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# *Summary of the Strategic Environmental Assessment* **of the project of National low-carbon Strategy n°3**

June 2026



STRATÉGIE FRANÇAISE ÉNERGIE CLIMAT

# Summary

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# I. Non-technical summary of the Strategic Environmental Assessment

## 1 - Preamble: strategic environmental assessment and its targets

**Strategic Environmental Assessment (SEA) is an iterative process aimed at ensuring a high level of consideration of environmental considerations in the development of programming to achieve a plan that is less harmful to the environment.**

**This environmental assessment is part of the preparation of the third edition of the National Low Carbon Strategy (SNBC),** which constitutes France's framework for action on climate change mitigation.

**The SEA shall report on the potential or actual environmental effects of the implementation of SNBC 3.** The environment is understood as a whole: population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape, as well as the interactions between these elements (L. 122- 1 of the Environmental Code). The SEA approach, as a decision support tool, was initiated at the start of the development of the SNBC 3 and allowed it to be adjusted throughout its development.

**This process is a preventive and non-normative approach. The SEA must make it possible to assess the various options available and present the best possible choices.**

## 2 - General presentation of the National Low Carbon Strategy and its articulation with other plans and programmes

### A. The National Low-Carbon Strategy, what are we talking about?

**The National Low Carbon Strategy (SNBC) is the long-term planning tool for French climate policy to reduce greenhouse gas emissions.** It was established by Law No 2015- 992 of 17 August 2015 on the energy transition for green growth. The SNBC includes a long-term target (achieving climate neutrality in 2050<sup>1</sup> and reducing France's consumption-based emissions), a target trajectory to achieve it, carbon budgets (greenhouse gas emission ceilings not to be exceeded expressed as an annual average per 5-year period) and public policy guidelines to achieve these targets.

**The SNBC relies on a baseline energy-climate transition scenario, which translates the effect of assumptions, policies and measures into sectoral greenhouse gas emission trajectories by ensuring, in accordance with the law, 'to target the action plan on the most effective measures'.<sup>2</sup>** This indicative reference scenario enables the Government to adopt the SNBC's carbon budgets, sectoral targets and public policy measures and guidelines.

The SNBC applies in mainland and in the following overseas territories: Guadeloupe, French Guiana, Martinique, Réunion, Mayotte, Clipperton, Saint Martin and Saint Pierre and Miquelon<sup>3</sup>.

**The law provides for SNBC to be reviewed every five years.** The SNBC referred to in the SEA is the third edition (SNBC 3)<sup>4</sup>. **SNBC 3 updates the 3rd and 4th carbon budgets** (periods 2024- 2028 and 2029-2033) in line with the new climate ambition and **adopts the 5th carbon budget** (period 2034-2038).

### B. Key Strategic Targets of the Third National Low-Carbon Strategy

SNBC 3 has seven main strategic targets:

- **Halve territorial non-carbon sink emissions** (LULUCF sector and technology sinks) by 2030 compared to 1990;
- **Achieve climate neutrality by 2050**, i.e. the balance, within the national territory, between anthropogenic emissions by sources and anthropogenic removals by sinks of greenhouse gases;

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<sup>1</sup> Target set out in Article L. 100-4 of the Energy Code

<sup>2</sup> Article L. 222-1 B of the Environmental Code

<sup>3</sup> Outermost territories not having environmental competence over which Book VI of the Environmental Code

<sup>4</sup> The previous SNBC (SNBC 2) was adopted by decree in April 2020

- **Ensuring energy sovereignty and moving away from fossil fuels** by ending coal-fired electricity production by 2027, coal energy consumption by 2030, oil consumption by 2045 and fossil gas consumption by 2050 and ensuring the availability of decarbonised energy, including electricity and biomass;
- **Reducing our final energy consumption**, i.e. energy at the stage of its use by the final consumer, through energy efficiency and sufficiency;
- **Consolidate the natural carbon sink**, via a balanced approach to the various forest and soil issues;
- **Ensure a just, sustainable and socio-economically competitive transition** that protects employment, purchasing power and territorial balance;
- **Reduce France's consumption-based emissions** from -71% to -79% in 2050 compared to 2010. France thus becomes the first country to set itself an indicative consumption-based emissions reduction target by 2050.

Beyond these targets, SNBC 3 pursues sectoral targets for reducing GHG emissions.

## C. The articulation of SNBC with other plans and programmes

### 1. Comprehensive consideration of SNBC in French planning documents

**The State, local and regional authorities and their public institutions are required**, respectively, to take SNBC into account in their planning and programming documents which have a significant impact on greenhouse gas emissions.<sup>5</sup> **The Climate and Resilience Act extended this principle to certain economic actors** by requiring the identification of decarbonisation levers available to them and their operational translation into decarbonisation roadmaps.<sup>6</sup> Finally, to support voluntary undertakings wishing to assess the consistency of their decarbonisation trajectory with the guidelines of this SNBC up to 2050, **an SNBC voluntary declination guide for organisations will be published in parallel with SNBC 3.**<sup>7</sup>

The SNBC reference scenario is intended to guide these actors in the preparation of their planning documents.

**At territorial level, SNBC is mainly linked to:**

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<sup>5</sup> Legislation: III of Article L. 222-1 B of the Environmental Code: [https://www.legifrance.gouv.fr/codes/article\\_lc/LEGIARTI0000393787](https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI0000393787)

<sup>6</sup> Legislation: Article 301 of the Climate and Resilience Act, [https://www.legifrance.gouv.fr/jorf/article\\_jo/IORFARTI000043956974](https://www.legifrance.gouv.fr/jorf/article_jo/IORFARTI000043956974)

<sup>7</sup> A draft of this guide was published in November 2024 during the prior consultation on the draft SNBC 3: [https://concertation-strategie-energie-climat.gouv.fr/sites/default/files/2024-11/3.%20Guide%20SNBC%20businesss\\_0.pdf](https://concertation-strategie-energie-climat.gouv.fr/sites/default/files/2024-11/3.%20Guide%20SNBC%20businesss_0.pdf)

- the regional planning, sustainable development and territorial equality schemes (SRADDET), the regional air and energy climate scheme (SRCAE) for the Ile-de-France and Corsica regions, and the regional planning scheme (SAR) for the overseas departments and regions;
- Territorial climate-air-energy plans (PCAETs);
- Territorial coherence schemes (SCoT);
- Local urban development plans (LUPs).

These documents must be subject to a strategic environmental assessment.

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## 2. The main plans and programmes linked to the SNBC

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**By its nature, SNBC is linked to many plans and programmes. Indeed, SNBC is a very cross-cutting strategy** that covers all greenhouse gas emitting sectors (transport, agriculture, industry, buildings, energy production and processing, waste, digital), as well as carbon sinks. SNBC 3 also contains guidelines on mobilising stakeholders (States, businesses, local authorities) and on issues that facilitate or are decisive for achieving our climate targets (research, economic policy, jobs and skills).

**Mainly, SNBC is linked to the Multiannual energy plan (MEP)<sup>8</sup> published on 12 February 2026<sup>9</sup> and the National Climate Change Adaptation Plan (PNACC) adopted in March 2025.<sup>10</sup>** Together, these three documents form the French Strategy for Energy and Climate (SFEC). The SFEC aims to address the challenges of decarbonisation in a coherent and integrated manner and to strengthen the necessary articulation between climate change mitigation and adaptation policies.

**The SNBC is also structured as follows:**

- **Transversally** with the **National Plan for the Reduction of Air Pollutants (PREPA)**, which brings together the State's medium- and long-term guidelines for air quality in many sectors (industry, transport, residential-tertiary, agriculture); the **National Strategy for the Mobilisation of Biomass (SNMB)**, which specifies the modalities for the sustainable mobilisation of biomass (wood-energy, wood-material,- agricultural biomass, organic waste) to achieve SNBC's targets; France's electrification plan, which constitutes an operational roadmap for the phase-out of fossil fuels, and the **national strategy to secure supplies of critical metals**;
- **Sectorally, with many documents.** The main sectoral documents are cited in Part III.3 of the SNBC 3 Strategic Environmental Assessment.

The diagram below shows the main interactions between SNBC and other plans and programs.

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<sup>8</sup> EPP is subject to a strategic environmental assessment

<sup>9</sup> Ministry of Ecological Transition (2025). Multiannual energy programmes (MEP) <https://www.ecologie.gouv.fr/politics-public/programming-plural-lenergy-ppee>

<sup>10</sup> Ministry of Ecological Transition (2025). Adaptation of France to climate change: <https://www.ecologie.gouv.fr/public-policies/adaptation-france-change-climatique>

# Summary of the Strategic Environmental Assessment of SNBC 3

Courtesy translation - in the event of any legal inconsistency between the English courtesy translation and the French version, the French version shall prevail.

## Interactions principales entre la SNBC et les autres plans

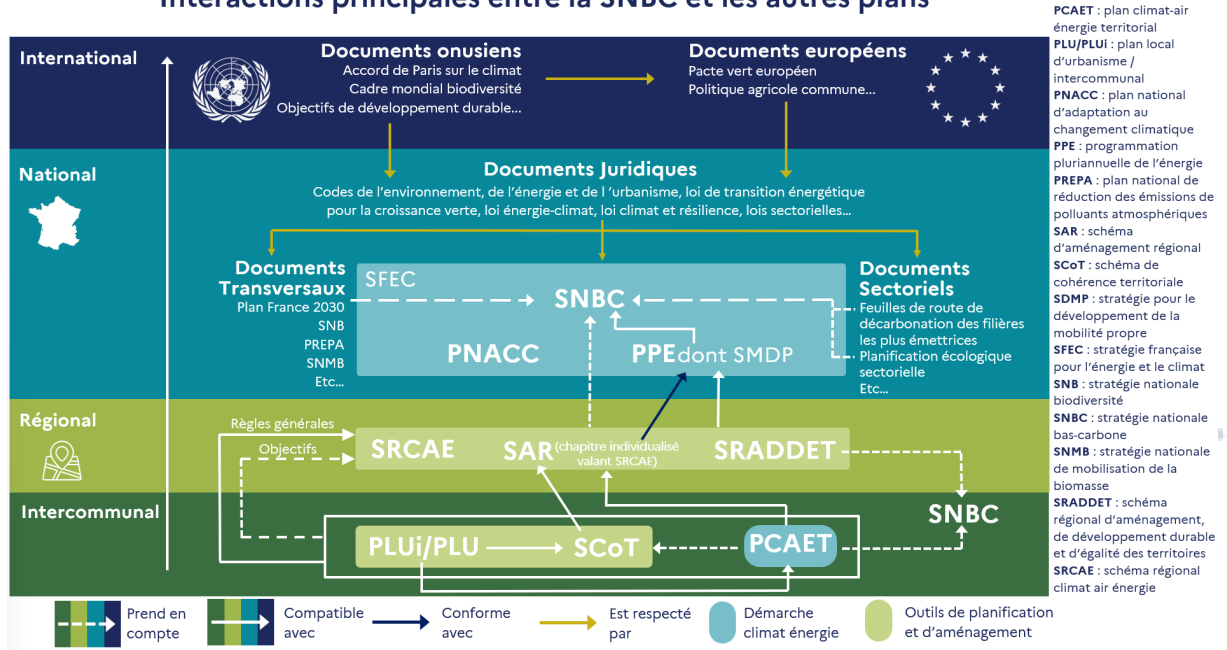


Figure: 1 Key interactions between SNBC and other plans

### 3 - Initial state of the environment and identification of environmental issues from the prism of which SNBC 3 is to be examined

#### A. Summary of the initial state of the environment

In the initial state of this SEA, in accordance with the Environmental Code, the following topics were considered: **Climate and energy**; **Physical environment**: water resources and aquatic environments, soil and subsoil resources; **Natural environments**: biodiversity and natural habitats and the Natura 2000 network; **Human environment**: natural and technological hazards, nuisances, human health, architectural, cultural and archaeological heritage.

These themes are examined in turn through the prism of:

- **The main threats and pressures they face** in relation to the topics we are dealing with, namely greenhouse gas activities, carbon sinks and climate change. These sections describe the current state of play (according to the most recent data);
- **The main existing policies and measures** in relation to these pressures;
- **Recent trends and prospects for trend developments**, according to available data on the topic.

On the basis of those elements of analysis, environmental issues were identified, against which SNBC 3 was then examined.

**This summary focuses on the main threats and pressures identified and trends and prospects for development.**

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#### 1. Climate and energy

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##### 1. Climate

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##### a. Threats and pressures

**Human activities emit greenhouse gases (GHGs) into the atmosphere.** These GHGs play an essential role in regulating the Earth's climate. However, since the pre-industrial era, global concentrations of GHGs from human activities have increased sharply (+196 ppm between pre-industrialisation 1850 and February 2025, of which +139 ppm for CO<sub>2</sub> alone),<sup>11</sup> accentuating the greenhouse effect. This intensification leads to an increasing accumulation of energy in the Earth's climate system, disrupting the broad balances that govern the current climate and causing major impacts on the environment. **In 2023, territorial<sup>12</sup> non-carbon sink GHG**

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<sup>11</sup> European Environment Agency (2025). Atmospheric greenhouse gas concentrations: <https://www.eea.europa.eu/en/analysis/indicators/atmospheric-greenhouse-gas-concentrations>

<sup>12</sup> Scope: Mainland and Overseas included in the European Union.

