

# Belgium's long-term strategy

## 1. International and European context

In 2015, the Paris Agreement was concluded in the context of the United Nations Framework Convention on Climate Change (UNFCCC). The main objective of this accord is to limit the rise in global temperatures to well below 2°C, and to aim for a maximum increase of 1.5°C (compared to pre-industrial levels). To this end, the different parties to the accord have presented a Nationally Determined Contribution for 2025/2030. Moreover, all parties are invited to draw up a long-term strategy for low greenhouse gas emissions development and submit it to the UNFCCC by 2020.

In preparation for the EU's long-term strategy to be presented to the UNFCCC in 2020, in November 2018 the European Commission published its long-term strategic vision "A clean planet for all", which aims to build a prosperous, modern, competitive and climate-neutral economy by 2050<sup>1</sup>. According to the Commission, this ambition is in line with the 1.5°C objective of the Paris Accord. The vision of the Commission has been accompanied by a detailed and in-depth analysis, with different scenarios exploring how climate neutrality can be achieved by 2050. At the European Council of 12 and 13 December 2019, European Heads of Government endorsed the objective of a climate-neutral Europe by 2050, and the Commission was invited to prepare a proposal for a long-term strategy as early as possible in 2020, with a view to its adoption by the Council and submission to the UNFCCC. Article 15 of the Governance Regulation (EU Regulation 2018/1999) also requires each Member State to prepare and submit a long-term strategy to the European Commission before 1 January 2020.

With this long-term strategy, Belgium intends to fulfil its commitments under the Paris Agreement and the European Governance Regulation, and provide a clear framework for its citizens and businesses.

## 2. Belgian context and approach

Belgium is a federal state in which decision-making power is shared between a federal state, three regions (Wallonia, Flemish and Brussels-Capital) and three Communities (Flemish, French and German-speaking). As regards climate policy, the regions have important responsibilities in areas such as rational use of energy, promotion of renewable energy sources, public transport, transport infrastructure, urban and rural planning, agriculture and waste management. The federal state is responsible for a large part of fiscal policy. It is also responsible for product policy (standards, quality of fuels, labelling and performance standards for electrical appliances for domestic or industrial use, etc.). It is responsible for the security of the country's energy supply and nuclear energy. It oversees territorial waters and is therefore responsible for the development of offshore wind farms.

For the development of Belgium's long-term strategy, each region has drawn up its own strategy, approved at its level of government. These regional strategies are annexed to the present document.

The federal level intends to cooperate with the regional entities and support them in their transition to a climate-neutral society. To this end, the federal administration has prepared a vision document containing various strategic workstreams and concrete levers that can be deployed to support the transition from the federal level.

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<sup>1</sup> Climate neutrality means a global equilibrium between the emission and absorption of greenhouse gases.

The summary of the policies (point 4) provides an overview of the main common elements of the regional strategies, as well as various elements that the federal level could deploy within its competences.

### 3. Public consultations

Taking into account the above-mentioned approach, whereby each region has developed its own long-term strategy, the regions have also been able to decide separately on the organisation of public consultations.

Various stakeholder and public consultations on climate and energy policy have already been organised in recent years, both at the Belgian level (e.g. in the context of the inter-federal energy pact and the Belgian national energy-climate plan) and at the regional level (in the context of regional strategies and policy plans). Moreover, in recent years, various studies and technical explorations on the long-term scenarios for reducing greenhouse gases have been conducted (both at national and regional level). For reasons of efficiency, each entity has chosen to base its strategy on existing research and stakeholder input, rather than holding an additional public consultation. Each region has also stated in its strategy that it should not be seen as an end point. Each region undertakes to develop processes for the coming months/years to further discuss the regional strategies with the public and the various experts and stakeholders involved, and to substantiate and elaborate them in more detail if necessary. The federal level also intends to cooperate and support the different levels of government and stakeholders in elaborating the elements referred to.

