European Climate Neutrality Observatory

Report:

Delivering 2030 climate targets

A snapshot of the transparency and policy information gaps of Member States' NECPs

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Contents

Summary and key messages

The 2025 Transparency Gap Report assesses transparency and policy information gaps in the final National Energy and Climate Plans (NECPs) of four EU countries: France, Ireland, Italy, and Sweden. NECPs are crucial for outlining how EU Member States will meet their climate and energy targets by 2030. The report evaluates whether these plans provide sufficient data transparency and policy measures to achieve their stated goals.

Key Findings

1. There are significant transparency and policy information gaps in all plans. Without addressing these, Member States risk failing to meet their 2030 climate targets. Strengthening the NECPs will be essential for ensuring a credible and effective transition to a net zero economy.
2. Policy information gaps threaten emissions reduction goals – the NECPs set ambitious targets without outlining clear policies and measures to support them.
3. There is a high level of variability across countries:
    - France and Ireland have the most detailed NECPs but still require improvement.
    - Italy and Sweden show significant deficiencies in both transparency and policy commitments.
4. Sectoral weaknesses: The transport, industry, and buildings sectors exhibit the largest information and policy information gaps.

Country-Specific Insights

- The French NECP is transparent across many areas but lacks details on buildings renovation, bioenergy use, and measures for industrial carbon capture.
- The Irish NECP has well-structured policies but is missing key data, such as on heat pump adoption rates and transport demand.
- The Italian NECP is weak on transparency with significant policy information gaps, especially in the transport, buildings, and industry sectors.
- The Swedish NECP is the least transparent NECP; it is missing renewable energy targets and is based on unclear emissions projections.

Recommendations

1. Improve transparency: Member States should clearly report all required indicators and set up monitoring mechanisms.
2. Enhance policy detail: NECPs should include specific, actionable policies with clear implementation plans.
3. Strengthen EU oversight: The European Commission should issue country-specific recommendations to improve transparency and implementation feasibility.

1 Introduction

1.1 Background and political context

What are NECPs

In their National Energy and Climate Plans (NECPs), EU Member States are required to describe their climate and energy objectives and targets – as well as the policies and measures to achieve them through 2030 (with an outlook to 2040 and the longer term). Specifically, they need to show how they will deliver on national binding emission reductions targets for the sectors covered by the Effort Sharing Regulation (ESR; covers agriculture, road transport, buildings, waste, and small industry) and for the Land Use, Land Use Change and Forestry (LULUCF) sector, as well as how they will contribute to the EU's 2030 renewables and energy efficiency targets. Minimum national targets and contributions are based on national ambition levels set in the ESR, the LULUCF Regulation, the Renewable Energy Directive (RED) and the Energy Efficiency Directive (EED), respectively, but for some countries the NECP may be the main or only document setting out milestone emissions reduction targets for 2030 and the key policies to achieve these.

The Governance Regulation (Regulation 2018/1999) sets the framework for the NECPs. Plans must be developed based on a common template and follow common rules for reporting and monitoring. Furthermore, as integrated, cross-economy plans, NECPs should be drafted with significant input across ministries to address key interdependencies, synergies, and overlapping needs between sectors and look at potential sequencing issues. One example of this is the need to identify the cumulative demands of the transport, building, and industry sectors for renewable hydrogen over time and ensure that these are met with sufficient supply, and to consider whether hydrogen production can be fully provided by the additional renewable electricity foreseen in the plan.

NECPs were first adopted in 2019 and – as required by the Governance Regulation – they are in the process of being updated between 2023 and 2024. Updates should better reflect the quickly changing scientific, political, and legal environment, as well as recent climate-related extreme weather events and heightened global political attention. This ongoing update is of the utmost importance, as EU climate and energy policies have evolved substantially since the NECPs were first drafted in 2019. After the launch of the European Green Deal, the EU increased its climate target for 2030 from (gross) 40% to net 55% emission reductions. To back this new target, the EU revised its entire climate and energy framework under the 'Fit for 55' Package, which brought new legislative files and revised existing ones. The ESR, LULUCF, RED, and EED have all been revised as part of the package. Moreover, following the COVID-19 pandemic and the war in Ukraine, the EU adopted the 'Next Generation EU' and the 'REPowerEU' policy packages, which have further increased ambition and provided substantial additional funding for climate action and the energy transition at the national level. To take full advantage of this important opportunity, and to ensure countries meet the updated ambition, information in the NECP updates needs to be as detailed and transparent as possible.

Why NECPs matter as guide to the transition

The European Commission has started the new legislative cycle by reaffirming the strategic direction for EU policy for 2025-2029. The 'Competitiveness Compass' includes as a central pillar a roadmap for climate neutrality by 2050 while safeguarding the EU's industrial base and socio-economic fabric. The net zero transition is a project of unprecedented scale and implies considerable changes to the current systems. These need to be anticipated and addressed for the transition to be effective and fair.

A climate neutral economy will not come about by chance. The pathways consistent with well-below two degrees require decisive action during the second half of this decade and the following ones. **Consistent and transparent planning, with a clear eye to intermediate targets, is an important tool to guide policymaking to this end. NECPs, established by EU law and presently in their second iteration, represent an opportunity for EU Member States to chart their next steps on the road to a net zero economy by 2050.** NECPs are the standard vehicle for all Member States to transparently communicate concrete policies and measures and the relevant indicators used to guide and monitor the transition. These plans must be both specific and comprehensive enough to allow stakeholders to understand the planned policy action guiding investment, supply, and consumption pattern changes in society.

1.2 Objectives of this report

This report analyses a sample of NECPs for potential gaps on two essential elements: **(1) transparency on the indicators required by EU law**, and the detail and expected **(2) impact of the policies and measures described in the national plans**.

Given the complexity of the task and the resources available, the analysis is limited to the final plans of four EU countries – **France**, **Ireland**, **Italy**, and **Sweden**. These countries were chosen because their final NECPs were available at the time of analysis, and they represent a sample of countries of various sizes across Europe.

The analysis of these four NECPs offers valuable insights and recommendations for all Member States on how they can strengthen their NECPs and furthermore provides guidance for **the European Commission for enhancing the framework** for NECPs and other planning requirements.

1.3 Outline of this report

The document starts with a chapter explaining the **methodology** used for the analysis. It then provides an overview of the **cross-country findings**, highlighting separately the transparency and policy information gaps. Results are then **detailed per country** for the four final NECPs analysed.

2 Methodology

This section describes how the four National Energy and Climate Plans (NECPs) were assessed and defines several concepts that are used across the report.

2.1 Analytical approach

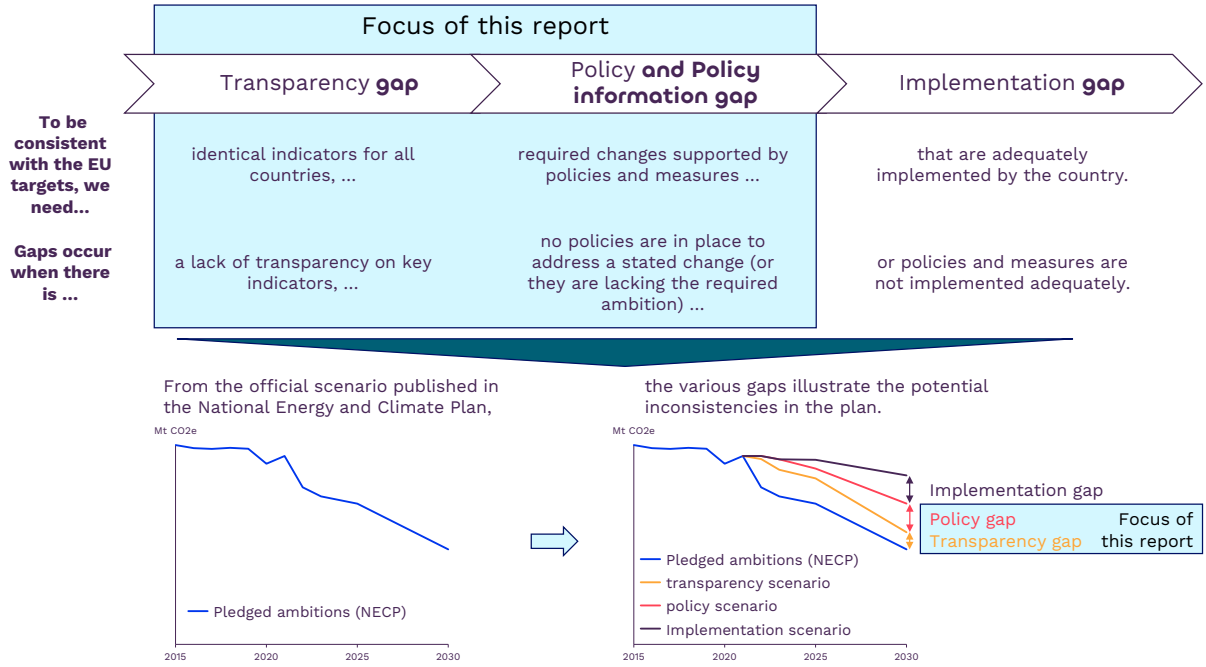
Our analysis builds on existing methodologies, including the approach of the European Scientific Advisory Board on Climate Change (ESABCC) in its Assessment report 2024 ('Towards EU climate neutrality Progress, policy information gaps and opportunities'). In this report, the ESABCC identifies four main types of gaps or inconsistencies in EU climate policy, including **policy gaps, which are defined as an instance where no policies are in place to address the required change**.