**emissions amount to 376 Mt CO<sub>2</sub>e.<sup>13</sup> Transport, agriculture and industry are the three most emitting sectors, accounting for 34%, 20% and 17% of total emissions respectively. The LULUCF (Land Use, Land Change and Forest) sector, which includes emissions and removals from forests, grasslands, cropland, artificialised areas and wood products, is currently a net carbon sink. For the time being, this is the only way for France to achieve CO<sub>2</sub> removals.**

**According to the most recent estimate by INSEE and SDES<sup>14</sup>, in 2024 France's consumption-based emissions amounted to 563 Mt CO<sub>2</sub>e, i.e., reduced to the total population, 8.2 t CO<sub>2</sub>e/inhabitant.** It consists of half domestic emissions (direct emissions from households and emissions from domestic production excluding exports) and half imported emissions (emissions associated with imports for final use and intermediate consumption).

### **b. Trends and outlook**

**Until climate neutrality is achieved globally, the climate will continue to warm and the impacts of global warming will worsen.** In France, from 1900 to the present day, average temperatures increased by 2.2 °C, a value stronger than that observed on a global average. The other effects of climate change already observed are varied and related to each other. In France, climate projections show continued warming until the 2050s, regardless of the emission reduction scenario. The baseline warming trajectory for adaptation to climate change (TRACC), based on the trend scenario according to IPCC scientists, prepares for the hypothesis of a warming that will gradually reach +4 °C by 2100 in France mainland compared to the pre-industrial period.

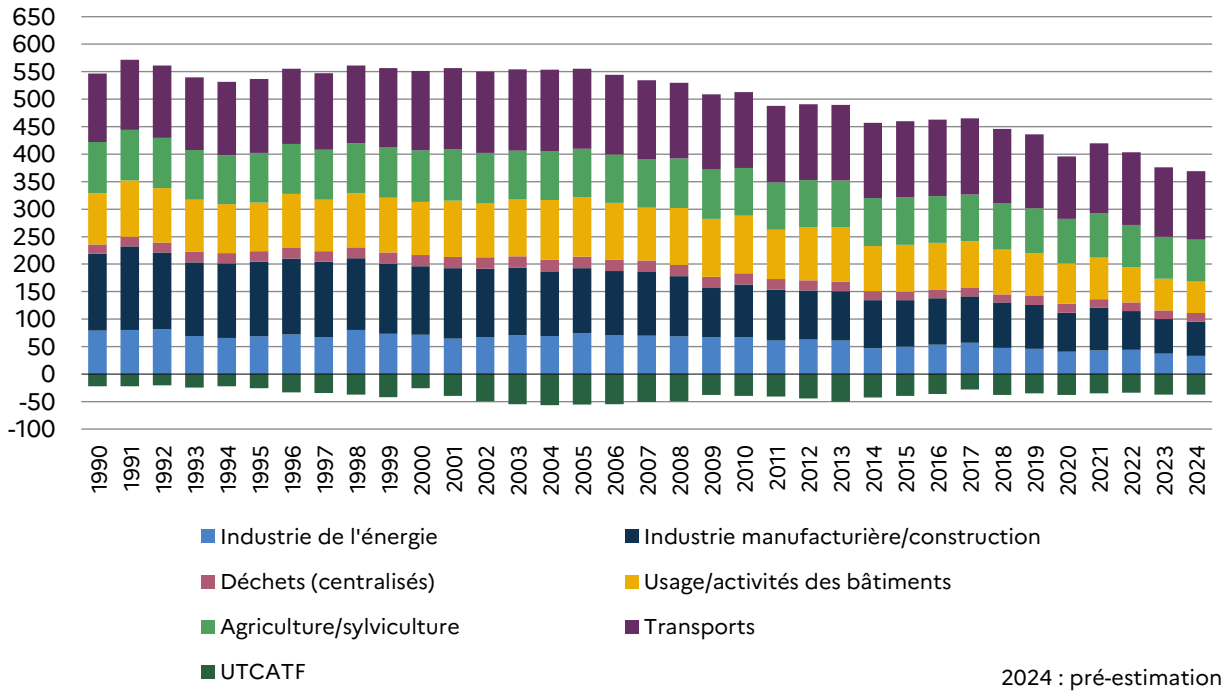
**In terms of past trajectory, France's greenhouse gas emissions excluding carbon sinks have decreased overall since 2005 with an acceleration of this decline in recent years.** Between 1990 and 2024, greenhouse gas emissions in France excluding carbon sinks decreased by 32% according to provisional data (Secten 2025). **The National Low-Carbon Strategy 3 presents a review of France's trajectory in relation to its targets (see SNBC 3 – Part SNBC II.A.1).**

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<sup>13</sup> CITEPA (2025) SECTEN report 2025 edition: [https://www.citepa.org/wp-content/uploads/2025/06/Citepa\\_Secten-2025.pdf](https://www.citepa.org/wp-content/uploads/2025/06/Citepa_Secten-2025.pdf)

<sup>14</sup> BAUDE, Manuel; LARRIEU, Sylvain (2025). France's consumption-based emissions from 1990 to 2024. SDES and Insee, 16/10/2025. <https://www.statistiques.developpement-durable.gouv.fr/edition-numerique/cle-figures-du-climate/fr/3-observations-du-change-climatique-et>

**Changes in GHG emissions excluding carbon sinks (excluding LULUCF)  
(observed, in Mt CO<sub>2e</sub>)**



**Figure: 2** Evolution of GHG emissions (Mt CO<sub>2e</sub>) excluding carbon sinks. (Source: evolution 1990-2024: National Inventory of Greenhouse Gas Emissions, Citepa, Secten 2025)

The French consumption-based emissions increased towards the end of the 1990s before reaching its peak in 2008 (876 Mt CO<sub>2e</sub>). **Since then, the French consumption-based emissions have decreased by an average of 2.3% per year and decreased by 25% in 2024 compared to 2010.**

**According to the latest scenario with available existing measures ('WEM' 2024), considering the effect of all policies and measures adopted until 31 December 2023, a reduction of -39.5% in non-carbon sink GHG emissions compared to 1990 is achieved in 2030, very close to the target set in SNBC 2 to reduce France's non-well GHG emissions by -40% in 2030 compared to 1990. By 2050, the WEM 2024 scenario achieves a 57% decrease in non-well GHG emissions compared to 1990.**

In the WEM 2024 scenario, the consumption-based emissions is reduced by -27% in 2030 and by -44% in 2050 compared to 2010.

**c. Identification of environmental issues**

The fight against climate change is the challenge of the century. Keeping the global average temperature increase well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C is a collective duty. To fully contribute to the global action required by the Paris Agreement, France must drastically reduce its greenhouse gas emissions in order to achieve climate neutrality by 2050 and reduce its consumption-based emissions by taking into account imported emissions. **In this respect, this SEA will then examine SNBC 3 in**

**the context of the issue of 'Reducing territorial emissions and imported greenhouse gas emissions'.**

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## 2. Energy

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### a. Threats and pressures

**Most of the sectors considered by SNBC consume energy**, according to variable shares by type of energy. These energy consumptions are still predominantly fossil, and are sources of greenhouse gas emissions.

**The issue of the availability of the energy consumed, whether on national territory or via trusted third countries, is of paramount importance, and can be a source of tension for national security of supply.** The source of the energy consumed varies greatly depending on the type of energy. While fossil fuels are almost entirely imported, France produces the equivalent of what is consumed domestically for electricity or renewable thermal energy. Sovereignty issues may also arise on specific renewable energies, such as biofuels or hydrogen.

### b. Trends and outlook

**As regards final energy consumption, the WEM 2024 scenario shows that the existing measures already lead to a 16% decrease in the scope of the Energy Efficiency Directive<sup>15</sup> (EED) in 2030 compared to 2012**, with a target of 1 243 TWh in 2030 (a 29% reduction target compared to 2012). This consumption reaches 1 300 TWh in 2050 with the existing measures (against a target of a 50% reduction in final energy consumption set in the Energy Code).

**The 2024 AME scenario also shows sufficient availability of the biomass resource** (surplus biomass scenario over the entire trajectory) **and an increase in electricity consumption.** By 2050, the 2024 WEM assumes a sharp increase in electricity consumption: almost 200 TWh of increased needs between now and 2050 due to ambitious H<sub>2</sub> production assumptions (in particular for the production of e-fuel- due to the new ReFuelEU Aviation Regulation), the increase in the number of electric vehicles (following the revision of the Regulation (EU) on CO<sub>2</sub> emission thresholds for new vehicles) and reindustrialisation. New demands are emerging, in particular in the 'digital and data centre' sector, which counts in the tertiary sector, leading to a sharp increase in electricity consumption reaching up to 63 TWh in 2050 in the WEM 2024 scenario.

### c. Identification of environmental issues

Making France the first major industrial country in the world to emerge from its dependence on imported fossil fuels presupposes resolute action to move from consumption that is still predominantly fossil fuels to an economy that is more sober, more efficient and supplied with low-carbon energy produced and controlled on our soil. France aims to end its coal-fired

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<sup>15</sup> The scope of this Directive covers final energy consumption (excluding non-energy consumption) as well as air bunkers, but excludes sea bunkers and ambient energy (heat in the environment for heat pumps).

electricity production in 2027 and move away from dependence on imported fossil fuels in 2050, compared to an energy mix made up of nearly 60% of currently imported fossil fuels.

**Issues of verification of the overall consistency of the results between them (shielding) are integrated into the modelling work carried out by the DGEC** in order, in particular, to verify at each time horizon, and for each of the sectors (transport, agriculture, buildings, industry, energy, waste) and energy carriers, the adequacy of resources (electricity production, biomass volumes, etc.) with the needs arising from the reference scenario.

**In the follow-up to the SEA, these topics will be addressed through the issue of 'Reducing territorial emissions and imported greenhouse gas emissions'.**

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## 2. Physical environment

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### 1. Water resources and aquatic environments

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In France, freshwater resources are found in surface waters (rivers, lakes) and groundwater. An average volume of almost 211 factureion m<sup>3</sup> (Mdm<sup>3</sup>) is renewed every year in mainland France. Mainland France has almost 430 000 kilometres of rivers and 623 000 if the five DROMs are added. Groundwater is estimated at 2 000 factureion m<sup>3</sup>. In addition, France has around 5 500 km of coastline, including more than 240 coastal and transitional water bodies.

#### a. Threats and pressures

**Climate change is disrupting the water cycle, affecting both the quality and quantity of resources.**

**Current patterns of production and consumption also put pressure on the quantity and quality of water resources and on aquatic environments. As regards the quantitative aspect,** water consumption generates situations of structural quantitative imbalances in certain areas. These imbalances between the availability of water resources and the need for water for human use and ecological purposes will increase as climate change can exacerbate local conflicts between different water users. **As regards quality,** greenhouse gas emitting sectors also cause more local pollution (plant protection products, nitrogen, hydrocarbons, fine particles, PFAS, metals, etc.). Such pollution can directly affect rivers and groundwater through atmospheric deposition after runoff or leaching.

**Spatial planning, land use change or the conduct of economic activity can also generate both quantitative pressures on water resources and aquatic environments through land take, wetland degradation, agricultural drainage or river rectification, etc. and qualitative pressures** with riparian land take leading to bank erosion, increased turbidity and sedimentation of watercourses and hydraulic works disrupting sediment circulation.

#### b. Trends and outlook

**The effects of global warming will amplify pressures on water and aquatic environments, with future risks to the amount of water resources available in the future.** Projections from INRAE and IOWater's Explore2 project indicate an increase in winter precipitation of +10 to +45 % by 2071–2100, depending on the region, but a very marked summer decrease in the south-west. As a result, the average winter flows of rivers would increase by around 10% in some

mountainous areas, while in the south-western plains they could fall by up to 10%. 20% of France's mainland surface area (compared to 10% today) would be affected by a 10-year weather drought (with a 1 in 10 chance of occurring within the year). According to Météo France, the average water balance will increase (precipitation – evapotranspiration). Under the TRACC scenario, evapotranspiration could increase by 10-20%, resulting in annual water deficits of up to -45 mm by 2050 and -116 mm by 2100, one to two months less rain. According to the Office of the High Commissioner for Strategy and Planning, 88% of the territory could face 'moderate to severe' water tensions, with almost generalised restrictions on use by 2050.