The attached regional strategies provide more detailed information on how the existing research and stakeholder inputs have been incorporated and what further steps are envisaged:

- Walloon Region: see chapters 1.4 and 1.5
- Flemish Region: see introduction, pages 5 to 8
- Brussels-Capital Region: see chapter 3.3

### 4. Summary of the policies

#### 4.1 General level of ambition

The long-term strategies of the regions envisage the following overall emissions reductions by 2050:

- The long-term strategy of Wallonia aims to achieve carbon neutrality by 2050, by a reduction of greenhouse gas emissions by 95% compared to 1990, supplemented by measures regarding carbon capture and use, and negative emissions (see also chapters 2 and 2.1 of the Walloon strategy);
- The long-term strategy of Flanders aims to reduce greenhouse gas emissions from the so-called non-ETS sectors by 85% by 2050 compared to 2005, with the ambition to move towards full climate neutrality. As regards the sectors covered by the ETS, the Flemish Region subscribes to the context set out by the EU for these sectors with a decreasing emissions quota (see also chapter 2.1 of the Flemish strategy);
- The long-term strategy of the Brussels-Capital Region sets the objective of moving closer to the European target of carbon neutrality by 2050, in the urbanised context of Brussels (see also chapter 4.1 of the Brussels-Capital strategy).

The federal level does not have its own reduction target, in percentage terms, since all Belgian greenhouse gas emissions are covered by the emissions of the regions.

Besides the ambitions to reduce direct greenhouse gas emissions, the different regions are also working - to varying degrees - to limit indirect emissions and their carbon footprint. The attached regional strategies provide more detailed information (see for example point 4.2 of the Walloon strategy, the introduction to the Flemish strategy and point 4.2 of the Brussels-Capital strategy).

#### 4.2 Expected emissions levels by sector

In accordance with the requirements of the Governance Regulation, the regional strategies contain information on the expected emission levels by sector in 2050. The table below presents these expected emission levels at the Belgian level. Nonetheless, it is important to take into account the following observations in this regard:

- The nature of the expected emissions levels by sector differs between regions and sometimes even between sectors within a region. For example, the Flemish strategy contains 'expected indicative contributions' per sector, while the Walloon strategy refers to the results of the 'Wallonie Bas Carbone' (Low Carbon) study, in which the sectoral reductions were taken into account in an 80% reduction scenario. **The table below therefore in no way contains strict sectoral targets at the Belgian level, but is intended instead to illustrate the expected emissions levels per sector at the Belgian level on the basis of the three regional strategies.** The nature and source (including underlying assumptions) of the regional figures are specified in the annexed regional strategies;
- The figures for 2030 in the table below are based on the regional WAM scenarios as elaborated in the Belgian NECP<sup>2</sup>;
- The Flemish strategy does not contain a quantified estimate of the expected emissions levels in 2050 for Flemish industry covered by the ETS. In the table below, the expected level of emissions from Belgian industry has therefore been calculated as the sum of Walloon and Brussels industry (ETS + non-ETS) and Flemish non-ETS industry, with the proviso that Flemish industry covered by the ETS needs to be added. Furthermore, industrial emissions (historical + expected) are not included in the total figure in the last row of the table;
- The emissions figures for the transport sector do not include international aviation and maritime transport;
- The LULUCF sector is not included in the table below;

Table 1: Historical and expected emission levels per sector in Belgium (in Mt CO<sub>2</sub> eq.)

	1990	2005	2017	2030	2050	2005-2050
Electricity	23.0	23.2	13.2	/	0.0	-100%
Industry	57.2	50.6	38.7	/	/	/
- ETS		43.0	30.5	/	/	/
- Non-ETS		7.6	8.2	5.1	1.3 to 1.9	-76% to -83%
Transport	21.1	26.7	25.9	19.6	0.0	-100%
Buildings	25.0	27.4	20.7	15.9	2.5 to 2.9	-89% to -91%

<sup>2</sup>The NECP, including all underlying figures and assumptions, can be accessed via this link: <https://www.nationalenergyclimateplan.be/en>.