The present report builds on these concepts and adds the importance of transparently projecting and communicating on the indicators required to monitor the transition. A **transparency gap occurs when the required indicators to track progress are missing**. The concept of a transparency gap was first introduced in a previous ECNO report, which investigated five draft NECPs.[1]

1 The report can be found at https://climateobservatory.eu/report/european-climate-planning-NECP (accessed 31 March 2025). It assesses five Member State draft NECPs according to transparency and internal consistency.

While the assessment of transparency gaps checks whether there is sufficient detail regarding required indicators, assessing the **policy information gap means looking at whether policies and measures (PaMs) are sufficient to achieve national targets**. It consists of a qualitative assessment, made possible thanks to a robust mapping of the targets and PaMs. The analysis structures the various areas where policies are required and lists the PaMs included in the final NECPs to identify potential 'policy information gaps'. The simplest example of such a gap is when a target is defined in the NECP (e.g., x% increase in car efficiency), but the plan lacks an associated PaM to achieve it (e.g., no measures on car weight or maximum speed). The assessments in this report assume the full implementation of the policies in the final NECP. Consequently, our assessment does not consider any future modifications to the plan by a new government or gaps in investment to implement policies and measures. Figure 1 illustrates the concepts, policy information and transparency gaps, and provides an overview the scope of the analysis.

Figure 1: Illustration of the gaps that are expected to lead to insufficient greenhouse gas (GHG) emission reductions.



Source: ©ECNO 2025

Both assessments are performed at the sectoral level, covering energy supply, transport, buildings, and industry, and then summed across sectors. The assessments are laid out in further detail in the two sections below and in the annexes 8.1 and 8.2.

2.2 Use of the Pathways Explorer model

The NECP documents were assessed using the Pathways Explorer[2], an open-source modelling framework which allows us (i) to structure the indicators and the PaMs according to the parameters of the model, and (ii) to reproduce the impact of indicators on energy and emissions through an extensive set of levers. This highlights quantitatively the key risks of not reaching the targets. The Pathways Explorer is a simulation model based on levers and indicators. The levers connect to policies (modal shift in transport), while the indicators assess their impact (% of km travelled for each mode of transport). A scenario is a collection of ambition levels for all underlying levers, ranging from Business-as-Usual (BaU) to disruptive ambitions ('how far do we want to go to develop modal shift'). The Pathways Explorer includes comprehensive interactions between sectors.

2.3 Transparency gap methodology

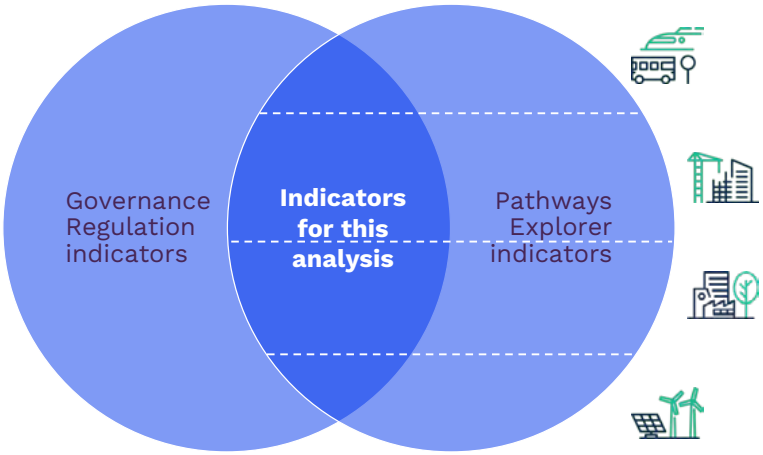
The transparency gap analysis is based on a list of indicators described below and assesses which of these indicators are available (or not) in the NECP. In the following, we explain how the list of indicators was constructed for the purpose of the present analysis.

NECP indicator requirements are defined by the EU **Governance Regulation** (Annexes I, II, III, and Energy Union indicators). In addition to Annex I, Annexes II and III include other Energy Union indicators for renewable energy and energy efficiency.

As introduced above, the Pathways Explorer framework is used to structure the transparency analysis. Shown in Figure 3, the analysis focuses on those indicators also covered by the Pathways Explorer model. These are classified into four sectors – transport, buildings, industry, and energy supply. In the end, the final list of indicators used for the analysis contains those covered by both the Pathways Explorer model and the Governance Regulation guidelines. As such, the analysis is limited to the sectors covered by the Pathways Explorer and does not cover the entire Governance Regulation, even where this is a mandatory part of the NECP. For example, climate adaptation is present in the Governance Regulation but not in the Pathways Explorer and therefore falls outside the scope of analysis.

2 More information available online at www.pathwaysexplorer.org, accessed 31 March 2025

Figure 2: Transparency gap indicators used in the analysis are those common to the Pathways Explorer and Governance Regulation.



Source: ©ECNO 2025

In sum, the methodology considers the following indicators across four sectors:

- **Transport:** Passenger and freight demand and modal shares; fleets of ZEVs (BEV/FCEV) and LEVs (HEV/PHEV) by type and mode; biofuel shares in road, marine, and aviation transport.
- **Buildings:** Floor area; renovation rates; renovation depths; EPC bans; enforced renovations; new building efficiency; energy demand shares for district heating, biomass, and electricity for space heating.
- **Energy Supply:** Total capacity of power generation technologies (renewables, nuclear, fossil fuels); fuel mixes for heat and electricity; net trade balances for electricity, fossil fuels, hydrogen, and e-fuels.
- **Industry:** Share of electricity, gas, hydrogen, biofuels, and e-fuels in final energy consumption.

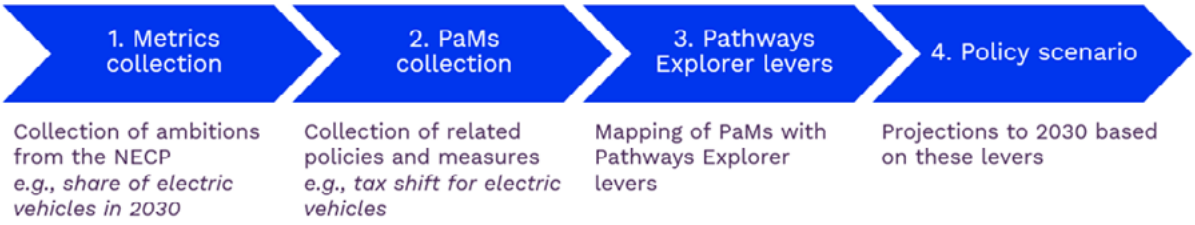
Annex 8.2 of this report provides detail on which indicators are mandatory with references to the respective Governance Regulation provisions.

2.4 Policy information gap analysis

The regulatory framework addressing the policy information gap is partly based on Article 2.1.c of the Governance Regulation, which requires NECPs to describe the planned policies and measures in relation to corresponding objectives, targets, and contributions to EU-level goals.

To analyse the policy information gap, we look at the stated ambition for a specific indicator in the NECP (for example, the share of electric vehicles by 2030), and assess whether this ambition is plausibly supported by the policies and measures described in the NECP. The policy information gap identification is not based on an official impact assessment methodology, but leverages the requirements set out in the Governance Regulation, translated into a methodology using the Pathways Explorer to generate a policy scenario. This process is shown in Figure 4. More details on methodology are available in annex 8.1.

Figure 3: Policy information gap analysis.



