreign influences as well.<sup>46</sup> Because of the general progress of natural sciences and the reinforcement of state policy, a movement of restoration touched all of Europe,<sup>47</sup> and the United States,<sup>48</sup> during the second half of the nineteenth century. Two forestry schools affected Belgian forestry in particular: the Tharandt school, which in general referred to German forestry, and favoured clear-cutting, artificial regeneration and the establishment of monocultural stands; and the French school, which promoted natural regeneration, selective cuttings and mixed stands.<sup>49</sup> According to local circumstances, managers pragmatically chose to apply one or the other method.

In the second half of the nineteenth century, the closing of coalmines<sup>50</sup> required a drastic reorientation of wood production towards other markets. The forest administration was at a turning point. The question arose as to whether it was necessary to divert wood production towards the needs of the paper industry, the pulpwood industry or to aim at the production of industrial round wood and high-quality saw timber. At the same time, other functions of the forest became more prominent. From the 1950s onwards, recreational use of forest increased dramatically, especially in the industrialized north of the country. A study from the 1970s showed, for instance, that 'a visit to the forest' was the second most common recreational activity in Flanders (after family visits). Environmental and ecological considerations also played a gradually increasing role in the study and management of forests. From the 1970s onwards, environmental organizations and pressure groups were also influencing forest management. Principles of multifunctional forestry and close-to-nature silviculture, promoted by the Swiss school of Leibundgut, tried to reconcile these different requirements from the forest, and were introduced in forestry education, especially by Van Miegroet (Ghent University) and Roisin<sup>51</sup> (Facultés agronomiques de Gembloux) in the 1970s.

Since the regionalization of forest policy (special law of 1980) and the subsequent split up of the administration over the Belgian regions in 1983,<sup>52</sup> forest policies in the north and south have diverted significantly. In the densely populated and poorly forested north of the country, public pressure and demand for (non-wood) forest services is high. Although wood still represents an important economic output, especially poplar wood, its production is no longer of vital importance to the regional economy. This has resulted in a forest management and a

forest policy in which ecological, recreational and environmental functions of forest are of equal and sometimes even higher importance than the economic function. Public consultations and participation are also becoming increasingly important in local management and decision making. In this sense, it corresponds more closely to forest policy in the Netherlands, or to the management of 'urban forests' and parks in the United Kingdom.<sup>53</sup>

Policy is different in the Walloon part of the country. In this well-forested region (especially the Ardennes), the sale of wood still generates a considerable income for local authorities, and is still considered vital to the rural economy. The last director of the National Waters and Forests Service, Émile Clicheroux,<sup>54</sup> emphasized the economic importance of forests, particularly in the relatively impoverished Walloon region. Although a proposal by Jules Bary<sup>55</sup> to develop an integrated wood industry in Wallonia did not succeed, the economic aspects of forestry will always remain more important in the south than in the north of the country. Still, new policy developments (directive on forest biodiversity, new forest legislation) also tend to shift to a higher reconciliation with other functions.

Whereas the north and the south of the country seem to have taken different approaches, these are in fact no more than local realizations of similar principles of multifunctional forest management in which a synthesis between economic profitability, environmental protection and other functions of the forest is aimed at. Interest in a more integrated, patrimonial, ecological and environmental vision has been growing in recent years.<sup>56</sup>

### **Development of Forest Policy, Policy Instruments and Forest Administration since 1830**

In 1830, the Belgian revolutionaries inherited the administrative organization left by the French and Dutch regimes. The collapse of the central authority and the disorganization of the public administrations caused a sudden increase of forest offences and devastations to forests. On 17 January 1831, the provisional government decided to merge the administration of 'Waters, Forests and Domaines' with the 'Registration' part of the Department of Finance. As a consequence, the forest administration lost its autonomy. From 1834 to 1862 the central forest administration consisted of one assistant inspector and one employee. Also, the

field staff was downsized, and the forest administration policymakers continued their politics of alienation or selling off national forests (see above).

Several members of parliament opposed the sales, not for reasons of conservation or supply, but because forests were considered mortgages for public loans. Mortgaged, the national forests were temporarily protected from any alienation. However, not all elected officials shared the same opinion. After all, the construction of railways, as well as the mining industry and metallurgy, needed increasing quantities of wood.

During the parliamentary session of 1834/35 one of the senators proposed a sale of state forests in order to compensate the considerable expenses made by the forest administration managing the less productive forests that had not yet been sold. Moreover, by weakening the forest administration some elected officials wished to return to the *Ancien Régime* situation; that is, an independent management of communal woods and woods of public establishments without any central government interventions or guidelines.