**The overall trend in ecological water quality has been slightly improved in the latest WFD inventory.** The trends observed in the various pollutions contaminating rivers are not homogeneous. Pollution of watercourses by organic and phosphorus-containing materials has significantly decreased: Phosphate levels have been halved in rivers in 15 years. However, agricultural pollution remains a concern. Nitrates are, together with plant protection products, the most detected pollutants in groundwater in the mainland, but with significant territorial disparities. PFAS, which is very persistent, is an emerging and increasingly studied threat.

### c. Identification of environmental issues

**Water resources and aquatic environments are subject to many pressures, particularly in relation to climate change and production and development models, both current and those to be chosen in the coming years.** Indeed, the available water resource is likely to decrease, especially in summer, and markedly according to the territories, with also an increase in extreme phenomena (drought, flooding), which requires working on the proper distribution of the resource between the different uses and with the natural environments.

In addition, anthropogenic activities generate water pollution with impacts on the environment, drinking water supply and human health.

**As such, this SEA will subsequently examine SNBC 3 in terms of the challenge of 'preserving water resources' and the proper functioning of aquatic environments, and will also include the topic of water resources and aquatic environments in the challenges of 'preserving and improving the living environment and public health' and 'strengthening the resilience of territories to climate change and limiting natural risks'.**

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## 2. Soils

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In 2022 (average 2021-2022-2023), the 54.9 million hectares of mainland France are distributed for 48% in natural soils (mainly wooded soils), for 43.7% in agricultural soils (cultivated or still grassy like grasslands) and for 8.3% in artificial soils. Soil organic matter, composed on average of 60% organic carbon, provides many services.

### a. Threats and pressures

**Greenhouse gas emitting sectors can cause a variety of threats and pressures on soils.** In particular:

- **All sectors are putting pressure on land take.** The consumption of space, defined as the transformation of natural, agricultural or forestry areas into urbanised areas, is one of the major pressures on French soils. Housing remains the main factor in the consumption of

space. Land take causes losses of ecological functions, including reduced soil fertility and resilience and physical degradation (reduced soil capacity to retain water, loss of carbon storage potential, decreased biomass and microbial biodiversity, etc.). The increase in biomass production for energy purposes may also imply increased competition for land uses;

- **Several sectors, including energy, industry, waste and agriculture, can cause soil pollution.** In October 2024, France identified more than 11,000 polluted or potentially polluted sites and soils <sup>16</sup> (local pollution). The main families of pollutants identified in soils and groundwater are metals (cadmium, lead, etc.) and metalloids (bore, arsenic) (almost a quarter of cases) and hydrocarbons in various forms (almost a third). As regards specifically diffuse pollution, which is often multiple on the same site, it results mainly from industrial spills, poorly managed landfills, fuel leaks or the accidental flow of fertilisers;
- **Radioactive waste**, mainly from the nuclear power industry, is classified according to its level and duration of radioactivity. In France, their volume reached around 1.85 million m<sup>3</sup> at the end of 2023, with more than 90% supported by operational sectors, the rest being under study or project. Their management, strictly regulated by national and international law, is based on the "polluter pays" principle and is financed by producers. The National Radioactive Material and Waste Management Plan (PNGMDR) ensures sustainable planning, incorporating forward-looking scenarios linked to the evolution of the nuclear fleet, in order to anticipate long-term transport, storage and storage needs.
- **Agricultural and forestry management or land-use change practices may affect the biogeochemical cycles (nitrogen, phosphorus, carbon, etc.) of the soil and natural soil degradation phenomena, or more directly affect the physical integrity of the soil (stacking).** The soil ensures the supply of nutrients essential for the growth of plants and in particular nitrogen, phosphorus and potassium. Agricultural production systems require large amounts of nutrients. The nature of crops and associated agricultural practices influence soil nutrient levels. When their content is depleted in cultivated soils or according to the desired level of production, mineral or organic fertilisation (inputs of manure, slurry, etc.) is necessary in order to maintain yields. These inputs, depending on practices and quantities, can have major impacts on soil quality and biodiversity;
- Several surfaces, due to their topographies or the developments that are carried out there, can suffer soil losses (erosion, runoff). Water and wind erosion affect around 20% of the mainland area with average losses of 1.5 t/ha/year and exceeding 2 t/ha/year in very fragile areas (vineyards, arable crops).

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<sup>16</sup> Ministry of Ecological Transition (2025). Environmental assessment of France 2024 edition: [https://portal.documentation.developpement-durable.gouv.fr/exl-php/document-poster/mte\\_recherche\\_avancee/OUVRE\\_DOC/14015?fic=mpdouu00265693.pdf](https://portal.documentation.developpement-durable.gouv.fr/exl-php/document-poster/mte_recherche_avancee/OUVRE_DOC/14015?fic=mpdouu00265693.pdf)

**Climate change exacerbates environmental pressures** with episodes of drought, heat or intense rain that weaken ecosystems. Moreover, climate change also weakens forests and the associated carbon sink.

#### **b. Trends and outlook**

**Despite a relative slowdown in recent years and regionally differentiated dynamics, artificialisation in France has resulted in an average annual consumption of 21 000 hectares of natural, agricultural and forestry areas since 2015.** Land take mainly results in losses of agricultural land. On the other hand, forest area has been increasing for almost two centuries. Growth in terms of wood volume has also slowed down in recent years, due in particular to water stress, higher temperatures and extreme events (storms, fires).

**The historical evolution of carbon stocks in soils varies between -0.2 ‰ and +3.2 ‰ per year, depending on agricultural practices and land use.** In the absence of artificialisation or reversal of grassland, a median increase of +1.9 ‰ per year would be possible throughout the territory, or even +3.3 ‰ for agricultural areas alone and up to +5.2 ‰ for arable crops. **If land take and soil sealing were to increase in the future, this would lead to a significant increase in emissions.** According to ADEME, the sealing of one hectare of agricultural land, usually via concrete or coated, generates around 190 tonnes of CO<sub>2</sub>e. For permanent grassland, this value is even higher, around 290 tonnes CO<sub>2</sub>e/ha, due to richer carbon stocks. **On the other hand, due to climate change, soils could release carbon.** Researchers calculate, on the basis of 49 experimental soil profiles based in North America, Europe and Asia, that for 1 °C of warming in 2050, approximately 30 Gt (+/-30) of carbon could be released from the soil on a global scale.

**The number of polluted sites and soils is increasing over the period 2012-2024.** However, this increase also reflects an improvement in soil knowledge (widening monitoring, gradual identification of new sites, etc.).

**Agricultural biomass will be a key resource for the energy transition.** Increased biomass production may have varying impacts on nitrogen, phosphorus and carbon cycles depending on resource types and practices.

#### **c. Identification of environmental issues**

**Soils have a key role to play in achieving France's climate targets,** in particular through their capacity to store carbon. They are also essential for the proper functioning of natural ecosystems, the preservation of biodiversity, the management of coastline setbacks and the prevention of flooding.

However, soils are subject to strong pressures linked to human activities such as artificialisation and multiple risks of pollution, aggravated by the impacts of climate change. The continued artificialisation of soils and the overturning of permanent grasslands are major obstacles to achieving carbon sequestration targets. **As such, this SEA will subsequently examine SNBC 3 in the light of the challenge of 'preserving the soil and ensuring balanced spatial management'.**

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### **3. Basement resources**

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Natural resources are essential for the proper functioning of society and the economy, in particular for energy production, construction and agriculture.

### a. Threats and pressures

**The need for natural resources has been increasing globally for many years. There are many challenges related to the extraction and consumption of subsoil resources. The challenges, however, vary according to the types of resources considered.**

**Fossil resources** (including gas and oil) **account for the largest share of resources mobilised for final energy consumption.** There are many issues relating to energy resources: France's dependence on imports and the resulting strategic and economic risks (imports of fossil energy amounted to €63 billion in 2024); significant consequences of burning fossil fuels on the climate, etc.

**Metallic mineral resources form a vast ensemble with a wide variety of properties and uses.** The industrial revolution has made it possible to extract an ever-increasing quantity and variety of metals and has seen the emergence of new processes for metallurgy. Dozens of metals have found very diverse uses, with some of these metals playing a prominent role in the development of low-carbon energies. Rare earths are another set of critical metals mobilized by low-carbon technologies (**electric** generators especially for wind turbines and electric vehicle engines). The problems related to metallic mineral resources are numerous: France's dependence on imports (with a very low volume extracted on French territory at present) and the resulting strategic and economic risks; social and environmental impacts of extraction.

**Non-metallic minerals include industrial minerals (andalousite, kaolin, talc, etc.) and construction minerals (aggregates, massive rocks, ornamental rocks, etc.).** In France, the needs for non-metallic minerals are mainly covered by the extraction of materials available on its territory. The uses are mainly local. There is, however, a growing reluctance on the part of the population to extract aggregates.

**This context therefore reinforces a twofold imperative: reducing consumption and increasing the more virtuous use of resources.**

### b. Trends and outlook

**In France and Europe, fossil energy consumption has been declining for several years,** with primary oil consumption falling by 23% since 2011, primary gas consumption by 26% and primary coal consumption by 61%. Under the current policies and measures, in the WEM 2024 scenario, fossil energy consumption is expected to continue to decrease with a 35% decrease in primary fossil energy consumption compared to 2012. Achieving climate neutrality will require further reductions in consumption.

**With regard to metallic mineral resources, trends show a sharp increase in needs.** Thus, while metal ore mining has more than tripled globally over the past 50 years, foresight studies show that the energy transition will lead to an even greater increase in global demand for metals needed for low-carbon technologies (rare earths for offshore wind and electric motors, lithium and nickel for batteries, etc.), with the need to develop new extraction, processing and recycling capacities. Beyond this overall dynamic, it should be noted that the extraction volumes concerned vary greatly depending on the metals considered. Moreover, these overall results must be taken with caution as they aggregate materials for which the stakes are very

different (criticality, availability, geostrategic dependence, conflict of use, recyclable, substitutable or environmental and social impact, etc.).

The **material consumption-based emissions are an indicator that makes it possible to account for all the raw materials used to satisfy a country's final consumption**. It reflects the impact of France's domestic demand on the use of resources, both those extracted from the national territory and those mobilised directly and indirectly outside our borders to produce and transport imported products. It is estimated at 14.0 tonnes per capita in France in 2021, slightly below the European average (14.8 t/hab.). Between 2008 and 2021, France's material consumption-based emissions decreased by 17%. In the WEM 2024 scenario, preliminary assessments conducted indicate that the French material consumption-based emissions could grow in the short, medium and long term, showing the difficulty of reducing the overall material consumption-based emissions.

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#### 4. Identification of environmental issues

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Faced with the strategic role in the energy transition, and the environmental and geopolitical impacts associated with their extraction, it becomes imperative to better manage the uses of mineral resources. Current consumption dynamics – in industry, construction, energy or digital – are putting increasing pressure on subsurface resources. Moreover, the limits of the global carbon budget make it necessary to abandon the full exploitation of known fossil resources.

In this context, developing a more circular economy, based on sufficiency, reuse, recycling and ecodesign, is an indispensable lever to reconcile the green transition, industrial resilience and social justice. **As such, this SEA will then examine SNBC 3 from the perspective of 'limiting the depletion of mineral resources and developing the circular economy'.**

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### 3. Natural environment

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#### 1. Biodiversity and natural habitats

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**Biodiversity refers to all ecosystems, animal, plant, fungal and microbial species and the genetic diversity they contain, from the mainland forests to the coral reefs of the overseas territories.** France has one of the richest natural heritages in Europe thanks to the diversity of its climates and geographies, which **generates a wide variety of ecosystems**.

##### a. Threats and pressures

**The main causes of biodiversity loss worldwide** but also at national level include:

- **Land-use change and the destruction and artificialisation of natural environments causing the loss, degradation and fragmentation of natural habitats.** This is one of the main drivers of biodiversity erosion, accounting for around 30% of its impacts. This process leads to the destruction of habitats, the disturbance of species, the degradation of soils and the alteration of their ecological functions. In addition, the fragmentation of natural environments causes a decrease in genetic diversity, isolating animal and plant populations. Transport, buildings and industry and agricultural practices (monocultures, disappearance of hedges and grasslands) contribute to these effects;

- **Climate change** . Climate change already has a definite impact on ecosystems through changes in their functioning (quantity and distribution of species, seasonal calendar of biological events, ocean acidification, risks of invasions by invasive alien species, etc.);
- **Pollution**. Human activity creates or modifies certain substances that make them naturally non-degradable or undegradable. Pollution is diverse: nitrogen deposition, sulphur oxides, plant protection products, heavy metals and metalloids. These pollutants have multiple adverse effects on biodiversity, although some remain little (re)known to date. They can cause the death of certain species, cause diseases by intoxication, affect their reproduction (feminization of fish, weakening of eggs, etc.) or alter their behavior.
- **The overexploitation of biological resources**, bearing in mind that, for the forestry sector, the existing regulatory framework makes it possible to guard against overexploitation, but that many forests are affected by an imbalance with ungulate populations, calling into question the ability to regenerate these forests;
- **Adverse effects of invasive alien species (IAS).**

#### b. Trends and outlook

**The pressure on ecosystems is such that many natural habitats and species are now in decline.** Moreover, even if pollution threats are reduced in the coming years,<sup>17</sup> their negative effects on biodiversity could continue for many years to come. The accumulation of combined effects (pollution, climate change, habitat fragmentation) could lead to irreversible ecological tipping points.