Source: ©ECNO 2025

3 Key findings and recommendations

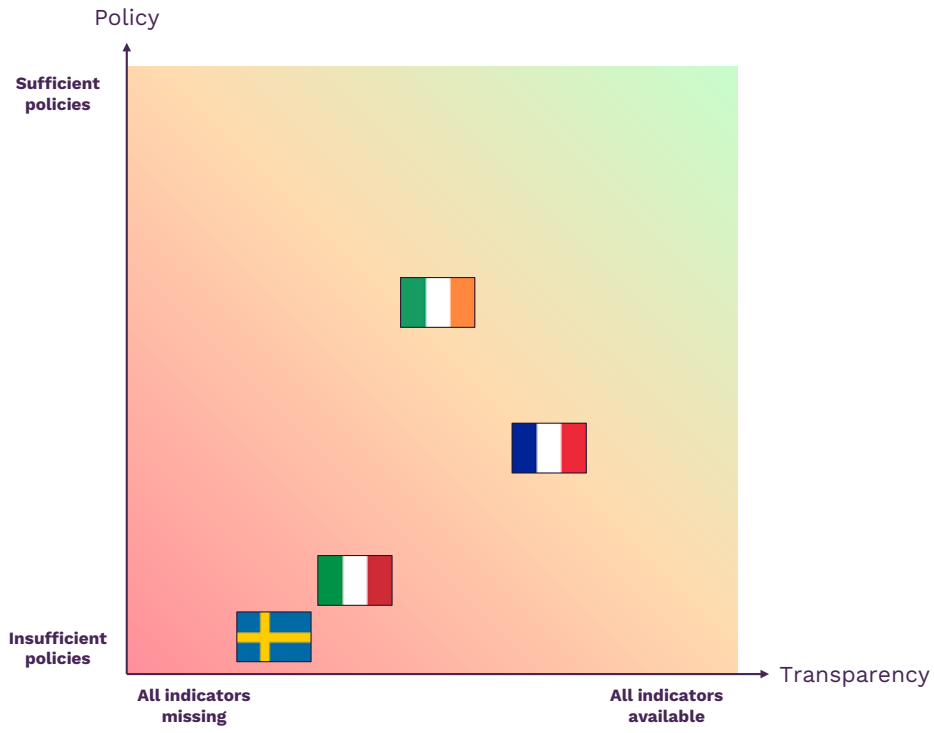
3.1 Cross-country overview

All four final NECPs were assessed on their transparency and policy information, as described in the methodology section. Cross-country findings include the following:

- All four NECPs have significant shortcomings in terms of transparency on the indicators and the degree of policy information provided. This increases the risk of missing the targets as plans reflect a lack of clarity. The scale of the transition requires a clear plan to realistically achieve the targets. Effective planning also allows for proper communication with all stakeholders to bring them onboard for implementation.
- Variability among countries is notable: France and Ireland align more systematically with the detail and substance required by the Governance Regulation, though their plans could be further improved. Sweden provides the least information on both transparency and policy, and likewise Italy shows much room for improvement on both dimensions. The implications of these gaps are detailed in the following sections.

- While France and Ireland submitted the most advanced of the four plans analysed, further improvements would enhance these further. For instance, for France, including forecasts for non-residential renovation rate, gas power plant capacity, and sectoral biomass consumption could significantly improve transparency. For Ireland, detailing measures related to heat pump targets, solar capacity, and circular economy would address some of the policy information gaps effectively to ensure the country can realistically achieve its targets.
- Italy and Sweden face more substantial deficiencies leading to large gaps on both transparency and policy information. Addressing these issues, as discussed in the respective country-specific analyses below, will require more comprehensive efforts on both dimensions. These two plans are missing many required indicators and lacking sufficient depth in their policies, which poses a high risk of missing their reduction targets.

Figure 4: Mapping of the four NECPs analysed according to the transparency of indicator communication and the quality of policy information.



The horizontal axis shows indicator transparency, based on available NECP indicators versus required ones in the Governance Regulation (aggregated by country in Figure 6). The vertical axis represents the policy gap from Figure 7 ranging from 30% (strong lack of supporting policies) to 100%. Source: ©ECNO 2025

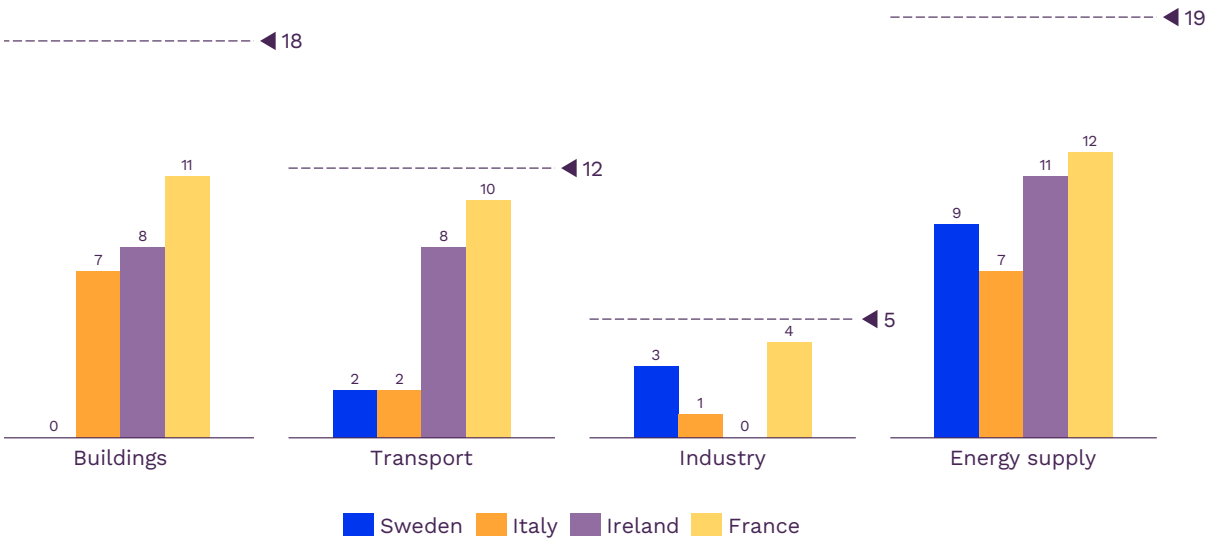
3.2 Cross-country findings on the transparency gap

The transparency assessment of NECPs is based on several mandatory indicators specified by the Governance Regulation for inclusion in national plans; these apply uniformly to all EU Member States. Notably, energy supply indicators are more prevalent than those for other sectors, such as transport or industry, as more focus has been set historically on detailing energy indicators for the Governance of the Energy Union. Still, this should not preclude national administrations offering adequate depth of information on other sectors.

Key findings include:

- Transparency gaps exist across all countries and sectors. None of the four NECPs fully satisfies the information requirements, whether assessed overall or by sector.
- There tends to be a lack of indicators across the four main sectors for Sweden and Italy. France, in turn, covers a large share of the required indicators.
- Among the four NECPs analysed, the energy supply sector is the only sector where all countries cover more than a third of the indicators. Still, their communication remains incomplete.

Figure 5: Quantity of mandatory indicators from the Governance Regulation communicated in the four NECPs analysed for this report.



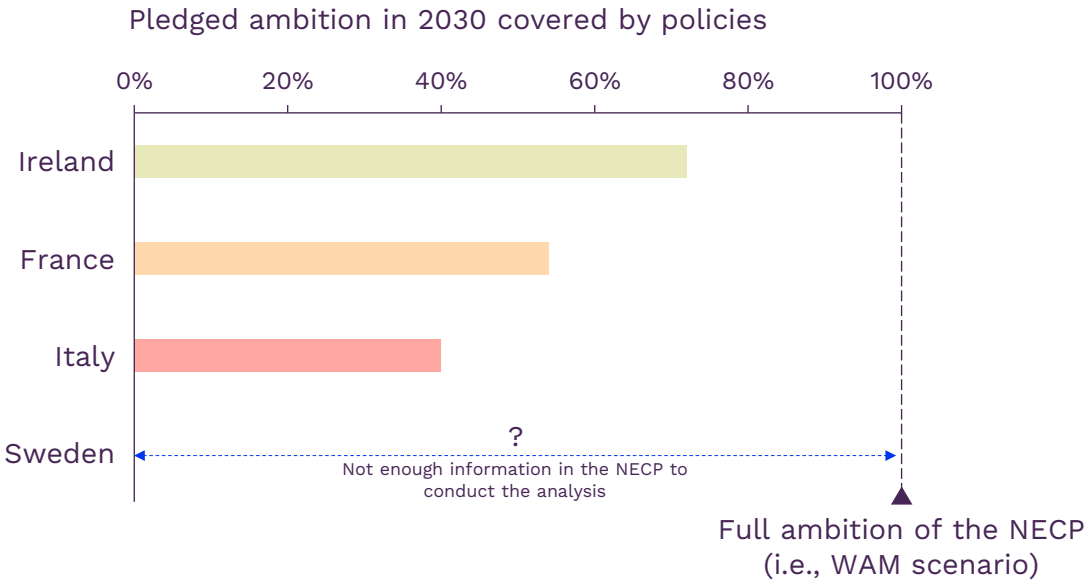
The dashed horizontal lines indicate the required number of indicators per sector. Bars represent included indicators. The missing indicators by sector and country illustrate the transparency gap. Source: ©ECNO 2025

The graph in Figure 6 depicts the available mandatory NECP indicators by sector and the degree to which these are included in the four final plans. It is worth mentioning that some indicators are not explicitly mentioned in the Governance Regulation but are interpreted from the NECP's general framework, as discussed in the methodological approach of the report.

3.3 Cross-country findings on the policy information gap

Ambitious climate goals without the necessary policies and measures have a high risk of falling short, leading to higher-than-expected greenhouse gas (GHG) emissions. The graph in Figure 7 illustrates the share of pledged climate ambition supported by presented policies. This is based on the with additional measures (WAM) scenario in the NECP documents. When this share is below 100%, a policy information gap is apparent. This gap indicates the lack of necessary policies and measures to credibly achieve the stated goals of the NECP.

Figure 6: Policy information gap for the four countries analysed.