For the next few years, senator and fierce opponent of the forestry administration, Count Joseph d'Espiennes (1778–1860) demanded a budget decrease of the forest administration. According to d'Espiennes, local authorities should be able to reclaim or manage their woods without central intervention. The reclamation of wastelands and forest was at the centre of the political debate. Industrialization and population growth put the food dependency of the country into the spotlight,<sup>57</sup> and the physiocratic ideas about agriculture as the only true source of wealth threatened the existence of common lands and forests.

Until the 1840s the debate on the sale of state forests remained rather theoretical, but the context changed rapidly after the Belgian–Dutch treaty of 19 April 1839. Owing to this treaty, all mortgages on state forests were raised and the Belgian government decided by the act of 3 February 1842 to sell a portion of the national domains within ten years. From 1840 to 1845 several members of parliament supported the idea to sell state forests and reduce the administration's budget, based on the opinion that private owners were more capable of managing forests. Just a few members of parliament, such as Count Felix de Mérode, opposed this. One topic of discussion in the Second Chamber was the alienation of the Sonian Forest near Brussels. De Mérode warned against the potential consequences for water management and the loss of wood supply to the industries due to the sale and subsequent deforestation of this forest. He called for not bringing such a considerable mass of wood

on the market, so as not to reduce prices even more.<sup>58</sup> De Mérode's last call was guided by the palace, which was eager to preserve a game park adjoining the royal estate of Tervuren. The government succeeded by accepting nine bills on the alienation of national domains between 1844 and 1855, as a consequence of which 8,103 hectares of state forests were sold. Early opponents easily yielded to arguments such as national debt reduction and the ideas of economic liberalism.

Selecting 1854 as a milestone in the recovery of the forest administration seems arbitrary, because the alienation of national domains continued until 1855. However, the publication of the Forest Code on 19 December 1854 was a turning point that led to several later reforms. Modernization as well as the installation of coherent forest legislation was urgent. Clarifying management regulations and harmonizing procedures on the subject of common rights was intended to put an end to the multitude of regulations and acts on forest matters, and to protect the remaining forest against further deforestation and degradation.

The reform of forest legislation began in 1848 when the Second Chamber of Parliament considered the possibility of a republication of the famous French Code of 1669. As a result the commission for the revision of the forest legislation was installed. Members of the commission felt themselves inspired by the French Forest Code of 1827; as a result, the Belgian Forest Code was proposed in June 1851 and the draft finally adopted in May 1854. Members of parliament disagreed mostly on common rights: should they assign user rights to both users and owners, or should they reserve user rights exclusively to the owners. In the end, user rights were assigned to the landowners only.

The Forest Code determined regulations applicable to (1) state forests, (2) woods and forests owned by the municipality, by parts of the municipality and by public establishments, and (3) woods and forests undividedly owned by the state, municipalities or public establishments together with private persons. It fixed procedures on the matter of restrictions and limitations, conditions under which wood could be cut, exploitation, common rights, management and conservation, procedures, and penalties for offences. Worth noticing is the fact that the Forest Code was not applicable to privately owned woods or forests.

However, the publication of the Forest Code did not resolve all problems and there was a general lack of long-term vision. The forest administration got off to a good start in connection with the reclamations of common lands. As measures from the Ministry of the Interior, encouraging the reclamation of communal wasteland, partially failed,

afforestation responsibilities got progressively transferred to the forest administration because of their expertise. A set of measures reinforced the range of actions by the forest administration: the creation of tree nurseries to assist the afforestation of communal wastelands (1860), the exemption of management costs of newly afforested wastelands by municipalities (1862), the foundation of a forest school in Bouillon (1864) and the establishment of a national botanical garden (1871).<sup>59</sup> Future forest agents needed at least an agronomist's certificate, complemented with courses on forest economy, legislation, and applied natural history, as well as practical work at the forest schools of Nancy and Tharandt.

However, this well-trained staff progressively opposed the existence of a mixed administration of Registration, Domains, Waters and Forests with a multitude of services and with divergent and even opposing objectives.<sup>60</sup> Until 1876, nobody seemed to care about this rather irrational administrative organization, when Ferdinand de Macar drew the attention of the Second Chamber to this. As a result of this intervention, both private and public foresters claimed an administrative reform. Contestation spread rapidly after the agricultural and forest conference in Liège in 1879. On 7 June 1879, the minister of finance installed a commission charged with the examination of the complaints. A report with the conclusions of the commission was finally published in 1883, in which the commissioners proposed the separation of the administration of Waters and Forests and the Registration, together with the transfer of the newly created 'Waters and Forests' to the Ministry of the Interior, Directorate of Agriculture.