Agriculture	15.3	12.8	12.4	9.9	6.3 to 7.0	-45% to -51%
Waste	5.1	4.5	3.7	1.9	0.1 to 0.2	-95% to 98%
<b>Total non-ETS</b>		<b>79.0</b>	<b>70.9</b>	<b>52.6<sup>3</sup></b>	<b>10.2 to 12.0</b>	<b>-85% to -87%</b>

Given that the scope of the different regional strategies varies (not all of them include the ETS), it is not possible to aggregate the regional levels of ambition in a way that shows the overall Belgian target for reducing greenhouse gas emissions. The above table shows that, on the basis of the regional strategies, the emissions from Belgian non-ETS sectors would be reduced by 85% to 87% by 2050 compared to 2005.

### 4.3 Key levers by sector

Each regional strategy addresses the key changes and breakthroughs<sup>4</sup> required in each sector to achieve the envisaged emissions reductions. Each region has incorporated its own emphases and priorities. However, a number of recurring key elements can be identified. These common elements are briefly summarised below<sup>5</sup>. The elements with which the federal level could support the regions in their transition are then briefly described.

#### The electricity sector

Each region acknowledges that electricity production must be completely climate neutral by 2050<sup>6</sup>. For this reason, each strategy places a strong emphasis on renewable energy sources, including solar and wind power, taking into account the potential of each region. The strategies differ somewhat on the role of biomass in the electricity mix: in the Walloon and Flemish strategies, the use of sustainable biomass for energy purposes still has a role to play (taking into account the cascade principle), whereas in the Brussels strategy, the use of biofuels is deemed unsuitable in an urban context, given the impact on air quality.

Each region also anticipates that electrification - combined with a climate-neutral electricity supply - will contribute significantly to the reduction of greenhouse gases in other sectors, primarily transport (e.g. electric vehicles), buildings (e.g. heat pumps) and industry.

At the same time, each strategy states that the clean potential for renewable electricity generation (and power generation in general) is insufficient to fully cover anticipated future demand. Each region therefore gives an important role in its long-term strategy to imports of climate-neutral electricity (and other energy sources). The strategies of the Flemish and Walloon Regions also highlight the need for a reform of the current centralised and demand-driven energy system towards a decentralised and

<sup>3</sup>= 52.4 Mt CO<sub>2</sub>eq. from the sectors non-ETS industry, buildings, transport, agriculture and waste + 0.2 Mt CO<sub>2</sub>eq. from the non-ETS electricity sector, which is not differentiated in Table 1.

<sup>4</sup> In the Walloon strategy, these elements are referred to as 'guidelines', the Flemish strategy uses the term 'bouwstenen' (building blocks), and in the Brussels strategy these elements are described in the 'strategic development' of each sector.

<sup>5</sup> For a complete overview, see the regional strategies in annex.

<sup>6</sup> The Walloon and Brussels strategies refer to an energy mix based entirely on renewable energy sources, while the Flemish strategy refers to a gradual but complete phase-out of fossil emissions in the electricity mix by 2050.

flexible system, as well as the need for electricity storage solutions for both the short term (e.g. batteries) and long term (e.g. Power-to-X).

Within the scope of its competences, the federal level can support the transition in the energy sector, among other things by exploiting the potential of offshore wind energy as much as possible, and by focusing on demand management, energy storage and the interconnection/integration of Belgium into the European electricity grid and the possible construction of the necessary infrastructure for the import of carbon neutral energy sources. With these levers, the federal level is helping to ensure a reliable, affordable and climate-neutral energy supply and to facilitate electrification in other sectors. Furthermore, the federal level, in consultation with the regions, could support the transition by:

- Having a long-term vision for electricity supply;
- Constructing transport infrastructure for green hydrogen and synthetic fuels;
- Implementing a long-term framework for the integration of intermittent sources by all actors;
- Supporting an active role for citizens.

## Industry

Both the Walloon and Flemish strategies<sup>7</sup> recognise that industry still remains an important source of greenhouse gases, and therefore envisage a far-reaching transition of their industry towards climate-friendly production systems. Flanders highlights the importance of preventing carbon leakage through effective measures so that emissions are actually reduced, not simply shifted somewhere else in the world.