Source: ©ECNO 2025

The table below details the calculation of the policy information gap percentage for each country. The 2030 policy scenario, modelled for this analysis, represents our best understanding of the policies and measures outlined in the NECP. The policy information gap percentage is calculated as the estimated reduction based on the policies and measures in the policy scenario, divided by the pledged reduction in emissions between 2023 and 2030. The closer the percentage is to 100%, the closer the modelled policies and measures are to the pledged ambition. See Figure 7 for a visual representation.

Table 1: Calculation of the policy information gap percentage.

Country	2023 emissions [MtCO2e]	2030 pledged policies [MtCO2e]	2030 policy scenario [MtCO2e]	Percentage policy information gap [%]
Ireland	67	43	50	72% = (67-50)/(67-43)
France	351	253	298	54%
Italy	393	263	341	40%
Sweden	There are too many missing indicators, policies and measures in the NECP to carry out this analysis.			

The key findings are summarised below:

- Concretely, **if the NECP documents do not include all the policies and measures that are in place or planned for reducing emissions, there is a significant risk that the pledged ambitions will not be achieved by 2030**. To provide a credible blueprint for reaching targets, countries must either be more complete on the PaMs included in their final document and their potential impact on emissions or find additional policies.
- To align with their stated ambitions, all countries should review their policies to make them more coherent with those objectives.
- The comprehensiveness of policies varies significantly across the countries analysed. The share of emission reductions from 2023 to 2030 supported by adequate policies ranges from 40% to 72%. For instance, in Ireland, the policies outlined in the final NECP suggest that only 72% of the expected emission reductions during this period are plausibly supported by effective policies. In Sweden, there are too many missing indicators and too few policies and measures in the NECP to carry out a quantitative analysis (for more detail, see the Swedish factsheet in section 7).

3.4 Recommendations for policymakers

The NECPs are meant to convey the policies and measures for achieving Europe's climate and energy targets, and support putting concrete additional policies in place to reach them. However, the four plans analysed for the purpose of this report are still not sufficiently precise and complete to fulfil that purpose. Although some of them are of good quality, the plans analysed could all improve transparency with additional indicators. When it comes to policies, some targets are not sufficiently supported by policies and measures. Where measures do exist in many cases they do not seem plausible or ambitious enough to achieve the targets.

National policymakers should therefore consider the following recommendations to improve transparency and policy in upcoming NECP cycles and in their monitoring in the meantime:

- **Clearly detail all required indicators relevant for climate and energy planning and develop a monitoring process:** Member States can strengthen their NECPs by including clear national targets coupled with a clear monitoring mechanism that considers all sectors related to the demand and the production of energy and related emissions. Based on the insights from the four final national plans assessed, countries are still missing transparency on the required indicators, and they should clarify how they will be tracking progress on these in order to meet their targets.

- **Be more specific on the policies and measures included in their NECPs:** Too often the plans are either missing policies for certain dimensions or include a list of policies and measures but do not provide clarity on actual impacts, both for individual policies and for the mix as a whole. National authorities should consider complementing their plans with sufficient detail, even if this information may already be available in separate documents, as the plans need to be standalone to stand up against the scrutiny of the full range of stakeholders ultimately involved in making these targets a reality.

Within the context of the Governance Regulation (and its potential revision), the European Commission, should:

- **Analyse the final NECPs and provide country-specific recommendations to safeguard against the risk of transparency and policy information gaps:** the 2030 milestone is only five years away, and our analysis shows that NECPs are still not consistently up to the task. A risk of missing targets and undermining decarbonisation objectives exists across the four NECPs analysed. To ensure achievement of the EU's climate goals, the European Commission may want to highlight these risks to Member States, including but not limited to the following areas:

  - Encourage Member States to be complete and transparent on the indicators and ensure that they have a monitoring mechanism in place to track progress during the transition.

  - Provide sufficient details (from planning to implementation) of the policies and measures in each of the sectors.

- Provide a clear view of how failing to achieve the national targets will impact the overall EU target, and how that will be addressed at EU level: This risk may partly be mitigated at the EU level by wide-ranging measures such as the ETS I and II , which give a stronger backbone to the transition. The European Commission could address this further with several policy initiatives, including e.g., via EU-level agreements with other regions for importing green hydrogen, an EU-level mapping of carbon dioxide storage, and a standardised framework to report transborder CO_2 fluxes.

4 Analysis of the French final NECP

4.1 Key findings for France

The present assessment is based on the final NECP submitted by France to the European Commission in July 2024. The submitted document outlines France's climate policies and projections up to 2030.

Transparency gap

The French NECP performs quite well in communicating information on the required indicators. A notable strength lies in its detailed modelling of climate projections through 2030 and the transparency of the underlying assumptions. Chapter 5 of the NECP clearly presents the assumptions and indicators by sector. However, some of the following key indicators for monitoring climate policies are absent.

- For the **building sector**, missing elements include the rate of non-residential renovations, changes in floor area for residential and non-residential buildings, and the share of heating powered by electricity.
- In the **transport sector**, the NECP lacks data on the proportion of low-emission vehicles, such as hybrid and plug-in hybrids.
- For the **energy supply sector**, the plan does not include information on gas power plant capacity or hydrogen imports and exports.

- Across **multiple sectors**, the NECP omits the share of biofuel and biomass in final energy consumption, which is key to understanding the contribution of bioenergy to the energy and climate transition. This poses a risk that certain sectors will want to leverage more bioenergy for decarbonisation than what is potentially available.
- Finally, the French NECP makes no mention of the **share of renewable energy** in its final energy consumption in 2030, despite this being a key objective to be carried forward by the Member States. The target of 35% by 2030, which was communicated by the French administration to the European Commission in July 2024, is not available in the NECP.

Policy information gap

The French NECP introduces numerous policies and measures to support its climate ambitions, as described in Chapter 3 of the plan. **While most of the plan's ambitions are well-supported, certain targets appear implausible due to a lack of corresponding policies.**

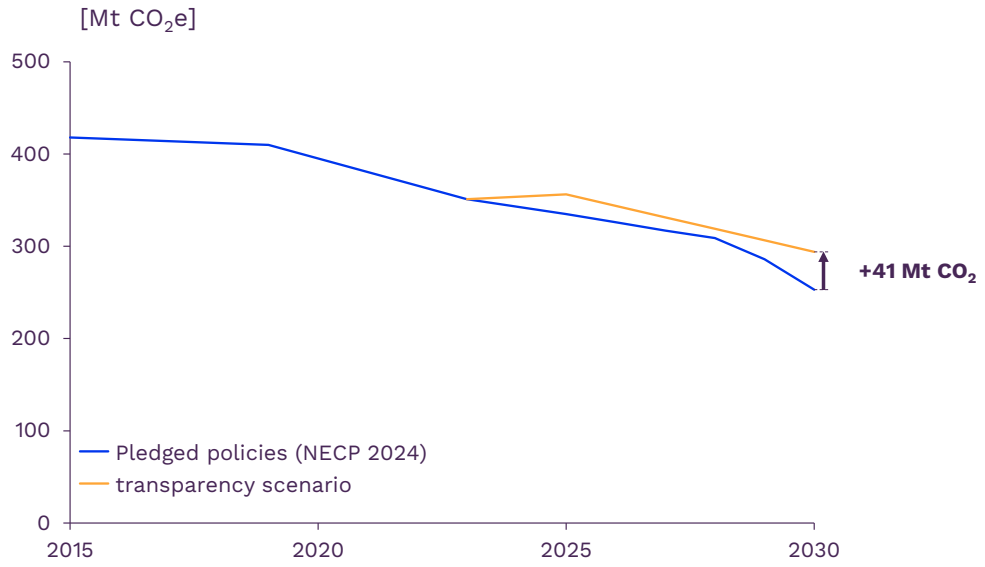
- In the **transport sector**, achieving the ambitious vehicle efficiency gains suggested would require policies to reduce the weight or size of cars to be credible; these policies are missing from the document.
- In the **energy supply sector**, the planned phase-out of coal and oil power plants by 2027 and 2030, respectively, depends heavily on deploying alternative flexibility capacities. The NECP does not outline how France intends to establish this flexibility given the lack of projections for gas power plant capacity between now and 2030.
- For the **industrial sector**, ambitions for carbon capture and storage (CCUS) need to be supported by clear planning for the associated transport network, which is not currently the case in the French NECP.

The following sections provide a detailed analysis of the missing indicators and policy information gaps, highlighting areas where further development is needed to ensure the plausibility of achieving France's climate objectives.

4.2 Transparency gap on emissions for France

The transparency gap in the French final NECP is estimated at around 41 $MtCO_2e$. This gap arises from missing key indicators, which increases the risk of missing emissions targets and limits robust assessment of the official scenario. To address this, a transparency scenario was constructed to estimate the impact of missing indicators. By using all available indicators in the NECP, this scenario approximates GHG emissions projections and is compared to the 'Pledged Policies (NECP 2024)' scenario, which aligns with the WAM scenario detailed in the French final NECP. The comparison highlights how missing key indicators can result in significantly different GHG emissions projections and puts the stated ambition at risk.