**According to WEM 2024<sup>18</sup>, land take is expected to continue** at a higher rate than population growth, **although at a slower pace** (+8.5% compared to 2020, representing 10.4% of the territory in 2050) with negative impacts on biodiversity.

#### c. Identification of environmental issues

France has an exceptional biodiversity and natural habitats due to its large area and its very varied ecosystems. Ecosystems provide food, materials, energy, regulate water supplies and climate, and are sources of well-being and tourism activities. Biodiversity also helps to maintain ecological balances and improve the climate resilience of territories. Finally, protecting spaces and habitats is an ethical and scientific responsibility. However, biodiversity and natural habitats are under significant pressure despite the actions implemented, with worrying biodiversity losses continuing due to land take and land cover changes, chemical and air

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<sup>17</sup> It should be noted that the situation is not improving for all sources of pollution: sales of plant protection products for agricultural use, contributing to pollution, increased by 14% between 2009-2011 and 2018-2020, whereas they had to be halved. OFB (2023). French biodiversity in decline, 10 years of key figures by the National Biodiversity Observatory: [https://www.ofb.gouv.fr/sites/default/files/Files/Plaquettes%20and%20rapports%20institut/Publication\\_10ansONB\\_web.pdf](https://www.ofb.gouv.fr/sites/default/files/Files/Plaquettes%20and%20rapports%20institut/Publication_10ansONB_web.pdf)

<sup>18</sup> Ministry of Ecological Transition (2024). Summary of the scenario with existing measures 2024: [https://webissimo.developpement-durable.gouv.fr/IMG/pdf/report\\_de\\_synthese\\_du\\_scenario\\_ame2024\\_v2-1\\_cle5f5e11.pdf](https://webissimo.developpement-durable.gouv.fr/IMG/pdf/report_de_synthese_du_scenario_ame2024_v2-1_cle5f5e11.pdf)

pollution and aggravated by the consequences of climate change. **As such, this SEA will subsequently examine SNBC 3 from the perspective of the challenge of 'preserving and restoring biodiversity and ecosystem services'.**

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## 2. Natura 2000 network

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**The Natura 2000 network, the European ecological network of natural sites** designated under the Habitats - Fauna - Flora and Birds Directives, **contributes to the conservation of habitats and species of Community interest. In 2023, France has 1,756 sites in this European network**

### a. Threats and pressures

Natura 2000 is a major step forward for nature conservation in Europe but still faces many challenges as terrestrial and marine biodiversity continue to face strong pressures from human activities. The threats and pressures on the Natura 2000 network are mostly the same as those on biodiversity and natural habitats, with specific consequences for these sites of Community interest.

### b. Trends and outlook

**In France, the network of protected areas, including Natura 2000, continues to develop and adapt to current environmental challenges.** Since its inception, the network has shown encouraging results, including stopping the increase in land take in protected sites.

The **National Biodiversity Strategy (NBS 2030)** foresees **the creation of 400 new protected areas by 2027, including Natura 2000 sites.**

### c. Identification of environmental issues

The issues concerning the Natura 2000 network are identical to those concerning biodiversity and natural habitats.

In the follow-up to the SEA, these topics will be addressed through the issue of **'preserving and restoring biodiversity and ecosystem services'.**

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## 4. Human environment

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### 1. Natural and technological risks

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**A risk is a more or less foreseeable potential hazard** that is likely to cause harm whether human, material or environmental. **Risks are classified into two main categories: natural hazards and technological risks. They result from the cross between a hazard, an exposure and a vulnerability.**

### a. Threats and pressures

#### Natural hazards

**Eight main natural hazards are foreseeable on the national territory:** floods, earthquakes, volcanic eruptions, ground movements, avalanches, forest fires, cyclones and storms. **Two-thirds of France's 36,000 municipalities are exposed to at least one natural risk.** The SDES lists 524 harmful natural events in France between 1900 and 2021. Aggregated data from 1982 to

2023 show a cost of natural disasters of €56.6 billion for all hazards, 90% of which is related to floods and droughts. Climate change is likely to increase the likelihood of natural hazards.

**The sectors targeted under the SNBC collectively contribute to climate change, which exacerbates natural hazards and phenomena. However, they are not a direct source of threats and pressure on them** (they are not their origin). However, they are more or less vulnerable and their vulnerability may lead to other consequences (delay in decarbonisation, accentuation of observed effects, chain effects, etc.).

### Technological risks

**Unlike natural hazards, technological hazards are solely anthropogenic.** There are five major sources of technological risk in France: industrial facilities, nuclear facilities, large dams, transportation of hazardous materials and mining sites.

**Climate change** increases the frequency, intensity and duration of heat waves, droughts and extreme events (intense rains, floods, winds) and **creates conditions conducive to technological accidents of natural origin (NaTech).** In addition, **new technologies used in the fight against global warming can also lead to new technological risks that need to be addressed by improving and evolving knowledge: battery-powered electricity storage (fire risks), hydrogen production, transport and storage (fire, explosion risks), deep geothermal (induced seismicity risk), CCUS (CO<sub>2</sub> Capture, Use and Storage) technologies (groundwater pollution, micro-seismicity risks), etc.**

## b. Trends and outlook

### Natural hazards

**Over the last ten years, France has experienced a net increase in the frequency and intensity of extreme natural events.** Although natural hazards are difficult to predict, the exacerbation of the aggravating effects of climate change is confirmed for all natural hazards except earthquakes and volcanic eruptions, leading to an increase in the vulnerability of populations and territories to natural hazards. The consequences of climate change will affect French territories in various ways, with a significant overall increase in the number and intensity of certain major natural phenomena. **By 2050, claims could increase by around 44% by 2050 as a result of climate change, taking into account a scenario close to TRACC according to the Caisse centrale de réassurance (Central Reinsurance Fund) for the phenomena covered by the CatNat scheme.**

### Technological risks

Accidentology<sup>19</sup> has been broadly stable since 2018 and slightly increased over the last 10 years for ICPE non-SEVESO accidents and incidents. It is decreasing for major accidents and SEVESO accidents.

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<sup>19</sup> See the completeness limits of the ARIA database mentioned in 2.b.

While the prevention of technological risks has generally improved in recent years through different policies and measures, trends related to climate change (more intense and long heat, droughts, lightning, short but violent winds and rains) are conducive **to the increase of technological accidents of natural origin. Climate change can also cause domino effects that further increase risks.** The ecological transition in our country is also likely to lead to new technologies and infrastructure projects (batteries, hydrogen, etc.), potentially subject to technological risks.

### c. Identification of environmental issues

France is subject to many natural and technological risks. Climate change increases the vulnerability of populations and territories to natural hazards, which requires them to be better taken into account in planning documents such as the SNBC, to ensure their resilience. Technological risks are generally well controlled in France, but the development of new technologies for decarbonisation purposes (hydrogen, CCUS, renewable energies, batteries, etc.) will have to be accompanied by special attention linked to the emergence of new risks. Moreover, the effects of climate change (extreme heat, droughts, intense cyclones, etc.) increase the risk of technological accidents of natural origin.

**As such, this SEA will subsequently examine SNBC 3 through the prism of the challenges of limiting natural risks (integrated into the broader issue of 'strengthening the resilience of territories to climate change and limiting natural risks') and the challenge of limiting technological risks ('limiting technological risks').**

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## 2. Damage: air, noise, olfactory and visual pollution

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**Nuisances are defined here as inconveniences to the quality of life and as sources of significant health and environmental risks.** This includes air pollution, noise, odors and light pollution.

### a. Threats and pressures

#### Air pollution

In France, the regulated air pollutants are: nitrogen oxides (NO<sub>x</sub>), fine particulate matter with a diameter of 10 µm or less (PM<sub>10</sub>) and 2.5 µm or less (PM<sub>2.5</sub>), non-methane volatile organic compounds (NMVOCs) including benzene (C<sub>6</sub>H<sub>6</sub>), ammonia (NH<sub>3</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO), polycyclic aromatic hydrocarbons (PAHs), certain metals and metalloids, and ozone (O<sub>3</sub>).

**Despite the overall improvement in air quality, exceedances of regulatory air quality standards, set for the protection of human health, persist in the short term (e.g. pollution episodes) and in the long term for certain pollutants and in certain areas of the territory.**

**Climate change has an impact on emissions of air pollutants and air quality** (heatwaves promote ozone accumulations, forest and vegetation fires favoured by droughts and periods of high heat lead to fumes containing fine particles (PM), higher temperatures lead to more volatilisation of pollutants (NH<sub>3</sub> agricole, sulphur compounds, etc.), etc.).

#### Noise pollution

For nearly 10% of French people, noise pollution (neighbourhood, activities, transport, etc.) is of great concern. According to the World Health Organisation (WHO), they are the second

leading cause of morbidity in Europe behind air pollution. Various sectors dealt with in the SNBC cause noise pollution (transport, industrial activities, renewable energies, etc.). Global warming tends to amplify some of the impacts of noise pollution as higher temperatures shift some activities in the evening or early morning and involve more window openings, thereby amplifying the perceived noise pollution.

### Olfactory pollution

**Olfactory nuisances are mainly caused by industrial and agricultural activities, waste water treatment plants (WWTPs), composting and methanisation units,** as well as waste storage centres. Global warming increases these nuisances (high temperatures promote the volatilisation of odorous compounds, water stress and droughts lead to increased risks of fermentation in sewage sludge or agricultural effluents, increased heat episodes and atmospheric stagnation lead to less dispersion of odours, etc.).

### Light pollution

Human activities are responsible for various forms of light pollution (urban lighting, industrial sites, transport infrastructure, etc.).

## b. Trends and outlook

### Air pollution

**Air quality has improved overall over the period 2000-2022** for regulated pollutants. Their primary emissions from human activities fell in 2023 compared to 2000: -64 % for nitrogen oxides; -49% for particles with a diameter of 10 µm or less (PM<sub>10</sub>); -52 % for particles with a diameter of 2,5 µm or less (PM<sub>2,5</sub>). Annual average concentrations of regulated pollutants are decreasing and exceedances of air quality standards for health protection affect smaller and fewer areas.

**The latest available WEM scenario for air pollutants (WEM 2023 (PREPA)) provides for:**

- **Sulphur dioxide:** emission reductions of 84% in 2030 and 86% in 2050 compared to 2005;
- **Nitrogen oxides:** emission reductions of 73% in 2030 and 80% in 2050 compared to 2005;
- **NMVOG:** emission reductions of 45% in 2030 and 48% in 2050 compared to 2005;
- **Ammonia:** emission reductions of 8% in 2030 and 12% in 2050 compared to 2005;
- **Fine particles (PM<sub>2,5</sub>):** emission reductions of 66% in 2030 and 68% in 2050 compared to 2005;
- **Fine particles (PM<sub>10</sub>):** emission reductions of 53% in 2030 and 54% in 2050 compared to 2005.

### Noise pollution

**The climate transition can help reduce noise pollution (modal postponement, electrification of the park, etc.).** Nevertheless, new sources of noise may emerge (wind turbines, transport linked to methanisation, heat pumps and heat networks, etc.).

### Olfactory pollution

**This pollution is likely to increase in the coming years as a result of climate change. In addition, new sources of olfactory pollution could appear (inappropriate management of methanisation inputs, etc.).** Good farm management practices can however severely limit these olfactory nuisances.

### Light pollution

**In France, light pollution has tended to increase in recent decades,** as a result of urbanisation, the expansion of commercial areas, etc. However, some municipalities note a decrease in light pollution thanks to measures implemented such as the renovation and extinction of public lighting for certain time slots.

#### c. Identification of environmental issues

France faces several nuisances (air pollution, noise, odours and light pollution). These nuisances affect the health and well-being of French people and the environment. Air pollution, both indoors and outdoors, is a major health issue, causing premature deaths and disease every year.

There are significant synergies between climate and climate policies. However, they call for certain precautions to ensure that the climate and energy transition does not directly or indirectly affect these pollutions.

**In this context, this SEA will subsequently examine SNBC 3 from the perspective of 'preserving and improving the living environment and public health', 'preventing and managing waste' and 'combating outdoor and indoor air pollution', the importance of which justifies a dedicated item.**

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### 3. Human health

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This section will focus on the impacts of climate change and the themes considered by SNBC 3 on human health. It is not intended to address human health in general.