In this context, it also underscores the need for major technological breakthroughs and new innovative industrial models. Both strategies identify the following common levers:

In the industrial sectors themselves, the efforts will first and foremost continue to improve energy efficiency. An important point of attention in this respect is using waste heat as much as possible, both within plants and via the heating networks. Moreover, the shift to renewable and climate-neutral energy carriers and raw materials will help reduce emissions further. To this end, both direct electrification and other climate-neutral energy carriers such as green hydrogen and other synthetic fuels are envisaged. Biofuels will also have a role to play, in particular for industrial emissions where electrification or other carbon-free energy carriers are not an option. However, both strategies state that using biomass as a raw material is preferable to its combustion as a fuel. Finally, according to both strategies, carbon capture offers other possibilities for reducing emissions, either through storage (CCS) or use (CCU).

In a broader context, each strategy (including that of the Brussels-Capital Region) highlights the importance of a transition to a circular economy, in which products are designed, produced and consumed with an alternative approach. In addition to creating added value and reducing consumption of raw materials, the transition to a circular economy should also make a significant contribution to the reduction of greenhouse gases, both in the industrial sector and in other sectors (see also section 4.5 below).

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<sup>7</sup> The long-term strategy for Brussels does not devote a specific chapter to the industry sector, on account of its very limited share in the greenhouse gas emissions of the Brussels-Capital Region. Nonetheless, it devotes a chapter to the reduction of fluorinated gases and refers in general terms to (translation) "*initiatives to develop carbon-free production models, towards a circular and renewable economy ...*".

Within the scope of its competences, in particular in the areas of product standardisation and taxation, the federal level can contribute to the transition to a circular economy, for example by fostering longer service life, more possibilities to repair, more possibilities to disassemble and lower material intensity of products.

## Transport

The three regions envisage reducing emissions from the transport sector to zero by 2050, for both passenger and freight transport<sup>8</sup>. To this end, the regional strategies emphasise the following common elements:

Each strategy primarily focuses on management/rationalisation of transport demand, with an emphasis on digitisation, efficient land use planning and a circular economy with shorter local value chains, thereby reducing the need for freight transport.

Moreover, each of the regional strategies stresses the importance of modal shift as the cornerstone for achieving the stated climate ambitions, with additional benefits in terms of air quality, mobility and use of the public space. As regards passenger transport, each region aims to limit the share of private cars in the modal split, in favour of alternative modes such as active transport (walking and cycling), light electric vehicles (e-bikes, *speedelecs*, electric scooters, etc.) and shared modes of transport (public transport and carsharing). To this end, they focus on a high quality offering of alternative modes, adequate infrastructure and the promotion of combined mobility<sup>9</sup>. The concept of *Mobility-as-a-Service* is also acknowledged as being an important lever to achieve the objective of combined mobility and to increase the vehicle occupancy rate (which translates into a reduction in the number of kilometres travelled per vehicle). As regards freight transport, the Walloon and Flemish strategies both aim at a shift from road to rail and inland waterways.

Finally, as the final element in the transport sector, regional strategies include a shift to zero-emission vehicles and energy carriers. As regards passenger transport, the Walloon and Flemish strategies primarily focus on zero-emission vehicles (battery or hydrogen powered)<sup>10</sup>. Also for freight transport, both regions aspire to achieve completely carbon-free traffic<sup>11</sup>, although they acknowledge that this is a considerable challenge which will require new technological developments. Besides electrification and hydrogen, alternative fuels, including biofuels and synthetic fuels, are given an important role, especially for heavy freight transport. The Brussels-Capital strategy highlights plans to ban diesel cars from circulation as of 2030, and petrol and LPG cars from 2035, so that transport will also be largely carbon-free by 2050.

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<sup>8</sup> The Walloon strategy refers to being completely carbon-free, the Flemish strategy emphasises zero emissions for transport and the Brussels strategy also believes that it is possible to make transport largely carbon-free by 2050, provided that the modal shift to alternatives to private cars has happened, and that the electricity used for transport is renewable in origin.