Figure 7: Transparency gap on total emissions in France. (including LULUCF)



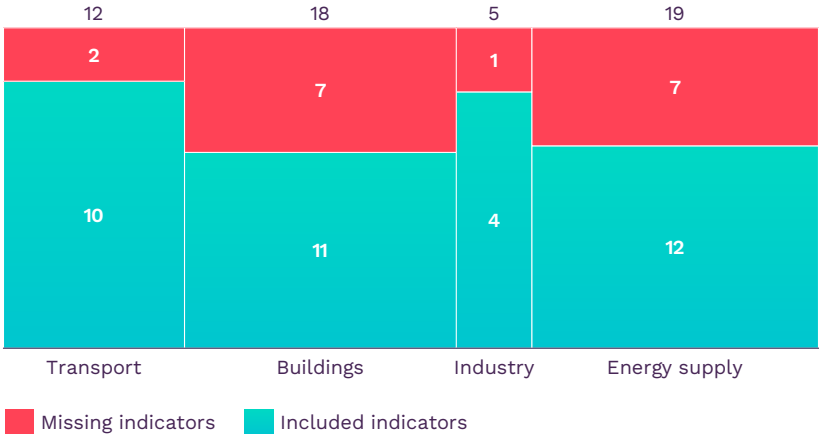
Source: ©ECNO 2025

France's NECP reflects commitments toward meeting national climate targets, yet it includes notable transparency gaps on key indicators. In response to these gaps, the NECP references supplementary documents, such as the National Low Carbon Strategy or the Long-Term Renovation Strategy, but the partial integration within the NECP itself makes independent assessment difficult.

Stock-take of the indicators

This section aims to detail the missing indicators in the French NECP which lead to the transparency gap described above. The quality of French NECP indicator communication is generally good but varies significantly by sector. It could be improved in the buildings and energy supply sectors to be more in line with the Governance Regulation. This overview is supplemented below by tables of the indicators missing from the NECP for each sector.

Figure 8: Indicators included in the French NECP. (from the mandatory indicators required by the EU Governance Regulation 2018/1999)



Source: ©ECNO 2025

For the transport sector, most indicators required by the Governance Regulation are included in the NECP. For 2030, projections cover only electric vehicles; however, low-emission vehicles (LEV) like hybrid (HEV) or plug-in hybrid vehicles (PHEV), also contribute to fleet development for passenger and freight transport. The incomplete fleet description also has an impact on the other sectors, as is described in the table below with the last four columns. For example, the development of new vehicles influences industrial emissions linked to the production of these vehicles, as well as the production of energy needed per energy carriers.

Table 2: Missing indicators in the transport sector.

	Availability	Mandatory indicators[3]	Impacts on other sectors			
			Buildings	Energy	Industry	Agriculture
Transport	🔴	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in freight		×	×	
	🔴	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in passenger		×	×	
	🟢	10 out of 12 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

For the building sector, the French NECP does not include all critical indicators, covering both residential and non-residential areas. The missing indicators are presented in the table below. Eleven of the 18 mandatory indicators to be communicated are included in the NECP.

3 For further explanations on the mandatory nature of these indicators, see justification in annex 8.2.

The absence of clarity on certain key indicators can also affect other sectors. For instance, limited data on changes in floor area (both residential and non-residential) or renovation rates and depth introduce uncertainty regarding the demand for building and insulation materials. Furthermore, detailed information on renovation volumes is crucial for assessing investment needs, planning professional training, and implementing public policies effectively.

The energy mix in the final consumption of the building sector is also incomplete. The share of energy demand met by biomass and the proportion of electricity used for heating non-residential buildings are missing. The absence of data on biomass limits understanding of demand and how to meet it sustainably, a critical issue for biomass in Europe. Regarding electricity, electric heating plays a significant role in capacity projections, as it requires high peak capacity to handle demand surges.

The NECP suggests that the energy mix for domestic hot water and cooking is expected to evolve similarly to that of heating, which is more comprehensively described. However, changes in heating systems may not directly apply to hot water systems. For cooking, the link to the heating energy mix is even weaker. One recommendation would be to present the energy mix for heating, cooking and hot water separately, as the current assumptions appear overly simplistic.

Table 3: Missing indicators in the buildings sector.

	Availability	Mandatory indicators		Impacts on other sectors			
				Transport	Energy	Industry	Agriculture
Buildings	🔴	Residential	Floor area		×	×	
			Renovation depth		×	×	
			Share of energy demand covered by biomass		×		×
	🔴	Non-residential	Floor area		×	×	
			Renovation rate		×	×	
			Share of energy demand covered by biomass		×		×
			Share of space heating covered by electricity		×		
	🔵	11 out of 18 mandatory indicators are available in the NECP					

Industry indicators are largely available and comply with the Governance Regulation. However, the **NECP does not provide projections for the share of biofuels** in the industrial sector's final energy consumption. Like the building sector, this indicator is crucial for ensuring security of supply and the sustainable use of biomass.

Table 4: Missing indicators in the industry sector.

	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Energy	Agriculture
Industry	🔴	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in freight			×	×
	🔵	4 out of 5 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

The NECP provides extensive data on the energy supply sector. However, greater precision is needed for capacity and production projections of gas-fired power stations (missing for 2030), combined heat and power plants (CHP), biomass, and renewables. The importance of biomass projections was outlined previously in this section. The absence of projections for gas-fired power stations introduces uncertainty in network balancing. These gas-fired capacities currently play a critical role in grid flexibility, particularly as other fossil-fuel power stations (coal and oil) are phased out in the short term. This issue is further addressed in the next section on the policy information gap.

Including projections for **imports and exports of hydrogen and e-fuels** would also be valuable given their potential significance by 2030. For hydrogen, data is needed to evaluate if French and European production can meet domestic demand or if import agreements outside the EU will be necessary. France is not unique; all EU member states would benefit from clear hydrogen projections, like those for electricity (e.g., capacity, production, demand, imports, and exports). Regarding e-fuels, France does not appear to forecast demand for 2030, highlighting the significance of this missing indicator.

Table 5: Missing indicators in the energy supply sector.

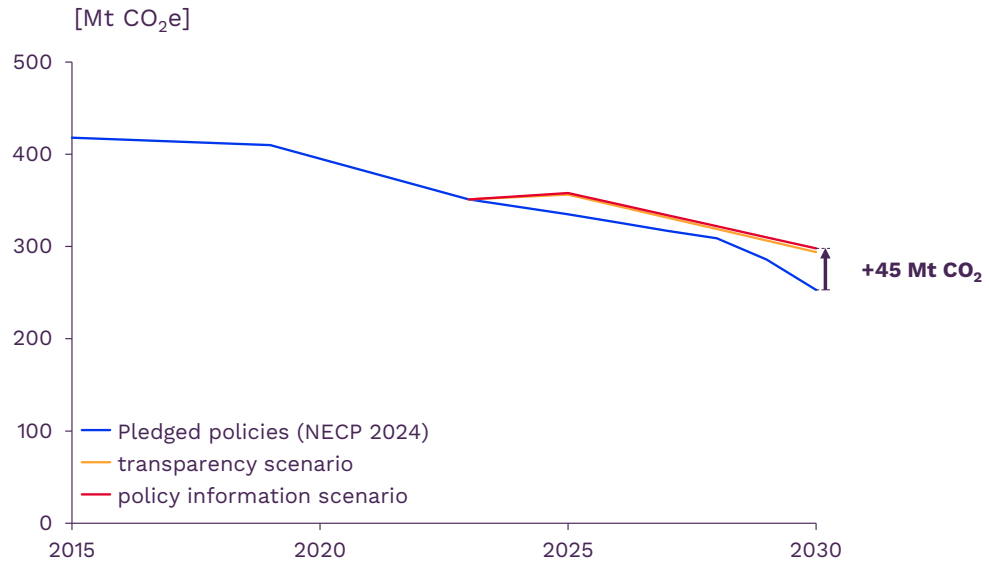
	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Industry	Agriculture
Energy Supply	🔴	Total capacity of combined heat and power plants (CHP)			×	
	🔴	Total capacity of solid-biomass and waste-fired power plants to produce electricity				×
	🔴	Total capacity of gas power plants				
	🔴	Energy mix to produce heat and electricity by CHP			×	
	🔴	Share of renewable waste to produce electricity				×
	🔴	Net import/export of hydrogen				
	🔴	Net import/export of e-fuels				
	🔵	12 out of 19 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

4.3 Policy information gap on emissions for France

The policy information gap with the WAM from the final NECP is estimated at around 45 $MtCO_2e$. This means the PaMs included in the French NECP are not sufficient to reach national targets. This policy information gap could lead to higher-than-expected GHG emissions. The policy scenario is constructed by deviating from the transparency scenario when the ambitions and indicators are not sufficiently supported.