#### a. Threats and pressures

Human health is both directly and indirectly affected by climate change and GHG-emitting activities:

- **Climate change and induced effects,** including increased vulnerability to extreme weather events (heat waves, forest and vegetation fires), exposure to infectious diseases, issues of quantitative and qualitative management of water resources, food security and mental health. Climate change is also having an impact on the health system itself.
- **Air quality and air pollutants.** According to an analysis by Santé publique France, over the period 2016-2019, in mainland France, nearly 40,000 premature deaths are attributable each year to exposure to fine particles (PM<sub>2.5</sub>) and nearly 7,000 deaths attributable to exposure to NO<sub>2</sub>. In 2025, Santé publique France assesses the weight on health of long-term exposure to PM<sub>2.5</sub> and NO<sub>2</sub> in mainland France by looking at the occurrence of respiratory, cardiovascular and metabolic diseases, and quantifies its economic impact (cost of 199 and 59 €/year/inhabitant for PM<sub>2.5</sub> and NO<sub>2</sub> respectively).
- **Endocrine disruptors.** Many everyday products contain: food, air, cosmetics, medicines, toys, etc. They are associated with various disorders: reproductive, metabolic, thyroid, or

even cancerous. Pressures on agricultural practices (drought, pests) may increase the use of certain plant protection products containing endocrine disruptors.

#### b. Trends and outlook

**Changes in the health status of the national population are multifactorial and difficult to describe.** Nevertheless, several studies and analyses specifically illustrate the health impacts related to climate change, depending on different warming scenarios. **In terms of projections, Santé publique France indicates that in a pessimistic warming scenario (RCP 8.5, higher than the TRACC), heat-related mortality could represent up to 7.7% of total mortality in France by 2090- 2099. As regards air pollution,** the 2016-2019 EQIS suggests a downward trend in mortality related to ambient air pollution.

**By contrast, national mitigation and adaptation policies are expected to limit certain negative impacts on human health and will even have several positive effects.**

#### c. Identification of environmental issues

GHG-emitting activities and climate change affect human health, including social and economic conditions (air, water and soil quality, food systems and livelihoods, etc.).

Reducing the impact of climate policies on human and environmental health is part of the One Health approach, which recognises the close links between human, animal and ecosystem health. A poorly regulated climate and energy transition can generate new pressures (air pollution, artificialisation, disturbance of environments) with deleterious effects on these three dimensions. **As such, this SEA will subsequently examine SNBC 3 from the perspective of the more general issue of 'preserving and improving the living environment and public health'.**

Given the importance of the subject and the interlinkage between strategies to reduce GHG and air pollutant emissions, subjects related to air quality will be studied via the dedicated 'fight against outdoor and indoor air pollution' issue.

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### 4. Architectural, cultural and archaeological heritage

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#### a. Threats and pressures

**The built heritage is exposed to different forms of pollution (chemical reactions, corrosion, etc.) and is affected by climate change** (extreme events, sea level rise, hygrometric variations, shrinkage-swelling of clays). The multiplication and repetition of hazards increases the need for preventive maintenance and restoration, which weighs on the public/private budgets of wealth managers. **In addition, the climate and energy transition carried out by the Government also affects certain aspects of our heritage** (energy renovation, installation of renewable energy production equipment, material substitution).

#### b. Trends and outlook

**It is difficult to define a clear trend (both past and prospective) on heritage.** The natural ageing of heritage will continue to impact its condition. Its alteration will also be accelerated, as a result of climate change. On the other hand, as regards the impacts of air pollution on building

facades and glass, there is a trend towards improvement, since emissions and concentrations of the pollutants in question have been decreasing for a decade or more for sulphur dioxide.

### c. Identification of environmental issues

France has some of the richest architectural, cultural and archaeological heritage in the world. However, human activities indirectly exert considerable pressure on this heritage, in particular as a result of climate change. Some SNBC guidelines could also have an impact on this heritage, such as energy renovation targets for buildings, the deployment of renewable energy or carbon capture technologies.

As such, this SEA will then examine SNBC 3 from the perspective of the challenge of 'preserving and improving the living environment', which will specifically incorporate this architectural challenge.

## B. Summary of environmental issues identified for SNBC 3

Conducting the initial state of the environment made it possible to identify 10 environmental issues from the prism of which SNBC 3 is to be examined. These challenges were identified taking into account the initial state of the various environmental compartments examined, and their sensitivity to existing or future threats and pressures related to the challenges addressed by SNBC.

The 10 environmental issues identified for SNBC 3 are as follows, numbered in the SEA as follows:



1. Reducing **Territorial** and **Imported Greenhouse Gas Emissions**



2. Preserving water resources



3. Preserving **soils** and ensuring balanced spatial management



4. Limiting the depletion of **mineral resources** and developing the circular economy



5. Strengthening the **resilience of territories to climate change** and limiting natural risks



6. Preserving and restoring **biodiversity** and ecosystem services

## Summary of the Strategic Environmental Assessment of SNBC 3

Courtesy translation - in the event of any legal inconsistency between the English courtesy translation and the French version, the French version shall prevail.



### 7. Limiting **technological risks**



### 8. Preserving and improving the **living environment and public health**



### 9. Tackling outdoor and indoor **air pollution**



### 10. Preventing and managing **waste**

**These issues have mainly been identified in view of the effects of climate change already observed on water resources, soils, biodiversity, natural hazards, the living environment and public health, to which the main sectors emitting greenhouse gases (GHGs) or carbon sinks add pressure. Moreover, the scale of the transformations already underway to drive the decarbonisation of our country also calls for particular vigilance on mineral resources, technological risks and waste.**

## 4 - Reasonable alternatives

### A. A strategy built around a credible and robust transition path

The SNBC relies on a **baseline energy-climate transition scenario**, which translates the effect of assumptions, policies and measures into sectoral greenhouse gas emission trajectories by ensuring, in accordance with the law, 'to target the action plan on the most effective measures'.<sup>20</sup>

The construction of SNBC, including through this prospective modelling work, is iterative: it consists of readjusting trajectories and levers to each modelling iteration (so-called 'run'), in order to ensure that targets are achieved by identifying additional measures to compensate for the risk areas identified in the modelling. In practice, iterativeness means identifying levers, assessing their impact, comparing them with the overall climate target and starting again if the latter is not achieved. **The central reference scenario of SNBC 3 is thus the result of several iterations conducted between 2021 and 2025.**

In this exercise, the State positions itself as a strategist, makes choices and proposes a **credible and robust path** to achieve our climate and energy framework targets. This scenario is not prescriptive, it is indicative. It illustrates the path chosen to date by the Government and the main strategic axes envisaged to achieve the various targets. **The State relies on this as a basis for its climate and energy policy by adopting the carbon budgets, sectoral targets and public policy measures and guidelines necessary to comply with the trajectory.**

The main elements of the baseline scenario of SNBC 3 are described in SNBC 3.

### B. A strategy informed by sensitivity testing and exploring variants in the central scenario

**Sensitivity tests were displayed throughout SNBC 3** to assess the effects of changes in the conditions for implementing climate policies, the pace of deployment of low-carbon technologies, and the behaviour of economic actors and citizens. **In particular, they make it possible to:**

- Test the robustness of the trajectories and justify the choices chosen for the scenario;
- Show the diversity of possible paths, offering a broader view of possible futures;
- Anticipate upheavals that could impact the strategy (adverse conditions under which the strategy would be defeated, etc.).

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<sup>20</sup> Legislating. I of Article L. 222-1 B of the Environmental Code: [https://www.legifrance.gouv.fr/codes/article\\_lc/LEGIARTI0000393787](https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI0000393787)

By developing these sensitivity tests and combining several of them into a coherent narrative, variants of the central scenario can be explored for illustrative purposes. Among the variants explored by combining the sensitivity tests presented in SNBC 3, two of them make it possible to illustrate certain uncertainties and impacts on the overall trajectory of greenhouse gas emissions:

- **The first, entitled ‘*Slower deployment of sufficiency*’,** examines the consequences of a slowdown or partial failure in reducing structural consumption, relying in particular on sensitivity tests concerning air traffic, the least modal shift in freight, the maintenance of high tertiary energy consumption, the maintenance of a high use of wood-energy and the massive spread of artificial intelligence;
- **The second, ‘*Slowing down the resurgence of industrial and energy sovereignty*’, is based on contrasting assumptions:** decrease in industrial production compared to the baseline scenario (no reindustrialisation dynamics), increased e-kerosene import, lower production of low-carbon gases (inducing increased use of imports), limited timber harvesting, lower deployment of heat pumps in France (inducing in particular an increase in gas consumption in housing).

These two alternative trajectories make it possible to highlight the differentiated effects of structuring choices on emissions and to enrich the analysis of the levers to be favoured.

The ‘*Slower deployment of sufficiency*’ variant could, for example, all other things being equal (and without representing the entirety of sufficiency), increase emissions by 12 Mt CO<sub>2e</sub> in 2050. For the ‘*Slower industrial and energy sovereignty*’ variant, emissions could decrease by up to 17 Mt CO<sub>2e</sub> in 2050 (integrated shocks with positive or negative impacts on greenhouse gas emissions). In addition, the reduction in emissions of the ‘*Slowing down the resurgence of industrial and energy sovereignty*’ variant leads to an increase in the consumption-based emissions that is capable of complicating the achievement of the indicative consumption-based emissions target set by SNBC 3. It mechanically leads to a decrease in French sovereignty compared to the baseline scenario. These estimates are made without taking into account any change in the French energy mix.

## 5 - Explanatory memorandum guiding the decision

### A. A framework imposed by extraterritorial obligations and a perimeter determined by the Environmental Code

**Tackling climate change is a collective imperative. SNBC 3 reflects the strategy adopted to achieve the new climate and energy framework targets set by France,** established in accordance with international commitments and Community policy. The SNBC is a perspective document, adopted by decree. It is governed by provisions of the Environmental Code.<sup>21</sup>

**France has set ambitious GHG emission reduction targets to mitigate climate change.** In particular, the climate neutrality target was enshrined in the law as early as 2019, and a target of reducing gross GHG emissions by around -50% between 1990 and 2030 was announced in 2023, raising the previous target by -40% in line with the increase in the European target.

**It is in this context that the Government has been preparing since 2021 the third version of the SNBC,** which thoroughly reviews the French climate strategy, in order to comply with the European green deal, adapt the strategy to recent developments and show a way to reduce our consumption-based emissions and achieve climate neutrality by 2050.

**The law also includes other energy-climate targets which the Government takes into account** to guide the construction of SNBC's baseline scenario and its broad guidelines.

### B. A strategy based on consultation and dialogue

**The State has chosen to place public debate at the heart of the- climate energy programming exercise.** The **development of SNBC 3 is therefore based on extensive consultation and dialogue with many stakeholders (business representatives, employee representatives, associations, local authorities, NGOs, citizens),** which has been ongoing since October 2021.

In this context, **the State has:**

- **Involved all stakeholders** (scientists, economic actors, local authorities, associations, etc.) through a dedicated committee and sectoral experts via workshops and working groups (WGs) to discuss the first hypotheses and levers to be mobilised;
- **Involved citizens** through consultation phases aimed at gathering their guidance on the country's climate and energy policy;

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<sup>21</sup> *Legislating. Articles L. 222-1 A to L. 222-1 E of the Environmental Code:* [https://www.legifrance.gouv.fr/codes/section\\_lc/LEGITEXT000006074220/LEGISCTA000031055359/#LEGISCTA000031055364](https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000006074220/LEGISCTA000031055359/#LEGISCTA000031055364)

- **Accompanied the economic actors** of the most emitting sectors in the identification of the decarbonisation levers available to them and their operational translation into decarbonisation roadmaps (Article 301 of the Climate and Resilience Law,<sup>22</sup> roadmaps of the sectoral strategic committees of the National Industry Council,<sup>23</sup> roadmaps of the 50 most emitting industrial sites, etc.).

## C. A strategy based on a retrospective analysis of the progress already made

**2023 marked the end of France's second carbon budget (2019-2023 period). A review of the sectoral dynamics observed over this period has been produced and is included in the SNBC 3 accompanying report.** This assessment made it possible to identify, by sector, the levers best engaged and to highlight the points of vigilance.

This work has thus made it possible to align SNBC 3's structuring hypotheses with the current dynamics and to feed the work of the State in order to perpetuate or strengthen its action.

## D. A strategy that takes into account the specificities of each sector and is not based on technological bets

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### 1. The main principles that guided the choices

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**Several key principles guided the choices made in SNBC 3. Thus, SNBC 3:**

- Takes into account the specificities of each emitting sector and their differentiated potential for reducing emissions;
- Rests on a solicitation of levers of sufficiency and energy efficiency;
- Does not rely on major technological bets, while realistically using a number of new technologies;
- Ensures the overall consistency of the results between them ('closing').

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### 2. Justification of the main choices of the central reference scenario

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**The table below explains the main constraints that guided the cross-cutting policy choices of the central reference scenario.**

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<sup>22</sup> Ministry for the Ecological Transition (2023) *The decarbonisation roadmaps for the most emitting sectors:* <https://www.ecologie.gouv.fr/feuilles-route-décarbonation-des-filières-plus-émettrices>

<sup>23</sup> Directorate-General for Enterprise (2025). *Sectoral strategic committees:* <https://www.conseil-national-industrie.gouv.fr/decouvrez-19-csf>

## Summary of the Strategic Environmental Assessment of SNBC 3

Courtesy translation - in the event of any legal inconsistency between the English courtesy translation and the French version, the French version shall prevail.