In 1885 the administration of 'Waters and Forests' and the service of reclamation and afforestation of wastelands was added to the newly created Ministry of Agriculture and Public Works. The number of administrative subdivisions increased again from six to nine. New services directly or indirectly related to the forest administration were established, for example: meteorological, agricultural and forest stations (1886), the High Council for Forests (1893), the service of the inspectors and the general guards of the National Forestry Commission, the agronomist station of Gembloux (a private institution taken over by the government in 1883), a research unit and a forest museum in Groenendaal (1896), and a scientific arboreta.

Progressively all responsibilities concerning research, conservation and management of woods and forests were concentrated in a single administration, converted into a General Directorate as from 30

December 1899. From 1900 onwards, the forest administration consisted of: (1) a central administration in Brussels, charged with the development of the main lines concerning management in forests of the Belgian state, municipalities and public establishments. Hunting, fishery, reclamation of wastelands, forest education and popularization of forestry also belonged to its responsibilities; (2) field teams including eleven 'inspections' divided in thirty-four 'cantonnements' (forest districts), the latter being divided into 'brigades' and 'trriages' (ranger districts); and (3) a special research service. Centralization and this set of institutions created a mature forest management policy. By the end of the nineteenth century Belgium had slowly but steadily established a well-organized state forestry; however, Belgium lagged decades behind compared to neighbouring countries such as France and Germany.

After 1918, neither the administration of 'Waters and Forests' nor the Forest Code were subject to major modifications, except for the establishment of new forest districts in annexed territories after the First World War. Regulations relating to private forests were introduced which made it possible for the administration to limit the cuts deemed to be excessive in privately owned forests. During the years preceding the First World War, private owners tended to deforest their woods to the benefit of industry. Between 1914 and 1918, in addition to the war damage, private owners carried out cuts on a large scale, because of the extra income as well as to supply the industry (coalmines, paper pulp factories) with the necessary raw materials. After the war the High Council for Forests warned against speculations, an increase in the price of wood and a continuing deforestation. Deforestation in privately owned forests did nevertheless continue. An emergency measure allowed public authorities to intervene against overexploitation. This was made possible by the act of 21 January 1921 – the so-called 'act of Cadenas' – dealing with the protection of woods belonging to private individuals; but this act ceased to exist in 1927. It took four more years (28 December 1931) before a new act was adopted by which the administration could limit excessive cuts in privately owned forests.

Finally, the regionalization of responsibilities in forest matters in 1980 caused the transfer of the central administration to the regions (realized by 1983). In the Walloon Region, the general directorate of 'Waters and Forest' was replaced by the Service of Forests, Hunting and Fishing (*Service des Forêts, de la Chasse et de la Pêche*), later transformed into the Division Nature and Forests. The Service of Natural Resources, Waters and Forests became responsible for forestry in

the Brussels-Capital Region and a service of Waters and Forests in Flanders, later reformed to the Administration for Forests and Green Areas. More recently (2006), this administration merged with the Administration for Nature Conservation to form the Agency for Nature and Forests (Agentschap voor Natuur en Bos). From 1983 onwards, Wallonia, Flanders and Brussels dealt with their forest inheritance in an autonomous way.<sup>61</sup> Hence, the Forest Code of 1854 was replaced by modern legislation based on principles of sustainability and multifunctional management (Flemish forest decree of 13 June 1990; the ordinance of 30 March 1995 on forest management by the Brussels-Capital Region and in the Walloon Region by the decree on the Forestry Code of 15 July 2008).

## **Conclusions**

Most synthetic studies of Belgian forest history have limited their analysis to forest area or country agricultural statistics. Based on these, they distinguished favourable and unfavourable areas for forestry, and tried to explain the fluctuations in function of conjuncture cycles in agriculture. The 'waves' of deforestation thus correspond with periods of high prices for cereals and periods of recovery with low prices. This would mean that deforestation is only linked to transformation into arable land, disregarding the other socio-economic factors, political climate and the proper economic importance of the forest itself.<sup>62</sup>

Forests are dynamic and constantly changing ecosystems. Their development cannot be reduced to simple linear relationships between forest area and economic and rural development (agriculture, industrialization, and urbanization). Not only do different parameters (offset market, political and economic developments) influence the disappearance, existence and survival of forest, they also influence aspects other than surface statistics – like ownership, stocking rate, species composition, and management regime. Also phases of deforestation and afforestation differ between regions and countries, cancelling each other out in global national statistics. In order to make the correct analysis and draw proper conclusions, it is essential to look at the complete picture, and include all these aspects and elements in the exploration of the data.

In the framework of this chapter, we have described the evolution and development of Belgian public forests (and in fact private forests) over the past two centuries. This period has been characterized by important

changes that fundamentally altered forest structure, distribution and ownership. Also, the market for wood products, the quality, composition and management of forest stands changed dramatically, as well as the importance given to other goods and services (nature conservation, recreation, water and carbon storage) provided by the forests.