Figure 9: Policy information gap on total emissions in France. (including LULUCF)



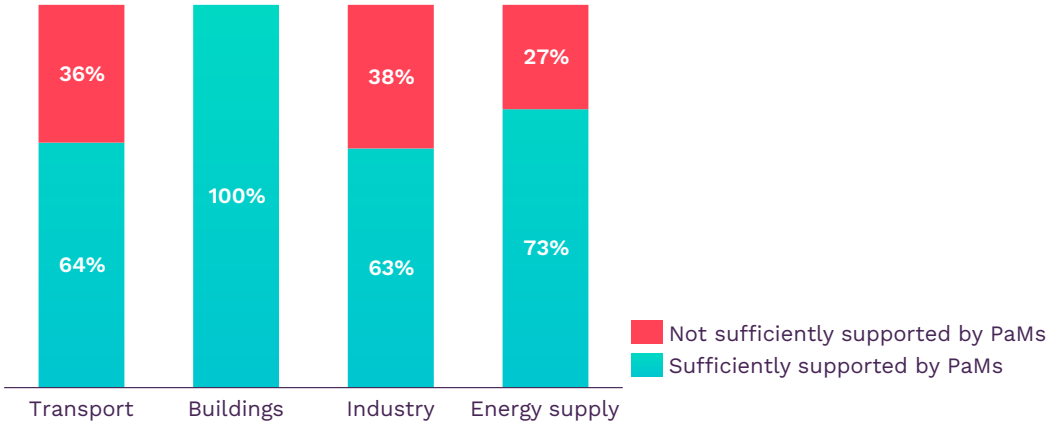
Source: ©ECNO 2025

Available policies and measures

Most included indicators in the NECP are plausibly supported by the described PaMs. The figure below shows the proportion of ambitions sufficiently supported by PaMs for each sector. For the building sector, 100% of stated ambitions appear achievable based on presented PaMs. However, many ambitions required by the Governance Regulation remain unaddressed.

This assessment is limited to the indicators provided in the NECP. Policies and measures related to missing indicators from the previous section are not analysed. The methodology evaluates whether the proposed policies and measures are plausible in achieving their stated goals. For instance, the NECP does not include an indicator for hydrogen imports and exports in 2030. Consequently, any measures related to this objective are excluded from the analysis, as it is not possible to assess their plausibility without a defined objective.

Figure 10: Proportion of indicators in the French NECP adequately supported by policies and measures.



Source: ©ECNO 2025

The tables below show the indicators for which ambition is stated in the NECP, but are deemed to be insufficiently supported by the PaMs. This evaluation is justified in the second column based on the PaMs analysed. They are prioritised in order of marginal emissions gap. In other words, the first indicators have the greatest impact on reducing the policy information gap.

Table 6: Key observations.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Transport	Total passenger transport demand	Flat evolution from 2019 to 2030 (15 150 pkm/cap)	The NECP addresses this indicator solely by **encouraging employers** to support teleworking. However, teleworking is not viable for all jobs; this incentive-based measure lacks detailed implementation strategies. With rising transport demand since 2000, this approach appears insufficient to achieve the goal of stable growth by 2030.
	Total inland freight demand	+4% (wrt 2019)	The SNBC 3 (French National Low Carbon Strategy) mentions a long-term vision for controlling freight demand. However, this vision is not supported by **any concrete and implementable measures**.
	Freight vehicle energy efficiency (within a technology)	LDV ICE: -14% LDV BEV: -20% HDV ICE: -15% HDV BEV: -20% (wrt 2030)	**No measures** were found in the NECP to support the energy efficiency ambition for LDV and HDV in freight transport.
	Load factor of trucks	8.4 tons/vehicle (8.1 in 2019)	Although there is a vision in SNBC 3 to increase and optimise the load factor, there are **no clear measures** to support the (slight) increase to 2030.
	Passenger vehicle energy efficiency	LDV ICE: -16% LDV BEV: -12% (wrt 2019)	Current measures, such as weight penalties and incentives for low-emission vehicles, seem insufficient to achieve the substantial energy efficiency gains targeted. Given the high efficiency of internal combustion and electric motors, effective energy efficiency improvements must **address vehicle weight, eco-driving practices, or road speed limits**.

Buildings

Indicators	Stated ambition in 2030 (from NECP)	Justification
All the stated ambitions seem plausible based on the NECP's policies and measures		

Energy Supply

Indicators	Stated ambition in 2030 (from NECP)	Justification
Total capacity of oil power plants	0 GW in 2030	The output of oil-fired and coal-fired power stations constitutes a small fraction of annual energy capacity or production, yet they serve a critical role in providing system flexibility. However, since gas power plant capacity is not given in the NECP, **the NECP does not specify the alternative sources intended to replace this flexibility**.
Total capacity of coal power plants	0 GW in 2027	
Production of refineries	-31% from 2019 to 2030	The proposed 31% reduction in refinery output by 2030 compared to 2019 appears to rely solely on decreasing domestic demand for petroleum products in France. However, **the NECP does not address restricting the production of French refineries, which may continue to produce for export markets**.

Industry

Indicators	Stated ambition in 2030 (from NECP)	Justification
Volume of CO_2 captured (CCUS)	4 - 8,5 $MtCO_2/yr$ in 2030	The projected volumes of carbon capture utilisation and storage (CCUS) by industrial sector appear plausible in terms of scale. However, the NECP explicitly acknowledges that **France currently lacks a planned CO_2 transport network** and is still in the process of consulting relevant sectors. Additionally, the Plan confirms that **France does not yet have geological storage capacity ready to accommodate these volumes**. The bilateral agreement with Denmark has also not demonstrated sufficient capacity to meet France's CO_2 capture targets for 2030.

5 Analysis of the Irish final NECP

5.1 Key findings for Ireland

The present assessment is based on the final NECP submitted by Ireland to the European Commission in July 2024. The plan outlines Ireland's climate policies and projections up to 2030.

Transparency gap

While the ambition in the Irish NECP is well supported, key transparency indicators are missing. Ireland's NECP reflects commitments toward meeting EU and national climate targets, yet it faces notable transparency challenges with key indicators missing. The main transparency gap in the NECP comes from the absence of key demand-driver indicators and incomplete economy-wide coverage.

- For demand-driver indicators, significant gaps include the evolution of the total built surface area and the total transport demand for freight and passengers.
- Regarding incomplete sectoral coverage, the NECP lacks specific details on renewable fuel consumption and electrification in the industry sector.
- The energy supply sector also omits information on gas power plant capacity and hydrogen imports and exports.

Policy information gap

A notable strength of the Irish NECP is its coherent framework, where stated ambitions are generally well-supported by policies and measures. However, the absence of several key indicators does not allow for a comprehensive assessment.

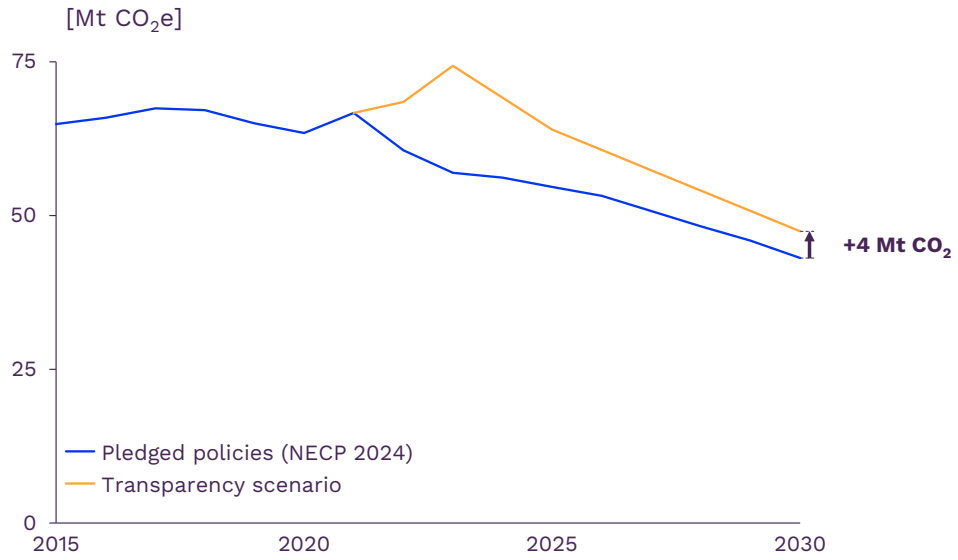
- In the building sector, achieving the target for heat pump installations requires a high increase in the installation rate. While measures have been introduced to boost heat pump adoption, the current trajectory is insufficient to meet the NECP target without further intervention.
- The ambition is broadly supported in the energy sector, though there are doubts about achieving the proposed solar photovoltaic (PV) installation target. Approximately half of Ireland's total PV potential is expected to be realized by 2030, yet the existing policies do not appear adequate to support this ambition fully.

The following sections provide a detailed analysis of missing indicators and policy information gaps, highlighting areas requiring further development to enhance the plausibility of Ireland's climate objectives.

5.2 Transparency gap on emissions for Ireland

The transparency gap in the Irish final NECP is estimated at around 4 $MtCO_2e$. This gap arises from missing key indicators, which increases the risk of missing emissions targets and limits robust assessment of the official scenario. To address this, a transparency scenario was constructed to estimate the impact of these missing indicators. By using all available indicators in the NECP, this scenario approximates GHG emissions projections and is compared to the 'Pledged Policies (NECP 2024)' scenario, which aligns with the WAM scenario from the Irish final NECP. The comparison highlights how missing key indicators can result in significantly different GHG emissions projections and puts the stated ambition at risk.