Main choices	Climate neutrality target 2050	Other environmental issues	Economic issues	Social issues	Biomass closure	Electrical shut-off
Aim for “near-complete” decarbonisation in the energy sectors in view of the incompressible emissions in the agriculture, waste and soil sectors	X		X	X	X	X
Do not consider breaking with the official demographic and macro-economic trends envisaged today (INSEE, European Commission)			X	X		
Consider a balance between partly incompressible emissions (e.g. agriculture) and sinks (land sector and capture storage)	X	X	X	X	X	
Make reasonable use of the levers of sufficiency, with the needs of the population declining slightly in all sectors without resulting in a loss of well-being	X	X	X	X	X	X
Fully develop energy efficiency compared to the technologies known today	X	X	X	X	X	X
Not to consider too risky technological bets , but nevertheless the reasonable use of a number of new technologies	X	X	X	X	X	X
Reducing the consumption-based emissions	X	X	X	X		
Given the pressures on biomass resources, respect the order of merit defined for energy biomass uses	X	X	X		X	X
Electrifying uses	X	X	X	X	X	X

## E. A strategy to ensure a just and socio-economically sustainable transition

SNBC’s guidelines and measures aim to ensure a just and sustainable socio-economic- transition for all stakeholders (citizens, businesses, local authorities, the State) by ensuring that:

- Preserving the competitiveness of economic activities subject to international competition and fostering the development of new local activities in a dynamic of reindustrialisation, in particular by guaranteeing competitive energy prices;
- Preserving and developing employment;
- Preserve the purchasing power of households by assessing, in particular, the impact of the strategy on household factures;
- Do not replace the national mitigation effort with an increase in the carbon content of imports;
- Target the action plan on the most effective measures taking into account the low mitigation potential of certain sectors.

To do this, SNBC relies on a robust macroeconomic framework, integrating technical- economic models to identify the most cost-effective levers (investments, energy efficiency, energy mix). It also makes it possible to define a value for climate action (VAC), a theoretical tool that sheds light on public arbitrations in order to achieve climate neutrality at

the lowest cost. This approach allows the strategy to be dynamically adjusted to technological developments, energy prices and economic constraints, while ensuring consistency with national industrial and energy plans.

**Analyses of the macroeconomic and socio-economic impacts of SNBC 3 are also carried out.**

They anticipate uncertain but likely limited macroeconomic impacts at the level of the economy as a whole (low impact on growth). However, they do not take into account the co-benefits that could be generated by the transition to climate neutrality (public health, pollution reduction). The transition is expected to reduce household energy factures by 2030 compared to the WEM and compared to 2023, in particular for the most modest, through accompanying measures and energy savings. By reducing dependence on imported fossil fuels, the strategy also strengthens economic resilience to external shocks.

**Thus, SNBC articulates climate ambition and economic realism, ensuring that climate neutrality remains accessible without sacrificing competitiveness or social justice.**

## **F. A strategy built in itinere via the SEA process**

The conduct of the SEA throughout the preparation of SNBC 3 contributed to the consideration of environmental issues complementary to GHG emissions (in particular water and biodiversity) in SNBC. Several aspects of SNBC 3 have been revised on this basis: adjusting the prioritisation of biomass uses to preserve ecosystems and soils, increasing the promotion of sustainable forestry and agricultural practices and low-impact farming, reducing waste landfill assumptions, limiting heating to wood emitting air pollutants, increasing the development of car-sharing to mitigate battery-related impacts and taking into account limitations to the deployment of CCUS technologies. The SEA has also contributed to strengthening the inclusion of material sufficiency, the circular economy and sustainable digital in SNBC 3 (equipment life extension, data centre management).

## **G. Implementation based on other plans and programmes**

The SNBC is a strategic document that defines the public policy orientations envisaged by the Government to conduct its climate policy. It is therefore not intended to lay down operational measures for each of the sectors, especially at distant horizons (level of aid, regulatory arrangements, etc.). As a framework for action, it is intended to be translated, rolled out and implemented in the various sectors and by the various actors (State, local and regional authorities, economic actors, citizens).

## 6 - Summary of the environmental impacts of SNBC

### A. General principles for the assessment of likely significant impacts of the implementation of SNBC 3

This section presents a summary of the assessment of the likely significant impacts of the implementation of SNBC 3 compared to a trend scenario (i.e. “with existing measures” or AME)<sup>24</sup> on the 10 environmental issues identified at the end of the initial state.

For each environmental issue, the analysis sought to:

- **Assess the likely significant impacts** of the implementation of the baseline scenario and the SNBC 3 guidance;
- **Identify the environmental recommendations** proposed as part of the SEA approach to avoid, reduce and offset impacts.

The likely significant effects on the environment have been analysed on the basis of whether they are **positive or negative, direct or indirect, temporary or permanent**.

**The positive or negative character has been graduated:** Major positive impacts (++), Limited positive impacts (+), Uncertain impacts (+/-), Neutral impacts (0), Limited neutral to negative impacts (0/-), Limited negative impacts (-), Major negative impacts (- -).

**Whether direct or indirect, temporary or permanent was considered to be:**

- Direct impacts **are** the immediate consequences of SNBC 3, i.e. without any intermediary between SNBC 3 and the effect;
- Indirect **impacts result from** a cause and effect relationship, in space and time, originating in SNBC 3 or one of its direct impacts;
- A **temporary** impact means that it fades over time;
- A **permanent** impact will continue in the long term.

### B. Summary by issues of the assessment of the likely significant impacts of SNBC 3

The analysis of the likely significant impacts of the implementation of SNBC 3 through the lens of the 10 challenges identified, compared to a trend scenario, **highlights likely entirely positive or neutral impacts on most of the environmental challenges considered.**

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<sup>24</sup> The AME scenario available to date is the AME scenario constructed in 2024. It incorporates the latest available data, as well as the impact of policies and measures adopted until 31 December 2023.

## Summary of the Strategic Environmental Assessment of SNBC 3

Courtesy translation - in the event of any legal inconsistency between the English courtesy translation and the French version, the French version shall prevail.

Environmental issues <sup>25</sup>	1- GHGs	2- Water	3- Soil	4- RESOURCES	5- RESILIENCE	6- BIODIVERSITY	7-TECH RISKS.	8- HEALTH	9- AIR	10- WASTE
Transport	++	0	+	+	+	+	+	++	++	-
Agriculture	+	+	++	+	+	++	+	++	+	+
Industry	++	0	+	+	+	+	-	++	+	+
Buildings	++	+	+	0	+	+	0	+	+	0
Energy production	++	-	-	0	+	0	-	0	+	-
Waste	+	+	+	+	0	+	-	+	+	++
LULUCF	++	+	+	++	++	++	0	+	0	+
Consumption-based emissions	++	+	+	+	+	+	0	+	0	++
Digital	+	+	0	++	0	+	+	+	0	++
Spatial planning	++	+	++	+	+	+	0	++	+	0
Financing the transition	++	+	+	+	0	+	0	+	+	+
Mobilisation of stakeholders	++	+	+	0	+	+	0	++	++	++
Research	+	+	+	+	+	+	-	+	+	+
Jobs and skills	+	+	+	+	+	+	+	+	+	+
Biomass	0	-	-	+	+	-	+	-	-	+
CCUS	++	--	-	-	-	-	-	-	0	-

<sup>25</sup> The 10 issues examined here are: 1) Reducing territorial and imported **GHG** emissions; 2) Preserving **water** resources; 3) Preserving **soils** and ensuring rational spatial management; 4) Limiting the depletion of **mineral resources** and developing the circular economy; 5) Strengthen the **resilience of territories** and limit natural risks; 6) Preserving and restoring **biodiversity** and ecosystem services; 7) Limit technological risks; 8) Preserving and improving the **living environment and public health**; (9) Combating outdoor and indoor **air pollution**; 10) Preventing and managing **waste**;

## Summary of the Strategic Environmental Assessment of SNBC 3

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<b>Overall implementation of SNBC 3</b>	++	+	+	+	+	+	0	+	+	+
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**Table: 1** Qualitative summary of the likely significant effects of SNBC 3 on the environment (Color code: Major positive, Limited positive, Neutral, Limited negative, Major negative)

On the reduction of territorial and imported GHG emissions, the impact of the implementation of the SNBC is considered to be major positive.

**SNBC 3 aims to significantly reduce territorial greenhouse gas (GHG) emissions** by mobilising all actors and all levers to eliminate, or otherwise significantly reduce, greenhouse gas emissions in each sector (including in the non-energy sectors). **By 2030**, the baseline scenario of SNBC 3 makes it possible to achieve the new target of reducing non-carbon sink emissions by -50% compared to 1990 by drawing a more ambitious scenario than that of SNBC 2. **By 2050**, a certain level of emissions seems incompressible. **Residual emissions result** mainly from the agricultural sector (including enteric methane emissions), given its specificity (mainly non-energy emissions inherent in production processes), as well as from waste (the degradation of waste emits methane). Residual emissions from industry and energy are reduced through carbon capture technologies: around 10 Mt CO<sub>2e</sub> fossils are captured in industry in 2050, and 3 Mt CO<sub>2e</sub> are captured in refineries and waste energy recovery units (counted in the energy sector). However, these sectors still emit some greenhouse gases by 2050, due to certain processes with incompressible emissions and for which carbon capture solutions are not viable. Residual emissions in the central reference scenario amount to 63 Mt CO<sub>2e</sub> or -88% (compared to a -57% decrease in non-well GHG emissions in 2050 compared to 1990 in the WEM 2024 scenario).<sup>26</sup> **These emissions must be offset by carbon sinks (natural and technological) for which SNBC 3 aims to increase storage potential. With regard to carbon sinks:** natural removals could capture around 36 Mt CO<sub>2e</sub>/year in 2050 in the central scenario, thanks to the forest sink (including soils) and the carbon stored mainly in wood products. Technology sinks (approximately 20 Mt CO<sub>2e</sub>/year in the central scenario) enhance removal capacities, either through the capture of emissions from biomass (BECCS) or through the direct capture of CO<sub>2</sub> in air (DACCS).

**In terms of consumption-based emissions and imported emissions,** it contributes to meeting the indicative target of achieving a consumption-based emissions below 215 Mt CO<sub>2e</sub> by 2050 while targeting a target of 160 Mt CO<sub>2e</sub>, corresponding to a reduction in the consumption-based emissions from -71% to -79% compared to 2010, i.e. a consumption-based emissions per capita of between 2.3 t CO<sub>2e</sub>/hab and 3.1 t CO<sub>2e</sub>/hab. The achievement of these targets is, however, highly dependent on the strategies adopted by other countries, in particular those which are very present in the value chains of products imported by France. Reducing France's consumption-based emissions relies on sector-specific levers, including food, transport, housing, capital goods and services. This includes transforming production and consumption

<sup>26</sup> The **AME scenario available at the time of publication of this SNBC 3 is the AME scenario constructed in 2024.** It incorporates the latest available data, as well as the impact of policies and measures adopted until 31 December 2023.

patterns, decarbonising value chains, promoting the circular economy and increasing the use of sustainable and recycled materials.

As regards the other challenges, the impact of the implementation of SNBC is considered positive limited with the exception of the issue of 'limiting technological risks', where the impact is considered neutral.