During the *Ancien Régime* no state forest – in the modern meaning of the word – existed as such: forests were owned by feudal lords and the crown, and managed according to their personal principles and goals, and local market demands. Under French (1797–1815) and Dutch (1815–1830) rule, a centralized state was installed, and all ecclesiastic and crown domains were ‘confiscated’. The condition and composition of these newly created ‘state forests’ was very diverse.

During the first half of the nineteenth century new macro-economic developments occurred, leading to important shifts in demands for marketable goods from the forest. Although demands for firewood and other products (like bark for tanning) drastically diminished, due to the introduction of coal and other industrial production processes, there was a strong and growing demand for wood for commerce and industry. As local production was not able to fill the high and swiftly changing demands, massive wood imports overwhelmed the national industrial market. State forests were no longer regarded as essential for the national wood supply and therefore reduced to their mere speculative value. At a high pace, state forests were sold or used as mortgage for the state debt, or placed as capital in large industrial investment holdings. At the same time, most valuable timber resources were sold or pillaged. Illustrative for that era is the fact that the forest administration was cut down and incorporated in the Ministry of Finance.

The first signs of revival were visible in the second half of the nineteenth century. New forest legislation was introduced in 1854, aiming at the conservation of the remaining forests and centralizing forest management, abolishing most common rights, and introducing regulations for the exploitation of state forests. Privatization of state forests was stopped, deforestation was reduced and initiatives were taken to valorize wastelands through afforestation. Again, economic developments were at the heart of this evolution: coalmining, paper mills and railway building provided new demands for specific wood products, and the state was aiming for long-term self-sufficiency, in order not to rely on uncertain imports for these economically important sectors.

At the beginning of the nineteenth century, most of the low productive coppice forests and unproductive wastelands were already or in

the process of being transformed into productive conifer plantations (mostly Scots pine, and later also Norway spruce). Other coppice and coppice with standards woodlands were directly or gradually transformed into high forest, as the market for round wood was growing, and local demand for firewood further diminished due to the introduction of fossil fuels (mainly coal). Although wood imports still increased, state forests regained their economic importance, and were well looked after. From 1885 onwards, a well-organized and well-trained forest administration was set up within the Ministry of Agriculture. Professional forestry education closely linked to and inspired by the forest schools of Nancy and Tharandt was introduced. A scientific council for forestry matters and a private society for forest owners and forestry were founded in 1893. Although interrupted by two world wars, this development continued during the nineteenth century, with an active state acquisition policy and further development of the forest stands (with a gradual build-up of the stocking rates).

The gradual shutdown of coalmines, together with new societal developments and expectations, urged a new orientation of forestry and wood production. Forestry, and especially state forestry, was increasingly developing towards a multifunctional approach in the second half of the nineteenth century, in which ecological and recreational functions are equally important (and even sometimes more important) than the productive function. Forestry principles and concepts that best fulfil these requirements of sustainability and multifunctionality (close-to-nature forestry, *Pro Silva* principles) were therefore widely adopted, and are even prescribed nowadays in state forestry administrations and state forests all over Belgium.

Overall we can conclude that the evolution of state forests in Belgium over the past two centuries is witness to the fact that the revival of forests is very much linked to political stability but even more to the way they are valued by society and their political representatives. Their proper economic potential, as producers of marketable goods, be it for local or industrial use, has in the past been the driving factor in their condition and development. In times of high local and national economic importance, forests and their managing administrations thrived. In periods when local production was no longer considered important due to massive and cheap import of wood, their value was reduced to their mere potential for speculation, mortgage and land capital. This was especially true for state forests, as they were much more linked to macro-economic developments and political doctrine than community

and privately owned forests, where local market and private use and attachment always remained important.

Over the last century, this direct relationship has changed as societal interest in forests and the goods and services they provide developed. Depending on the local economic situation, wood production may still play an important role, but it is increasingly subordinate to other forest services not related to wood production. Nonetheless, forests, in particular state forests, are considered important by society for what they are, and for what they provide to society in the sense of recreational, touristic, ecological and environmental benefits – and they are managed and taken care of in this perspective.

**Pierre-Alain Tallier** works at the State Archives of Belgium, in Brussels. His PhD dissertation was on ‘Forest and Forest Owners in Belgium from the end of the 18th Century to 1914’, recently published by the Académie royale de Belgique. He is the author of several publications on the history of Belgian forests.

**Hilde Verboven** is researcher at the Flemish Heritage Institute, Brussels. Her main research topics are forest and landscape history and the study of past land uses.

**Kris Vandekerkhove** is forest ecologist at the Research Institute for Nature and Forest (INBO), Brussels. His main research topics are natural dynamics in strict forest reserves and management guidelines for nature conservation in forests. Forest management history is an important focus in these research topics.