Figure 11: Transparency gap on total emissions in Ireland. (including LULUCF)



Source: ©ECNO 2025

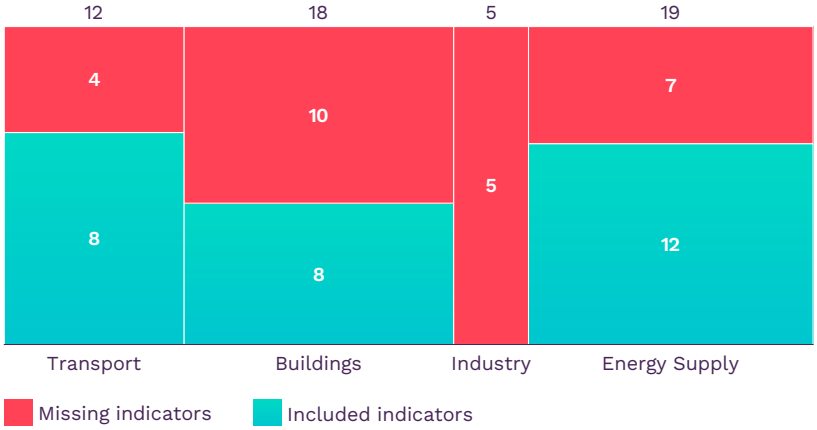
Ireland's NECP reflects commitments towards meeting EU and national climate targets, yet it faces notable transparency challenges. While the plan includes ambitious goals, particularly in renewable energy deployment, critical information gaps on indicators impede robust assessment. Ireland has acknowledged these gaps and indicates ongoing efforts to enhance the information base, particularly in the building sector.

In response to these gaps, the NECP references supplementary documents, such as the National Biomethane Strategy and the Climate Action Plan, but the lack of integration within the NECP itself makes independent assessment difficult.

Stock-take of the indicators

This section outlines the missing indicators in the Irish NECP, which contribute to the transparency gap described earlier. **Approximately half of the indicators are absent, with significant gaps particularly in the industry sector.** Improvements are needed in the buildings and energy supply sectors to align with the Governance Regulation. Below is an overview, supplemented with tables detailing the missing indicators for each sector.

Figure 12: Indicators included in the Irish NECP. (from the mandatory indicators in the Governance Regulation 2018/1999)



Source: ©ECNO 2025

A detailed projection of the freight and passenger demand and fleet is required to assess the total energy demand in the transport sector, to forecast fleet composition (i.e., the number of trains, buses, trucks, etc.), and to determine investment requirements for road and rail infrastructure. However, the total evolution of transport demand is communicated only for passenger private cars and trucks. While these categories account for a large share of demand, they are insufficient for a comprehensive assessment.

Table 7: Missing indicators in the transport sector.

	Availability	Mandatory indicators[4]	Impacts on other sectors			
			Buildings	Energy	Industry	Agriculture
Transport	●	Passenger aviation demand		×		
	●	Modal shares in passenger transport		×	×	
	●	Total inland freight demand		×		
	●	Modal shares in freight transport		×	×	
	●	8 out of 12 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

4 For further explanations on the mandatory nature of these indicators, see justification in annex 8.2.

The key missing indicator in the **building sector** is the floor area evolution. Indeed, the total area evolution is a direct driver of the total energy need in the building sector, especially for the heating demand, which represents the main end use in terms of direct emission in the building sector. This missing indicator also directly influences other sectors. Unavailable data on changes in floor area introduce uncertainty regarding the total demand for new heating systems, the total demand for building and insulation materials, and the demand for new potential infrastructure needs. These uncertainties directly impact the industry and the energy supply sector, and their required level of support.

Table 8: Missing indicators in the buildings sector.

	Availability	Mandatory indicators		Impacts on other sectors			
				Transport	Buildings	Energy	Industry	Agriculture
Buildings	🔴	Residential	Floor area			×	×	
			Renovation rate			×	×	
			Renovation depth			×	×	
			Ban of EPC labels			×	×	
			Trigger points (enforced renovation)			×	×	
	🔴	Non-residential	Floor area			×	×	
			Renovation rate			×	×	
			Renovation depth			×	×	
			Ban of EPC labels			×	×	
			Trigger points (enforced renovation)			×	×	
	🔵	8 out of 18 mandatory indicators are available in the NECP						

For the **industry sector**, the NECP contains several measures to promote the **circular economy**. Furthermore, domestic renewable fuel production can be indirectly assessed thanks to targets mentioned in the biomethane national strategy and hydrogen national strategy.

However, the consumption of **renewable fuels by industry** compared to the consumption in other sectors is not specified. More specific information on industry is needed to ensure a coherent plan for all renewable energy needs in Ireland and to assess the investments needed to decarbonise Irish industry. Specific information on national industrial plans is also necessary to ensure a coherent industrial plan at the European level.

Table 9: Missing indicators in the industry sector.

	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Energy	Agriculture
Industry	●	Share of electricity in final energy consumption			×	
	●	Share of gas in final energy consumption			×	
	●	Share of hydrogen in final energy consumption			×	
	●	Share of biofuel in final energy consumption			×	
	●	Share of e-fuel in final energy consumption			×	×

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In the **energy supply sector**, the total renewable capacity is well documented in the NECP. This allows for a clear view of the potential renewable electricity generation in the coming years. The capacity for non-renewable electricity is however lacking, which makes it difficult to assess the carbon intensity of the electricity generation as well as the flexibility of the grid network and the required investments in backup capacity.

Table 10: Missing indicators in the energy supply sector.

	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Industry	Agriculture
Energy Supply	●	Total capacity of combined heat and power plants (CHP)				
	●	Total capacity of gas power plants				
	●	Total capacity of oil power plants				
	●	Energy mix to produce centralized heat				
	●	Energy mix to produce heat and electricity by CHP			×	
	●	Net import/export of fossil fuels				
	●	Net import/export of hydrogen				
	●	Net import/export of e-fuels			×	
	●	11 out of 19 mandatory indicators are available in the NECP				

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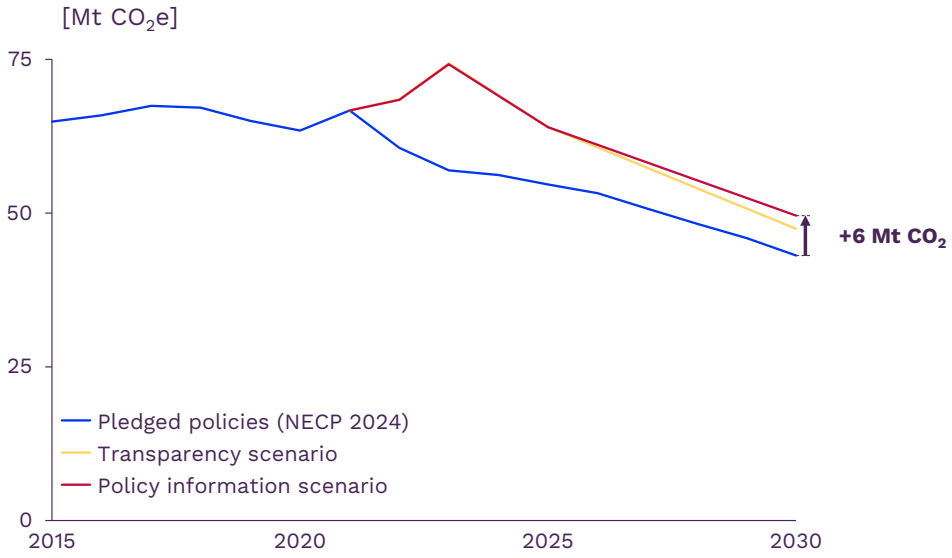
5.3 Policy information gap on emissions for Ireland

The policy information gap with the WAM from the final NECP is estimated at around 6 $MtCO_2e$. This means the PaMs included in the Irish NECP are not sufficient to reach national targets. This policy information gap could lead to higher-than-expected GHG emissions. The policy scenario is constructed by deviating from the transparency scenario when the ambitions and indicators are not sufficiently supported.

Figure 13: Policy information gap on total emissions in Ireland. (including LULUCF)

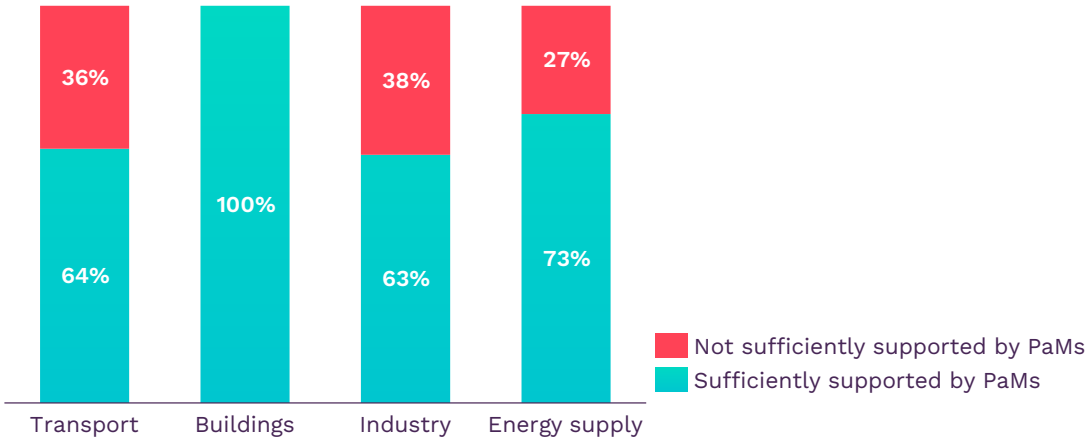


Source: ©ECNO 2025

Available policies and measures

The Irish NECP presents a coherent framework, with its stated ambitions broadly supported by PaMs. However, some ambitions would benefit from additional measures to enhance their plausibility. A detailed list of these cases is provided below. Industrial indicators were not evaluated due to the absence of relevant data (see the previous section).