- **On water resources**, the impact of the implementation of the SNBC is considered **to be limited**. Quantitative and qualitative pressure on water resources tends to decrease, in particular by reducing the use of fossil fuels, reducing the use and risks of plant protection products and better managing nitrogen fertilisation. However, some decarbonisation levers are likely to increase the pressure on the water resource. This is the case, for example, with the electrification of transport, the modal shift towards maritime and inland waterway transport, the development of renewable energies and the electricity grid, the increased mobilisation of biomass, or the use of carbon capture and storage technologies;
- **On soils**, the impact of the implementation of the SNBC is considered **positive limited**. The development of agroecological infrastructure and intermediate crops stabilises soils and strengthens their structure, carbon stock and fertility. However, the developments envisaged in the reference scenario lead to significant changes in land use patterns and the modelled scenario highlights issues of competition between different land use patterns, which should be anticipated;
- **As regards mineral resources**, the impact of the implementation of the SNBC is considered **to be limited**, mainly thanks to the exit from fossil fuels, the promotion of sufficiency in travel and consumption and production patterns, the use of bio-based materials for buildings, the reduction of the use of mineral fertilisers and the development of the circular economy. However, some decarbonised technologies could increase the pressure on mineral resources. This is particularly the case for the electrification of transport, carbon capture and storage technologies, and the development of decarbonised energy;
- **As regards the resilience of territories to climate change and natural risks**, the impact of the implementation of the SNBC is considered **to be limited**. The SNBC 3 adopts an integrated vision, articulating mitigation and adaptation, with orientations that invite to take into account the challenges of resilience. This is particularly the case for the decarbonisation of the transport sector, with the consideration of the future climate in transport systems and modes, the buildings sector with the consideration of summer comfort issues in thermal renovations and the LULUCF sector with the adaptation of forest stands to new climatic conditions in order to consolidate the carbon sink in the long term. In addition, agricultural practices favourable to soil conservation (agroecological practices, development of hedges and agroforestry, etc.) help to limit the risks of erosion and runoff and forest fire prevention measures provide a direct response to this type of risk. Finally, certain guidelines on spatial planning in SNBC 3 are specifically aimed at containing soil artificialisation and promoting renaturation, which helps to mitigate the impacts of natural risks, in particular heatwaves and floods;
- **As regards biodiversity conservation and ecosystem services**, the impact of the implementation of the SNBC is considered **to be limited**. The main positive impacts concern

the agriculture and land use sectors through better management of nitrogen fertilisation and reduction of the use of mineral nitrogen fertilisers and plant protection products, crop diversification and development of agroecological infrastructure, maintenance of permanent grassland and wetlands, adaptation of forests to climate change, forest renewal, and off-forest afforestation. However, in both sectors, the increased mobilisation of biomass, as foreseen in SNBC 3, could lead to mitigating the identified benefits on biodiversity conservation and ecosystem services. For the LULUCF sector in particular, these potential negative impacts will be limited by respecting the regulatory framework to practice sustainable and multifunctional management of the French forest, respecting soil, biodiversity, water cycles, carbon and developing the number of managed forests benefiting from a sustainable management document. In particular, the framework for harvesting biomass for energy production will evolve with the transposition of the RED III Directive, particularly in ecosystems rich in biodiversity;

- **As regards technological risks**, the impact of the implementation of SNBC is considered **neutral**. The positive impacts observed in several sectors linked to the reduction in the use of fossil fuels are offset by the increase in technological risks induced by certain decarbonised solutions provided for by SNBC 3. This concerns in particular the industrial sector with the increasing use of hydrogen as an alternative to fossil fuels, and the energy sector with the increase in the production of renewable heat or recovery and the use of hydrogen;
- **As regards the living environment and public health**, the impact of the implementation of the SNBC is considered **to be limited**. By significantly and positively transforming the structure of space and its uses, the implementation of SNBC 3 improves access to natural and green areas, helps preserve diverse landscapes, improves access to transport and promotes more pleasant housing. The implementation of the SNBC also tends to reduce noise, visual and olfactory nuisance. However, some technologies still face challenges related to their social acceptability. For public health, significant benefits are expected through the decarbonisation of the transport sector and sustainable spatial planning. In addition, the reduction of products with a high environmental consumption-based emissions makes it possible to limit society's exposure to toxic or polluting substances present in certain consumer goods;
- **As regards the fight against air pollution**, the impact of the implementation of SNBC is considered **to be limited**, mainly thanks to the reduction of dependence on fossil fuels, the new agricultural practices encouraged by SNBC 3 and the sorting of bio-waste. However, particular attention should be paid to the effects of waste combustion and the use of biomass for heating;
- **As regards waste prevention and management**, the impact of the implementation of the SNBC is considered **to be limited**, in particular thanks to measures to promote material sufficiency, recycling and recovery of by-products. However, some benefits could be mitigated by the high volume of waste generated during the replacement of equipment (boilers, convectors), the renovation or renewal of the vehicle fleet and by the emergence of specific waste streams, such as end-of-life batteries or charging stations requiring specialized recycling pathways.

### **Natura 2000 impacts:**

According to the law, the SEA must include an assessment of the impacts of SNBC on the Natura 2000 network. The purpose of this assessment is to verify the compatibility of the activity with the conservation targets of the Natura 2000 site(s). Unlike the environmental assessment, the Natura 2000 impact assessment does not cover the effects of the SNBC on the environment as a whole, but focuses on the analysis of its effects on the animal and plant species and habitats of Community interest that led to the designation of Natura 2000 sites.

At the national and strategic level of SNBC, **that strategy has no identifiable impact on any of the species or habitats of Community interest or on specific sites.** However, no Natura 2000 network site can be ruled out in the face of possible future impacts, not identified at this stage, linked to the implementation at local level of specific projects meeting the overall targets of SNBC. Environmental pre-project studies should, where appropriate, take into account any potential direct or indirect impact on a Natura 2000 site in direct or indirect proximity to the location of the project.

The guidelines developed in the SEA and aimed at minimising the impacts of the SNBC on biodiversity will also have to be transposed to the regional level and to projects carried out in or near Natura 2000 sites. The Natura 2000 impact assessment carried out as part of the sectoral documents such as the PEP, the SNMB and the PNFB will also make it possible to minimise the impact.

## **C. Assessment of the direct or indirect nature of the likely significant effects of SNBC 3**

The impacts of the implementation of SNBC 3 for **the agriculture, energy, waste and LULUCF sectors are estimated to be generally direct on most of the issues considered**, due to their more direct interactions with the environment (soil, water, living environment, etc.). The impacts of **cross-cutting orientations are estimated to be more indirect** on most of the issues considered.

Overall, the **impacts of SNBC's sectoral guidance are estimated to be rather direct on the main issue of SNBC 3**, namely the reduction of territorial GHG emissions and the reduction of the national consumption-based emissions, as well as on **technological risks, water resources, mineral resources and the circular economy and air pollution**. The impacts of SNBC 3 are estimated **to be more indirect for the other issues**.

## Summary of the Strategic Environmental Assessment of SNBC 3

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Environmental issues <sup>27</sup>	1- GHGs	2- Water	3- Soil	4- RESOURCES	5- RESILIENCE	6- BIODIVERSITY	7-TECH RISKS.	8- HEALTH	9- AIR	10- WASTE
Transport	Dir.	Ind.	Ind.	Dir.	Ind.	Dir.	Dir.	Dir.	Dir.	Ind.
Agriculture	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Ind.
Industry	Dir.	Dir.	Ind.	Dir.	Ind.	Ind.	Dir.	Ind.	Dir.	Dir.
Buildings	Dir.	Ind.	Ind.	Ind.	Dir.	Ind.	Dir.	Dir.	Dir.	Ind.
Energy production	Dir.	Dir.	Dir.	Dir.	Dir.	Ind.	Dir.	Ind.	Dir.	Dir.
Waste	Dir.	Dir.	Dir.	Dir.	NP	Ind.	Dir.	Ind.	Dir.	Dir.
LULUCF	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Ind.	Dir.	Ind.	Ind.
Consumption-based emissions	Dir.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Dir.	Ind.	Dir.
Digital	Dir.	Ind.	Dir.	Dir.	Ind.	Ind.	Ind.	Ind.	Ind.	Dir.
Spatial planning	Dir.	Ind.	Dir.	Ind.	Ind.	Dir.	Ind.	Dir.	Ind.	Ind.
Financing the transition	Dir.	Ind.	Ind.	Ind.	Dir.	Ind.	NP	Ind.	Ind.	Ind.
Mobilisation of stakeholders	Dir.	Ind.	Ind.	Ind.	Dir.	Ind.	Ind.	Dir.	Dir.	Dir.
Research	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.

<sup>27</sup> The 10 issues examined here are: 1) Reducing territorial and imported **GHG** emissions; 2) Preserving **water** resources; 3) Preserving **soils** and ensuring rational spatial management; 4) Limiting the depletion of **mineral resources** and developing the circular economy; 5) Strengthen the **resilience of territories** and limit natural risks; 6) Preserving and restoring **biodiversity** and ecosystem services; 7) Limit technological risks; 8) Preserving and improving the **living environment and public health**; (9) Combating outdoor and indoor **air pollution**; 10) Preventing and managing **waste**;

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Jobs and skills	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.	Ind.
Biomass	Dir.	Dir.	Dir.	Ind.	Ind.	Ind.	Ind.	Dir.	Ind.	Ind.
CCUS	Dir.	Dir.	Dir.	Dir.	Ind.	Ind.	Ind.	Ind.	Ind.	Dir.

**Table: 2** Direct or indirect nature of likely significant sectoral impacts of SNBC 3 (Color code: **Direct**; **Indirect**, Not relevant - NP)

### D. Assessment of the temporary or permanent nature of the likely significant effects of SNBC 3

The impacts of SNBC are rather permanent on SNBC’s primary issue, i.e. the reduction of GHG emissions, as well as on most of the issues on which it has a significant impact. For the LULUCF sector, the impact on the reduction of GHG emissions was estimated to be temporary given the pessimistic projections on the forest carbon sink after 2050.

The impacts on water, mineral resources and waste of the implementation of SNBC 3 by the transport sectors, buildings are considered temporary because mainly related to the ‘deployment’ phase of technologies: electrification of the fleet, scrapping of old vehicles, energy renovation, design of decarbonised heaters, deployment of renewable energy and carbon capture and storage technologies. As regards technological risks, the impact of the implementation of SNBC 3 is estimated to be temporary for several items (consumption-based emissions, stakeholder mobilization, research) considering that the ‘technological risks’ induced directly or indirectly by the implementation of SNBC 3, for example with the establishment of new plants linked to reindustrialisation, may be better understood and managed in the coming years.

Environmental issues <sup>28</sup>	1- GHGs	2- Water	3- Soil	4- RESOURCES	5- RESILIENCE	6- BIODIVERSITY	7-TECH RISKS.	8- HEALTH	9- AIR	10- WASTE
Transport	∞	Temp.	∞	Temp.	∞	∞	∞	∞	∞	Temp.

<sup>28</sup> The 10 issues examined here are: 1) Reducing territorial and imported GHG emissions; 2) Preserving water resources; 3) Preserving soils and ensuring rational spatial management; 4) Limiting the depletion of mineral resources and developing the circular economy; 5) Strengthen the resilience of territories and limit natural risks; 6) Preserving and restoring biodiversity and ecosystem services; 7) Limit technological risks; 8) Preserving and improving the living environment and public health; (9) Combating outdoor and indoor air pollution; 10) Preventing and managing waste;

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Agriculture	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
Industry	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
Buildings	∞	Temp.	∞	Temp.	∞	∞	∞	∞	∞	Temp.
Energy production	∞	∞	∞	Temp.	∞	∞	∞	∞	∞	∞
Waste	∞	∞	∞	∞	NP	∞	∞	∞	∞	∞
LULUCF	Temp.	∞	∞	∞	∞	∞	∞	∞	∞	∞
Consumption-based emissions	∞	∞	∞	∞	∞	∞	Temp.	∞	∞	∞
Digital	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
Spatial planning	∞	∞	∞	∞	∞	∞	∞	∞	∞	Temp.
Financing the transition	∞	∞	∞	∞	∞	∞	NP	∞	∞	∞
Mobilisation of stakeholders	∞	∞	∞	∞	∞	∞	Temp.	∞	∞	∞
Research	∞	∞	∞	∞	∞	∞	Temp.	∞	∞	∞
Jobs and skills	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
Biomass	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
CCUS	∞	∞	∞	Temp.	∞	∞	∞	∞	∞	∞

**Table 3** Temporary or permanent nature (∞) of likely significant sectoral impacts of SNBC 3

## 7 - ERC measures selected taking into account the likely significant impacts identified

Technical measures to avoid, reduce and compensate for the implementation of SNBC's guidelines, known as ERC measures, were identified following that assessment. They will have to be taken into account, in particular at project level, to ensure that the environmental impact of projects resulting from SNBC is reduced to an incompressible threshold.

	Taking into account the most significant impacts identified, the proposed ERC measures to be strengthened or deployed are as follows:
Transport	<ul style="list-style-type: none"> <li>- Integrate new criteria such as eco-design and recyclability, for example into the existing environmental score scheme, which already takes into account the consumption-based emissions linked to the production and transport of vehicles, in order to broaden the assessment for the award of aid for the acquisition and application of tax arrangements;<sup>29</sup></li> <li>- Strengthen the re-use and recycling of electric vehicle batteries, improving collection performance and developing national industrial capacities for the recovery and regeneration of critical metals for re-incorporation into the battery value chain or as consumable salts by industry. This requires the joint mobilisation of extended producer responsibility (EPR) sectors, battery marketers, recycling factories and public authorities;</li> <li>- Encourage the electrification of river vessels for less pollution and disruption of ecosystems;</li> <li>- Prioritize the establishment of transport infrastructure (especially railways) on sites already artificialized. For projects requiring new infrastructure (planned by SNBC 3 or not), compensate for artificialisation by renaturation actions;</li> <li>- Use low-carbon steel for the production of rails and low-carbon concrete for sleepers.</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>- Encourage limiting the need for total fertiliser inputs, both mineral and organic, while preserving the economic performance of farms and our food sovereignty, in particular by reducing surplus nitrogen fertilisation.</li> </ul>
Industry	<ul style="list-style-type: none"> <li>- Put in place public policies for the recycling of water-intensive materials (metallurgy, paperboard);</li> <li>- Ensure the application of the ICPE regulations, which regulate technological risks, the mining code (for the geological storage of CO<sub>2</sub> and any other gas) and the regulations on the transport of dangerous goods (in particular for the transport of CO<sub>2</sub> and hydrogen). Risk reduction measures shall be imposed whenever necessary;</li> <li>- Use advanced combustion technologies with filtering and emission treatment processes to reduce emissions of particulate matter and pollutants and allow their capture before release. In particular, national legislation requires the use of efficient systems for treating fumes leaving installations for the production of heat or electricity from biomass, enabling emission limit values to be achieved, in particular by implementing the best available techniques (BAT) applicable to those classified installations, which may be hardened depending on the local context;</li> <li>- Optimise hydrogen production processes by electrolysis to reduce water consumption;</li> </ul>

<sup>29</sup> Since<sup>1</sup> February 2025, the environmental score has also been used to calculate the annual incentive tax on the purchase of low-emission light-duty vehicles and to assess the advantage in kind linked to the availability of a vehicle.