**Hans Baeté** is a botanist employed at the Research Institute for Nature and Forest (INBO), Brussels. He writes reference reports concerning Flemish forest reserves (and their past), and coordinates an interdisciplinary discussion group on Belgian forest history.

**Kris Verheyen** is professor of forest ecology and management at the Laboratory of Forestry, Ghent University, Belgium. One of his main research interests is the study of land use and management histories in forests, and their implications on present-day ecosystem patterns and processes.

## Notes

1. This chapter is primarily based on P.-A. Tallier, *Forêts et propriétaires forestiers en Belgique de la fin du XVIII<sup>e</sup> siècle à 1914: Histoire de l'évolution de la superficie forestière, des peuplements, des techniques sylvicoles et des débouchés offerts aux produits ligneux* (Brussels: Académie Royale de Belgique, 2004).
2. De Ferraris, a field marshal, coordinated the first map covering a large part (90%) of the territory of modern Belgium between 1771 and 1778 on the orders of the Austrian Habsburg Empire.
3. See F. Goblet d'Alviella, *Histoire des bois et forêts de Belgique: Des origines à la fin du régime autrichien*, Vol. 1 (Brussels and Paris: Lechevalier et Lamertin, 1927), 391–426; O. Tulippe, 'L'Homme et la Forêt tempérée en Belgique', *Bulletin de la S.R.B.G.* 66 (1942), 184–88; E. Clicheroux, 'La forêt de 1800 à nos jours: Organisation de la forêt publique', in P. Blerot and J.-P. Lambot (eds), *Le grand livre de la forêt wallonne* (Liège: Mardaga, 1985), 34–44.
4. E. Van Looveren, 'De privatisering van de gemeentegronden in de provincie Antwerpen: vier case-studies', *Bijdragen tot de geschiedenis* 66 (1983), 189–210; E. Tilborghs, 'Een nieuwe bestemming voor de woeste gemeentegronden: Een onderzoek naar het lot van de gedurende 1834–1884 geprivatiseerde gemeentegronden in de Antwerpse Kempen'. Unpublished *licentiaatsverhandeling* (University of Leuven, Faculty of Science, 1987); C. Petit, 'Detection and Reconstruction of Land-Use and Land-Cover Changes from Multi-source Cartographic and Remote Sensing Data'. PhD thesis (University of Leuven, Faculty of Science, November 2001).
5. L. De Keersmaeker, N. Rogiers, R. Lauriks, B. De Vos, 'Ecosysteemvisie bos Vlaanderen: ruimtelijke uitwerking van de natuurlijke bostypes op basis van bodemgroeperingseenheden en historische boskaarten'. Research Reports of the Institute for Forestry and Game Management – Section Forestry, 2000(008) (Geraardsbergen: Institute for Forestry and Game Management, 2001).
6. The reconstruction is based on maps and historical documents. See F. Jacquemin, T. Kervyn, E. Branquart, L. Delahaye, M. Dufrière and H. Claessens, 'Les forêts anciennes en Wallonie. 1<sup>ère</sup> partie: Concepts généraux', *Forêt Wallonne* 131 (2014), 34–49; F. Jacquemin, T. Kervyn, E. Branquart, L. Delahaye, M. Dufrière and H. Claessens, 'Les forêts anciennes en Wallonie. 2<sup>ème</sup> partie: Cartographie', *Forêt Wallonne* 133 (2014), 38–52.
7. See P.-A. Tallier, 'L'histoire de la forêt Wallonne', in P.H. Blerot and C.H. Heyninck (eds.), *Le Grand Livre de la Forêt* (Namur: Forêt Wallonne, 2017), 47–60; F. Faes, *Bos en bosbouw in Vlaanderen* (Brussels: Ministerie van de Vlaamse Gemeenschap. Afdeling Bos en Groen, 2002); H. Lecomte et al., *La forêt wallonne: Etat de la ressource à la fin du 20<sup>e</sup> siècle* (Namur: Division de la Nature et des Forêts, Direction des Ressources forestières, 1999).
8. On the general evolution of forests in Belgium, see Tulippe, 'L'Homme et la Forêt', 184–88; E. Clicheroux, 'L'évolution de la forêt en Belgique', *Bulletin de*