<sup>9</sup> This means that a single journey is made using multiple modes of transport, with the user using the most appropriate means of transport for each part of the journey and being able to switch easily from one mode to another.

<sup>10</sup> The Walloon strategy states that the long-term priority is electrification, given that the energy efficiency of electric vehicles is 2 to 3 times higher than that of thermally powered vehicles. The Flemish strategy states that batteries and hydrogen fuel cells are the only existing zero-emission alternative.

<sup>11</sup> The Walloon strategy envisages passenger vehicles being completely carbon-free. The Flemish strategy refers to a complete shift to zero-emission vehicles.

Finally, the Walloon and Flemish strategies recognise the need to reduce greenhouse gas emissions from international aviation and maritime transport, in particular via alternative climate-friendly fuels.

Among other things, the federal level will ensure an efficient rail network with sufficient interconnections with neighbouring countries, to facilitate growth in the share of rail in passenger and freight transport. In addition, through its competence for taxation and product standardisation, it can support the transition to alternative modes of transport and zero-emission vehicles.

## **Buildings**

Each of the strategies focuses on significantly improving the energy efficiency of the building stock by 2050. To this end, each region proposes ambitious standards for new constructions, and accelerated and significant improvement of the energy performance of the existing building stock by 2050 (primarily through extensive renovation, but also demolition and reconstruction where appropriate). The following objectives have been incorporated in accordance with the regional renovation strategies:

- Walloon strategy: average target equivalent to primary energy consumption<sup>12</sup>  $\leq 85$  kWh/m<sup>2</sup>/year for the residential building stock;
- Flemish strategy: average target equivalent to primary energy consumption<sup>13</sup>  $\leq 100$  kWh/m<sup>2</sup>/year for the residential building stock, to be differentiated in more detail by type of building;
- Brussels strategy: average target equivalent to primary energy consumption<sup>14</sup>  $\leq 100$  kWh/m<sup>2</sup>/year for the complete building stock;
- As regards the tertiary sector, each region is aiming for an energy-neutral or carbon-neutral building stock by 2050 in terms of heating, hot water production, cooling and lighting.

Moreover, for the remaining energy demand, each strategy envisages an adaptation of the energy mix to further reduce greenhouse gas emissions:

- The Walloon strategy envisages that by 2050, the vast majority of buildings will use carbon-neutral energy sources for the production of heat and hot water. This will be primarily via heat pumps, but also through the use of biomass, solar heat, cogeneration and (mainly in cities) heat networks. If, in exceptional cases (e.g. in listed buildings), fossil fuels are still used, this will be via highly efficient technologies;
- The Flemish strategy also aims to make the energy supply of buildings more sustainable by 2050. Wherever possible, it is focusing on heating networks, which are supplied with waste heat or centrally-produced green heat. For more scattered buildings, solar heat and electrification (primarily heat pumps) will be prioritised;
- The Brussels strategy envisages that the reduction of energy consumption in buildings will be accompanied by an increased use of renewable energies adapted to the urban context, the main examples being solar thermal and photovoltaic energy combined with heat pumps.

Finally, various other levers are proposed in the regional strategies to further reduce energy consumption and support the integration of renewable/climate neutral energy sources. The Flemish strategy, for example, focuses on a number of spatial aspects (compactness, orientation, flexibility and

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<sup>12</sup> In accordance with the method of calculating the EPB certification of existing properties

<sup>13</sup> idem

<sup>14</sup> idem

adaptability) and on a more efficient use of the available space (e.g. by sharing space) in order to further reduce energy consumption. Conversely, the Walloon strategy believes that behavioural change can play an important role in the evolution towards more rational energy consumption.

Within the scope of its competences for taxation, the federal level can support both an accelerated and deep renovation of the building stock and a greening of the energy mix. The federal level will also ensure that its own building stock is fully energy and climate neutral by 2040.