## Summary of the Strategic Environmental Assessment of SNBC 3

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	<ul style="list-style-type: none"> <li>- Avoid the installation of high-risk facilities near sensitive areas (housing, establishments receiving the public);</li> <li>- Where possible, favour technologies and fluids with a lower risk profile;</li> <li>- Strengthen safety requirements for installations using hydrogen (leak detection, ventilation, anti-explosion devices).</li> <li>- Strictly supervise the storage and handling of CSRs (storage conditions, volume limitation, thermal monitoring);</li> <li>- Adapt safety standards for alternative refrigerants (hydrocarbons, ammonia).</li> </ul>
<b>Buildings</b>	<ul style="list-style-type: none"> <li>- Strengthen the fight against energy renovation fraud and unfair canvassing in order to preserve the quality of renovations and thus ensure optimal energy and GHG gains;</li> <li>- Prioritise the use of recycled or sustainably sourced materials for the manufacture of PACs and insulation materials;</li> <li>- Establish recycling and re-use programmes for heat pumps and end-of-life insulation materials (linked to the Extended Producer Responsibility (EPR) sector for construction products and materials in the building sector (PMCB);</li> <li>- Design urban heat networks and storm water management systems in an integrated manner, so that this water can be used to cool UCRs and reduce dependence on traditional water sources;</li> <li>- Avoid any leakage of refrigerants used, as they have a very significant global warming potential. To this end, all installations of more than 12 kW are to be regularly inspected.<sup>30</sup></li> </ul>
<b>Energy production</b>	<ul style="list-style-type: none"> <li>- ERC measures identified in the EPP 3 SEA;</li> <li>- Comply with the provisions of the BRGM-Ineris 2023 guide on the control of seismic risks in geothermal works.</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>- Apply as soon as possible the 'Best available techniques Reference Document on Landfills', known as 'BREF LAN'), a European regulation, which is scheduled to enter into force in 2033, which will prescribe the implementation of the best available techniques for the collection and treatment of air pollution from NDSIs;</li> <li>- Prioritise the storage of bio-waste in closed buildings with air treatment to limit olfactory nuisance;</li> <li>- Put in place islanding measures and encourage rapid rotation of fuel batches, to limit the risk of fire related to CSRs.</li> </ul>
<b>LULUCF</b>	<ul style="list-style-type: none"> <li>- Put in place and sustain public policies to adapt the French forest to new climatic conditions and limit the associated negative impacts: sustainability of support for forest renewal in line with the NACCP3, which provides in particular that the scheme must incorporate structural environmental criteria in the target of diversified and resilient forest renewal, and establishment of a national strategy for the adaptation of forests to climate change integrated into the next NFCP (National Forest and Timber Programme), implementation of the national strategy for the defence of forests and non-forested areas against fire and legal obligations to clear brush, etc.;</li> <li>- Strengthen the resilience and adaptability of the forest-wood sector in a context of declining net forest growth and multiplying crises, by developing wood-material uses (and in particular long-lived uses), capacities to recover poorly processed species (deciduous wood, crisis wood), increasing the lifespan of wood products and recycling and re-use of end-of-life wood products;</li> </ul>

<sup>30</sup> Legislating. Decree No 2010-349 of 31 March 2010 on the inspection of air-conditioning systems and reversible heat pumps: <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000022050074>

## Summary of the Strategic Environmental Assessment of SNBC 3

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	<ul style="list-style-type: none"> <li>- Promote sustainable forest management that is sensitive to the water and carbon cycles.</li> </ul>
<b>Consumption-based emissions</b>	<ul style="list-style-type: none"> <li>- Apply to any reindustrialisation project, the environmental assessment regulations that require an impact study, including a fauna-flora study, when the significant negative impacts of the project warrant it. This makes it possible to identify potential negative impacts and requires the deployment of an ERC (avoid reducing offset) sequence in order to limit the impact on biodiversity, and by extension on ecosystem services;</li> <li>- Apply to any reindustrialisation project the ICPE regulation, which imposes emission limit values so as to ensure a good level of air and water quality. A health risk study is requested in particular in the context of applications for environmental authorisations (ICPEs) to be obtained in order to have the right to operate a new plant;</li> <li>- Optimise water consumption in production processes relocated to the territory;</li> <li>- Optimize the consumption-based emissions of industrial relocations on the territory within the framework of the ZAN by focusing in particular on the location of industries on already artificialised soils or brownfield sites;</li> <li>- Encourage industrial relocations to set up circular economy approaches on the territory.</li> </ul>
<b>Digital</b>	<ul style="list-style-type: none"> <li>- Adopt new European ecodesign standards for digital terminals, in particular through the two delegated acts adopted pursuant to the ESPR Regulation<sup>31</sup> (2024/1781), which will address the reparability of EEE<sup>32</sup> (planned for adoption in 2027) and the recycled content and recyclability of EEE (planned for adoption in 2029);</li> <li>- Reflect for future digital strategies on the systematic association of ecological preservation targets in value chains and territorial projects.</li> </ul>
<b>Spatial planning</b>	/
<b>Financing the transition</b>	<ul style="list-style-type: none"> <li>- Initiate a reflection on the inclusion in the relevant funding mechanisms of an explicit criterion of water conservation (water efficiency, pollution prevention) and ecological restoration, in order to avoid projects that reduce emissions but increase pressures on ecosystems.</li> </ul>
<b>Mobilisation of stakeholders</b>	/
<b>Research</b>	<ul style="list-style-type: none"> <li>- Implement a systematic and independent assessment of technological risks from the early stages of research and development for research at major risk and integrate sustainability, safety and precautionary criteria into calls for projects and public funding.</li> </ul>
<b>Jobs and skills</b>	/
<b>Natura 2000</b>	<ul style="list-style-type: none"> <li>- Avoid any damage to the integrity of Natura 2000 sites in the deployment of structuring projects linked to SNBC 3: Upstream identification, at national and regional level, of exclusion zones for high-impact projects. Carrying out a Natura 2000 impact assessment already at the strategic planning stages (and not only at</li> </ul>

<sup>31</sup> Regulation (EU) (2024/1781) of 28 June 2024 ('Ecodesign for Sustainable Products Regulation'). [https://eur-lex.europa.eu/legal-content/FR/TXT/HTML/?uri=OJ:L\\_202401781](https://eur-lex.europa.eu/legal-content/FR/TXT/HTML/?uri=OJ:L_202401781)

<sup>32</sup> Electrical and Electronic Equipment

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	<p>the project stage). Prioritisation of settlements outside Natura 2000 sites and their ecological influence areas.</p>
<p><b>Biomass</b></p>	<p><b>Common:</b></p> <ul style="list-style-type: none"> <li>- Transpose RED III, in its parts relating to sustainability and GHG emission reduction criteria for forest biomass and the principle of cascading use of biomass;</li> <li>- Publish texts to recognise certifications for the sustainable management of hedges and the distribution of wood from sustainably managed hedges;</li> <li>- Put in place a prioritisation of biomass uses (integrated into the SNBC body), which favours long-lived material uses, including bio-based products, over energy uses, and will prioritise energy uses that do not have a technically and economically viable decarbonisation alternative;</li> <li>- Revise the national biomass mobilisation strategy (SNMB) following the new targets of SNBC 3 and ensure mutual consistency between SNMB and the regional biomass schemes (SRB), which will be revised according to a timetable specific to each region;</li> <li>- Put in place measures to encourage the reasoned harvesting of crop residues for energy purposes;</li> <li>- Strengthen the expertise of biomass cells on agricultural and forestry resources (and the availability of current and projected data);</li> <li>- Systematize the study of the viability of the supply plan of each biomass-consuming project for non-food uses requesting public support, in particular its consistency with the estimated capacity of agricultural and forest ecosystems to provide the corresponding biomass, including in projection.</li> </ul> <p><b>Biofuels:</b></p> <ul style="list-style-type: none"> <li>- Prioritise the development of non-first-generation biofuels so as not to compete with food resources;</li> <li>- Use marginal and degraded land to grow crops for biofuels, or use intermediate energy crops and avoid conversion of natural or agricultural land to ecological focus areas.</li> </ul> <p><b>Biogas:</b></p> <ul style="list-style-type: none"> <li>- Comply with the minimum safety requirements to be adopted when designing, constructing and operating a methanisation plant;</li> <li>- Reduce the storage time of livestock manure before methanation in order to avoid GHG emissions;<sup>33</sup></li> <li>- Install flares to burn the released gases in the event of overpressure;<sup>34</sup></li> <li>- Conduct consultations involving all stakeholders during pre-studies, regularly communicate on the environmental and economic impact of the production of renewable energy from organic waste decarbonising the natural gas network.</li> </ul> <p><b>Solid biomass:</b></p> <ul style="list-style-type: none"> <li>- Develop and implement the second National Forest Programme (PNFB) for forest biomass and SNMB;</li> </ul>

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	<ul style="list-style-type: none"><li>- Implement the National Biodiversity Strategy (NBS) and the resulting plans (SFAP, old-growth NAPs);</li><li>- Prioritise the replacement of domestic appliances with less efficient wood and the installation of new equipment in housing without any other low-carbon alternative, taking into account local air quality issues.</li></ul>
CCUS	<ul style="list-style-type: none"><li>- Avoid the use of fossil carbon capture and storage technology for emissions that can be decarbonised by technically and economically viable decarbonisation solutions.</li><li>- Strengthen the control of risks related to CO<sub>2</sub>'s capture, transport and storage infrastructure by integrating security and monitoring requirements (early detection of leaks, monitoring of pressures and flows).</li><li>- Ensure sustainable containment of stored CO<sub>2</sub> based on thorough site characterisation, technical control of injection processes and long-term monitoring of storages, in order to reduce the risks of water and air pollution, seismicity and ground movements, and damage to the biosphere.</li><li>- Securing the integrity of drilling sinks over their entire life cycle.</li><li>- Limit the impacts on biodiversity and natural environments when deploying CO<sub>2</sub>'s capture, storage and transport infrastructure (choice of sites, limitation of artificialisation, ecological continuity, restoration of environments).</li><li>- Supervise the management of solvents and hazardous waste resulting from CO<sub>2</sub> capture processes in order to reduce their environmental impacts;</li><li>- Limit the use of DACCS to what is strictly necessary;</li><li>- Encourage research and development aimed at reducing water and energy consumption in CO<sub>2</sub> capture processes;</li><li>- Take into account the impact on mineral resources, and in particular critical materials, in the development of CO<sub>2</sub> capture technologies.</li></ul>

## 8 - Monitoring the environmental issues of SNBC 3

**Taking into account the identified potential environmental impacts of SNBC 3, specific indicators have been defined in order to monitor, over time, the evolution of pressures on the environment and thus to assess the effects of SNBC on the environment.**

A limited number of indicators representative of developments were preferred to too many, difficult to gather and equally difficult to interpret and monitor over time. Although not exhaustive, **the usefulness of these indicators will be to alert to trends in development, in order to be able to react in the event of an increase in pressure on the environment, and to carry out further investigations if necessary.**

Among those indicators, in order to closely monitor the development of the first-order impacts of SNBC 3 and the taking into account of ERC measures, **some were selected to be integrated directly into SNBC.** They will be updated and accessible to the general public on an annual basis:

- Material consumption-based emissions of France;
- Freshwater consumption by use and fresh water abstraction by use;
- Consumption of natural, agricultural and forestry areas;
- Primary energy production from solid biomass;
- Total emissions of air pollutants (SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>2,5</sub>, NMVOC, NH<sub>3</sub>);
- Quantity of Waste from Economic Activities (WEEE) by sector;

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- Inventory of technological incidents/accidents.

Other environmental indicators are foreseen for the monitoring of the SNBC SEA. They are presented in part VIII.2. of the SEA.





**GOVERNEMENT**

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Égalité  
Fraternité*