- l'Institut de Recherches Economiques et Sociales* 22 (1957), 537–78; Blerot and Lambot, *Le grand livre*; F. Devillez and C. Delhaise, 'Histoire de la forêt wallonne face à l'agriculture des origines à nos jours', *Forêt Wallonne* 13 (1991), 2–12; K. Vandekerkhove, 'Integration of Nature Protection in Forest Policy in Flanders (Belgium)' (Freiburg: INTEGRATE Country Report. EFICIENT-OEF, 2013).
9. On historical human–forest interactions, see A. Verhulst, *Histoire du paysage rural en Flandre de l'époque romaine au XVIIIe siècle* (Brussels: La Renaissance du Livre, 1966); G. Tack, P. Van den Bremt and M. Hermy, *Bossen van Vlaanderen: Een historische ecologie* (Leuven: Davidsfonds, 1993); H. Baeté, M. Debie, M. Hermy, P. Van den Bremt and S. Adriaenssens, *Miradal: Erfgoed in Heverleebos en Meerdaalwoud* (Leuven: Davidsfonds, 2009).
  10. D. Goossens, *Inleiding tot de geologie en geomorfologie van België* (Enschede: van de Berg, 1984). Restricted to the main subdivisions, about 27 different soil types occur in Belgium.
  11. C. Bruneel, F. Daelemans, M. Dorban, C. Vandenbroeke, 'Population et subsistance dans l'espace belge (XVI<sup>e</sup>–XIX<sup>e</sup> siècles)', in A. Fauve-Chamoux (ed.), *Evolution agraire et croissance démographique* (Liège: Editions Derouaux Ordina, 1987), 293–324. The population according to the National Register on 23 January 2016 was 11,250,585.
  12. K. Vandekerkhove, E. Branquart and K. Verheyen, 'Country Report Belgium', in J. Latham, G. Frank, O. Fahy, K. Kirby, H. Miller and R. Stiven (eds), *COST Action E27 Protected Forest Areas in Europe – Analysis and Harmonisation (PROFOR)* (Vienna: Bundesforschungs- und Ausbildungszentrum für Wald, Naturgefahren und Landschaft, 2005),
  13. R. Dodoens, *Cruydeboeck* (Antwerp: Plantijn, 1554); M. de l'Obel, *Cruydtboeck oft beschryvinghe van allerley ghewassen, kruyderen, hesteren ende gheboomten* (Antwerp: Plantijn, 1583); M. de Poederlé, *Manuel de l'arboriste et du forestier belgiques*, Brussels: Ed. de Boubers, 1772.
  14. In northern Belgium, most of the 'common lands' had already been transformed from forest to heathland and grasslands by the early Middle Ages.
  15. F. Braudel, *L'identité de la France: Espace et Histoire* (Paris: Arthaud-Flammarion, 1986), 129–30; Goblet d'Alviella, *Histoire des bois et forêts*, Vol. 2, 229; M. Deveze, 'Forêts françaises et forêts allemandes: Étude historique comparée', *Revue historique* 235(2) (1966), 347–80, 59; G. Hoyois, *L'Ardenne et l'Ardennais: L'évolution économique et sociale d'une région*, Vol. 2 (Brussels and Paris: Ed. Universitaires Gembloux, 1953), 467–68.
  16. D. Woronoff, 'La "dévastation révolutionnaire" des forêts', in D. Woronoff (ed.), *Révolution et espaces forestiers* (Paris: Editions L'Harmattan, 1988), 44.
  17. P. Verhaegen, *La Belgique sous la domination française, 1792–1814, Vol. 4: L'Empire* (Brussels: Goemaere, 1929), 85.
  18. Through an imperial decree (dd. 12 October 1809), remaining goods from the clergy and emigrants that had not been sold earlier to the state were nationalized and added to the state domain.