## **Waste**

Although the waste sector is not the subject of a separate chapter in the regional strategies, this issue is covered in the sections dealing with other sectors (primarily under the heading 'industry' in the Walloon and Flemish strategies, and under the heading 'electricity production' in the Brussels strategy). In their strategies, each of the regions gives pride of place to the circular economy in the context of the efforts to achieve their climate ambitions (alongside other objectives such as, first and foremost, the management of raw and other materials). As a result, the gradual but complete phasing out (in Flanders and Brussels), or at least a very strong reduction, of landfilling or incineration of waste by 2050 is envisaged, which will make it possible to virtually eliminate all greenhouse gas emissions.

## **Agriculture**

Although the Walloon and Flemish strategies focus on the specific characteristics of their respective agricultural sectors, it is possible to identify a number of common elements, which can be grouped under three pillars:

(1) the levers within the agricultural system: both strategies are aimed at adaptations and improvements within the agricultural system, leading to a reduction in greenhouse gas emissions: the emphasis is on *smart farming and precision farming* (to minimise the input of raw materials and energy and maximise yield), practices to increase nitrogen efficiency (e.g., better manure management), and the application of techniques to reduce enteric emissions from livestock (e.g., genetic selection and adapted feed rations). Both strategies also place a strong emphasis on energy efficiency and the greening of the energy mix in order to significantly reduce energy emissions<sup>15</sup> from the agricultural sector.

2) the link with LULUCF and biomass: in addition, the Walloon and Flemish strategies stress that the agricultural sector can make an important contribution as a producer of biomass and biofuels (not only through the direct production of energy crops, but also by exploiting secondary flows such as the fermentation of animal manure to extract biomethane) and through carbon sequestration on agricultural land (see also the separate section below).

3) the levers within the food system: finally, a number of levers will be deployed within the wider food system to mobilise the potential for reduction. In this context, the main emphasis is on reducing food waste, maximising the use of food residues and other secondary flows, and adapting consumption patterns towards more local and seasonal products and healthier food.

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<sup>15</sup> This component is especially relevant for the Flemish strategy, given the significant energy consumption in the Flemish greenhouse horticulture sector. In the Walloon agricultural sector, energy emissions are already relatively low due to the limited presence of greenhouse horticulture.



The Brussels-Capital strategy only devotes limited space to the agricultural sector, namely on account of its very small share in the region's greenhouse gas emissions. In this area, its strategy primarily focuses on the development of urban agriculture which, in addition to climate change mitigation (e.g. less food transport), offers various benefits (greening, employment, social cohesion, etc.).

## LULUCF

Finally, efforts are envisaged to maintain or enhance carbon sequestration in soils and biomass. These include expanding green spaces (forests, natural areas, parks, etc.), sustainable forest and nature management and the encouragement of agricultural practices that favour carbon sequestration on agricultural land. In this respect, more information is available in the regional strategies in the annexes, see in particular chapter 3.6.1. of the Flemish strategy and chapters 2.1.1. and 3.5. of the Walloon strategy.

Each strategy also covers potential synergies with climate change adaptation. For example, carbon-rich agricultural soils are more resistant to periods of drought or flooding, expanding green spaces is a protective measure against expected heat waves (especially in urban areas) and the sound management of our forests can increase their resilience to climate change.

### 4.4 Key levers of adaptation policy

Belgium is already witnessing the consequences of climate change, and the impact is expected to increase with the rise in average global temperatures. The country must therefore organise itself to adapt to the expected or already observed consequences and to manage the related risks.

A range of measures have already been taken: as early as 2010, Belgium adopted a National Adaptation Strategy<sup>16</sup>, which envisaged the elaboration of a National Adaptation Plan<sup>17</sup>. This plan was adopted by the National Climate Commission in 2017 to strengthen cooperation and develop synergies between the different entities. To this end, the adaptation policies already implemented by the different entities were mapped and new national measures were identified in order to strengthen Belgium's resilience against the expected effects of climate change.

In accordance with the requirements of the Governance Regulation, the long-term strategies of the three regions include a component on the main aspects of their adaptation policy up to 2050. This strand addresses various common elements, including the importance of enhancing our resilience against droughts and floods, increased heat waves (especially in urban environments subject to the heat island effect) and the various risks related to climate change in specific sectors (forests, agriculture, industry, the energy system, etc.). The attached regional strategies provide further information on this subject:

- Walloon Region: see chapter 7.3.
- Flemish Region: see chapter 4.2.
- Brussels-Capital Region: see chapter 6.3

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<sup>16</sup>The National Adaptation Strategy is available at: <https://www.klimaat.be/files/1513/8269/7947/NASpublicatiedruk.pdf>.

<sup>17</sup>The National Adaptation Plan is available at: [https://www.klimaat.be/files/6714/9880/5758/NAP\\_NL.pdf](https://www.klimaat.be/files/6714/9880/5758/NAP_NL.pdf).

The regions will prepare and implement a new national plan for the period 2021-2030, taking into account a long-term vision. Through strategies, plans, studies and expert consultations, the regions are working to enhance their resilience against climate change risks.

#### 4.5 Cross-cutting focus points

Each entity also covers a number of cross-cutting focus points which are relevant to the long-term strategy. This chapter presents the common focus points to achieve a successful transition.

##### **A socially just transition**

The transition to be made by Belgium is a challenge for society as a whole. Both the regions and the federal level stress the importance of a socially just transition in which no one is left behind. To this end, the regions are looking to implement measures for broad public participation, social consultation, appropriate training for new professions and support for low-income and other vulnerable target groups most exposed to the impact of this transition. Specific efforts will be made to tackle energy poverty.

##### **A secure and sufficient supply of sustainable and affordable energy**

Both the Flemish and Walloon strategies recognise the need for a secure and sufficient supply of sustainable and affordable energy for Belgian citizens and businesses by 2050. Overcoming this challenge is crucial if the transition is to take place with a social dimension, while safeguarding the competitiveness of our companies.

To this end, the Flemish and Walloon strategies propose various measures which are also discussed in section 4.3, such as improving efficiency (in all sectors), exploiting the clean renewable energy potential, developing a flexible and decentralised energy system (including energy storage and demand side management). The three regions also recognise that Belgium will continue to be dependent on (climate neutral) energy imports. As such, in order to realise the regional strategies, a secure and sufficient supply of sustainable and affordable energy from abroad is vital.

##### **Innovation and R&D**

Each of the strategies emphasises the importance of innovation and R&D. Each acknowledges the need for technological breakthroughs and innovations to achieve significant emissions reductions in sectors that are difficult to make carbon-free, or even negative emissions in the long term. In addition, the importance of 'system innovations' is underscored (new business models, sharing systems, etc.). The regions also indicate that the success of the transition will depend on support for the development of innovations to move towards a more circular economy.

##### **Investments and financing**

The regional strategies pay particular attention to funding needs. In effect, the transition requires significant investment in all the sectors concerned, and can therefore only be achieved with adequate funding. The Brussels and Flemish strategies already include an initial estimate of the expected funding needs (based on existing studies), and all entities will continue their work to identify these needs more precisely.

To meet the funding needs, each regional strategy proposes specific emphases. The attached regional strategies provide further information on this subject:

- Walloon Region: chapter 5.
- Flemish Region: chapter 5.4.
- Brussels-Capital Region: chapter 7.3

### **Circular economy**

Finally, each entity expects that the circular economy will make a major contribution to achieving the climate ambitions in the different sectors. Indeed, the circular economy is expected to lead to a reduction in demand for primary raw materials and commodities in favour of high-value finished products and new services (e.g. repair services), a reduction in transport needs, a more efficient use of available space, a better valorisation of secondary flows (both energy and raw material) and a near-total phase-out of emissions in the waste sector. The regional strategies therefore place important emphasis on applying the principles of the circular economy in the different sectors. Besides reducing direct emissions, this approach will bring additional benefits, such as reducing Belgium's carbon and materials footprint, creating local economic opportunities and jobs, and reducing dependence on imports of (scarce) materials.