19. A majority of the nobility had fled the country after the French Revolution.
20. H. Houtman-De Smedt, 'De société générale tijdens de periode 1822–1848: Haar evolutie van domeinbank naar gemengde bank', in H. Van der Wee (ed.), *De Generale bank, 1822–1997* (Tielt: Lannoo, 1997), 15–62.
21. The Dutch government, including the king and the Dutch elite, did not regard forestry as a task for the state. They believed in an economic policy of laissez-faire when it came to resource exploitation, including timber. See Oosthoek on the Netherlands in this volume.
22. P.-A. Tallier, 'L'annexion des cantons d'Eupen-Malmédy et la reconstitution du patrimoine forestier belge après la Première Guerre mondiale: Le rôle prépondérant de l'administration forestière et de son directeur général Nestor Iris Crahay', *Forêt Wallonne* 67, November–December (2003), 2–11.
23. For data source, see: Tallier, *Forêts et propriétaires*; Faes, *Bos en bosbouw in Vlaanderen*; Lecomte et al., *La forêt wallonne*.
24. In 1900 and 1937, the mine wood consumption was approximately 1,000,000 m<sup>3</sup> and 1,375,000 m<sup>3</sup>, respectively. The Belgian mines used the most wood per tonne of coal produced in Europe. In absolute values, the amount of mine wood used strongly increased during the nineteenth century while the efficiency of its use (m<sup>3</sup> wood per tonne coal) only decreased very slowly. See Tallier, *Forêts et propriétaires*, 547–54.
25. The extension of the railway network – which increased from 50 km in 1834 to over 3,400 km in 1875 and 4,400 km in 1885 – demanded vast quantities of wood, not only for the tracks but also for the construction of stations and train wagons. See Tallier, *Forêts et propriétaires*, 554–55.
26. In the second half of the nineteenth century, a shift occurred from paper produced by chiffonds and straw to wood-based paper. The first Belgian wood paper mill was installed in Poix in 1861. In 1880, the national production amounted to 600 tonnes only, whereas twenty years later a total of 25,000 tonnes of paper pulp was exported. See Tallier, *Forêts et propriétaires*, 556.
27. The round wood consumption was estimated at 0,72 m<sup>3</sup>. E. Glessinger, *Le bois en Europe: Origine et étude de la crise actuelle* (Paris: Librairie du Recueil Sirey, 1932), 336.
28. E. Clicheroux, *La forêt deuxième richesse de Wallonie?* (Brussels: Crédit Général, 1978), 1, 18.
29. Between 1883 and 1897, tanbark prices decreased considerably from 20 francs per 100 kg down to 8 francs. See F. Loots, 'Les mouvements fondamentaux des prix de gros en Belgique de 1822 à 1913', *Bulletin de l'Institut des Sciences Économiques de Louvain* 1 (1936), 46.
30. See Oosthoek on the Netherlands and United Kingdom, and Fritzboøger on Denmark, in this volume.
31. Questions concerning common lands – forested or not – fed multiple discussions. See the overview by M. De Moor, 'Common Land and Common Rights in Flanders', in M. De Moor, L. Shaw-Taylor and P. Warde (eds), *The*

- Management of Common Land in North West Europe, c.1550–1850* (Turnhout: Brepols, 2002), 113–35.
32. Histoire Collective, *La Propriété foncière dans la province de Luxembourg, fasc. 3* (Rossignol: Projets Luxembourg, 1995), 71.
  33. G. Dejongh, 'La politique de défrichement des autorités dans les Pays-Bas méridionaux, 1750–1830: Un coup dans l'eau?', *Bulletin du Crédit Communal* 53(210) (1999), 31–44.
  34. *Défrichement des bruyères et autres terres incultes: Circulaire du Ministre de l'Intérieur du 30 juin 1843 et délibérations des conseils provinciaux* (Brussels: Imprimerie du Moniteur belge, 1843).
  35. According to V. Antoine this could be an error in the transcription of the former figure (14,190,000). See V. Antoine, *Un siècle de sylviculture*, Louvain: Ceuterick, 1929, 442.
  36. On the different questions dealt with by the High Council for Forests between 1893 and 1924, see *Bulletin Société centrale forestière de Belgique* (1926), 591.
  37. First entitled *Bulletin de la Société centrale forestière de Belgique* (B.S.C.F.B.), afterwards *Bulletin de la Société royale forestière de Belgique* (B.S.R.F.B.) and today *Silva Belgica*.
  38. Geology progressed thanks to André Dumont, François Cornet and Jean-Baptiste Julien d'Omalius d'Halloy, and botany thanks to François Crépin, Léo Errera, Julius MacLeod and Jean Massart.
  39. These institutions maintained their influence, even after the establishment of the agricultural institute in Gembloux. See L. Genonceaux, 'Rapport sur l'enseignement supérieur de la sylviculture en Allemagne et en Autriche-Hongrie. Addressed to the Minister of Agriculture, Industries and Public Works', *Bulletin de l'agriculture* (1888), 390–401.
  40. *L'Institut Agricole de l'État à Gembloux 1860–1910* (Brussels: Institut agronomique de l'État à Gembloux, 1910, 73); see also *Institut agricole de l'État à Gembloux. Historique, Organisation, Enseignement, Annexes* (Brussels: Duyk van Mierlo, 1901).
  41. H. d'Aspremont Lynden, 'Conseil supérieur des forêts: la politique d'achat des forêts par les pouvoirs publics', *Bulletin de la Société royale forestière de Belgique* (June 1957), 263–64.
  42. P. Roisin, *La forêt des loisirs: Forêts touristiques et conservation de la nature* (Gembloux: Presses Universitaires de Gembloux), 1975.
  43. In 1912, Massart published a list of sites to be protected: J. Massart, *Pour la protection de la nature en Belgique* (Brussels: Lamertin, 1912). The German States were half a century ahead of Belgium in regard of this matter. M. Devèze, *Histoire des forêts* (Paris: Presses Universitaires de France, 1965), 92.
  44. T. Collignon, 'La forêt: Source de bien être social', *Bulletin de la Société centrale forestière de Belgique* 21 (1914), 22.
  45. Antoine, *Un siècle de sylviculture*, 412; *Rapport de la Commission d'inspection forestière. Projet de réorganisation de l'administration* (Brussels, 1884), 1 passim.

46. Belgian publications at that time consisted of compilations of foreign authors; see e.g. *Monographie du mélèze d'Europe* (Namur, 1847), or translations, see e.g. K. Gayer, *Traité de sylviculture, traduit avec l'autorisation de l'auteur par Etienne Visart de Bocarmé* (Bruges: Stock, 1901).
47. Concerning the Netherlands: J. Buis, *Historia forestis: Nederlandse bosgeschiedenis*. Utrecht: Landbouwhogeschool, Wageningen & HES Uitgevers, 1985; B.H. Slicher Van Bath, 'L'histoire des forêts dans les Pays-Bas septentrionaux', *Afdeling Agrarische geschiedenis Landbouwhogeschool*, AAG Bijdragen 14 (1967), 102. See also *Rapport de la Commission d'inspection forestière*, 1 passim.
48. United States Department of State, *Forestry in Europe, Reports from the Consuls of the United States* (Washington, DC: US Government Printing Office, 1887). The report summarizes the inquiries of the American, Austria-Hungarian, French, German, Italian and Swiss consuls on forest culture and forest preservation. See also, *Rapport de la Commission d'inspection forestière*, 198.
49. Devèze, *Histoire des forêts*, 8, 90.
50. Closing of the mines in Wallonia took place between 1944 and 1973. The last mines in the Campine region closed down in the late 1980s.
51. Roisin, *La forêt des loisirs*.
52. Three regions were installed: the Flemish Region in the north, the Walloon Region in the south, and the Brussels-Capital Region in between.
53. By 'urban forests' we mean like the New Forest (Southampton) or Epping Forest (London). See Oosthoek on the United Kingdom and the Netherlands in this volume.
54. Clicheroux, *La forêt deuxième*.
55. Jules Bary (1912–1977), agronomist, Belgian politician and activist in the Walloon Movement. Among others, he is the author of the chapters on agriculture and forestry in the programme adopted by the Walloon socialists in Tournai in March 1967. See *Encyclopédie du Mouvement wallon* (Charleroi: Institut Jules Destrée, 2000), 121–22.
56. See E. Branquart and S. Liégeois, *Normes de gestion pour favoriser la biodiversité dans les bois soumis au régime forestier, compléments à la circulaire n°2619 relative aux aménagements dans les bois soumis au régime forestier* (Jambes: Division de la Nature et des Forêts, DGRNE, 2005); Vandekerkhove, 'Integration of Nature Protection'; K. Vandekerkhove, L. De Keersmaecker, R. Walleyn, F. Köhler, L. Crevecoeur, L. Govaere, A. Thomaes and K. Verheyen, 'Reappearance of Old Growth Elements in Lowland Woodlands in Northern Belgium: Do the Associated Species Follow?', *Silva Fennica* 45(5) (2011), 909–36; Les amis de la forêt de Soignes, *La forêt de Soignes: Connaissances nouvelles pour un patrimoine porteur d'avenir* (Wavre: Mardaga, 2009); D. Van Dam, C. Sappia, D. Belayew and I. Parmentier, *Pour une gestion durable du territoire rural de la Wallonie: Une réalité à laquelle sensibiliser les jeunes générations* (Namur: Presses universitaires de Namur, 2012).

57. This situation is similar to what happened in France: 'Ainsi la doctrine physiocratique est en réalité à l'origine de la justification de la politique forestière d'aliénation et de défrichement qui a trop caractérisé la fin du XVIII<sup>e</sup> siècle et le XIX<sup>e</sup> siècle'. R. Blais, *La forêt*. 3rd edn (Paris: Presses universitaires de France, 1943), 4.
58. F. de Mérode, *Discours prononcé par Monsieur le comte Félix de Mérode, membre de la Chambre des Représentants, sur la question du domaine forestier, incidemment liée à la discussion du traité avec la Hollande* (Brussels, 1843), 1.
59. D. Diagre-Vanderpelen, *Le Jardin botanique de Bruxelles 1826–1912: Reflet de la Belgique, enfant de l'Afrique* (Brussels: Académie Royal de Belgique, 2012).
60. *Forêt, Chasse et Pêche: Exposition internationale. Bruxelles-Tervueren 1897. Section Belge*. Brussels: Ch. Bulens, II, 1897.
61. Clicheroux, 'La forêt de 1800 à nos jours', 43–44; Flemish forestry decree of 13 June 1990, in *Moniteur belge*, 28 September 1990; Walloon forestry decree of 15 July 2008, in *Moniteur belge*, 12 September 2008.
62. Tallier, *Forêts et propriétaires*.

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