Figure 14: Proportion of indicators in the Irish NECP adequately supported by policies and measures.



Source: ©ECNO 2025

This assessment is limited to the indicators provided in the NECP. PaMs related to missing indicators from the previous section are not analysed. The methodology evaluates whether the proposed measures are plausible in achieving their stated goals. For instance, the NECP does not include an indicator for hydrogen imports and exports in 2030. Consequently, any measures related to this objective are excluded from the analysis, as it is not possible to assess their plausibility without a defined objective.

Table 11: Key observations.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Buildings	Heat pump installation	680,000 heat pumps by 2030	The NECP sets a target to install 680,000 heat pumps by 2030. Several policies, measures, and strategies are well-designed to increase the number of heat pump installations. However, **the required annual installation rate to reach the target seems too ambitious compared to the current installation rate to fulfil the target**. Indeed, the required installation rate is ~75,000 heat pumps per year. The NECP mentions the enhanced grant levels, that have increased the number of installed heat pumps by more than 6,000 heat pumps during the period 2022 and 2023. Current progress is thus falling behind, and **greater detail is required to substantiate the target's feasibility, particularly regarding workforce capacity and supply chain security**.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Energy Supply	Solar PV capacity	7 GW	The NECP's ambition to install 7 GW of solar photovoltaic (PV) capacity by 2030 is ambitious, representing more than half the total estimated potential for rooftop PV in Ireland[5]. Current trends in PV deployment are encouraging, particularly due to the Small-Scale Renewable Electricity Support Scheme. However, **without additional measures beyond the existing scheme, it is unclear how PV installation can still be boost to achieve the required scale**.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Industry	Circular eEconomy	Eliminating non-recyclable plastics, improving recycle rate	The NECP places significant emphasis on promoting the circular economy, highlighting measures such as reducing waste, improving recycling rates, and fostering sustainable production practices. **Specific initiatives include eliminating non-recyclable plastics**, imposing higher fees on materials that are difficult to recycle, and expanding the use of domestically harvested wood in long-lived products to store carbon. However, **the plan lacks quantifiable targets or indicators to measure progress in these areas**. A circularity gap is being prepared to fulfil this need, as indicated in the NECP.

5 https://www.climatecouncil.ie/councilpublications/councilworkingpaperseries/WORKIN~2.PDF, accessed 31 March 2025.

6 Analysis of the Italian final NECP

6.1 Key findings for Italy

The present assessment is based on the final NECP submitted by Italy to the European Commission in June 2024. The plan outlines Italy's climate policies and projections up to 2030.

Transparency gap

Key transparency indicators are missing, and some pledged ambitions should be strengthened via complementary policies and measures. The Italian NECP demonstrates foundational work for advancing the country's energy transition; however, significant gaps remain in achieving full transparency and meeting targets. All sectors suffer from incomplete coverage, with key elements, especially in transport and industry, left unaddressed.

- The **transport sector** lacks critical information, such as total demand and modal shares, which are necessary for coherent planning and assessment.
- Similarly, the **industry sector** focuses on hydrogen but fails to provide quantitative indicators for other renewable fuels that are expected to play a role in decarbonisation and to ensure a coherent European-wide industrial plan.

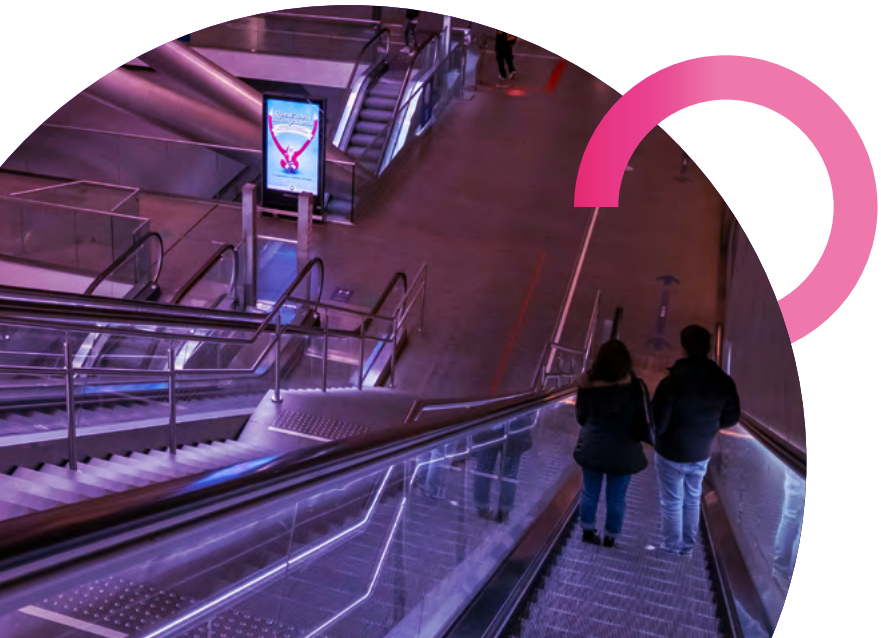
- The **building sector** is relatively more complete but omits essential details like total floor area and renovation depth, hindering a comprehensive evaluation of retrofitting efforts.
- Lastly, while the energy supply sector details renewable capacity extensions, it lacks clarity on several aspects, including the breakdown of imports by renewable fuels.

Policy information gap

While some targets are well supported, **several key indicators are not sufficiently supported, which results in a policy gap more than twice as high as the transparency gap.**

- In the energy **supply sector**, the NECP sets ambitious targets for expanding solar PV capacity, but the outlined measures primarily focus on solar thermal energy. This lack of clear support for PV expansion creates uncertainty about how the target will be achieved.
- In the **industry sector**, while the NECP promotes hydrogen as a key decarbonization tool, there is insufficient clarity on infrastructure readiness, particularly in transport and storage. Without stronger policies to support scaling, achieving the target remains uncertain.
- For the **transport** and **buildings sectors**, the NECP sets a high target for biomethane consumption, but the current secured production capacity falls significantly short. The absence of a clear strategy to address this gap raises concerns about the feasibility of meeting the goal.

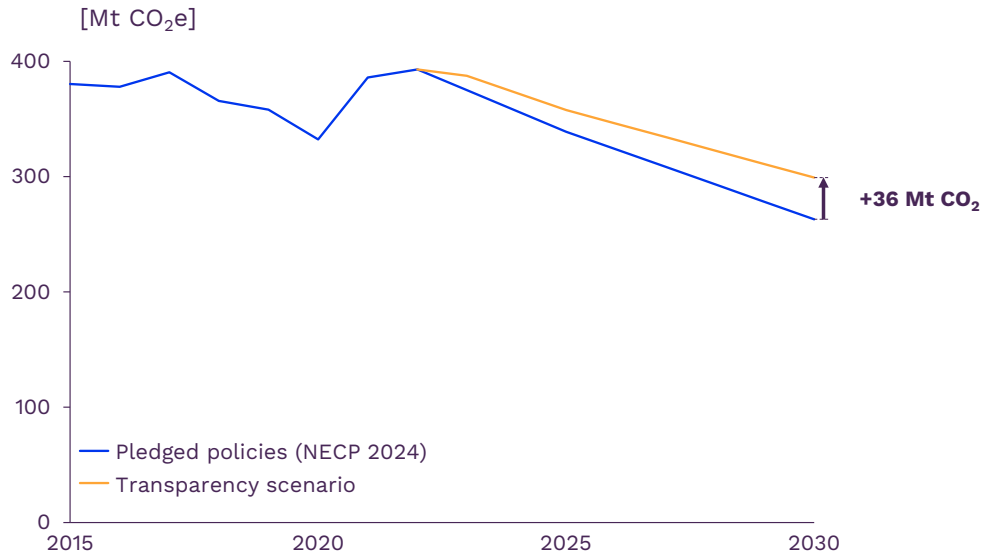
The following sections provide a detailed analysis of missing indicators and policy information gaps, highlighting areas requiring further development to enhance the plausibility of achieving Italy's climate objectives.



6.2 Transparency gap on emissions for Italy

The transparency gap in the Italian final NECP is estimated at around 36 MtCO$_2$e. The transparency scenario approximates, as closely as possible, the GHG emissions projection using all the indicators available in the NECP. It is then compared to the 'Pledged Policies (NECP 2024)' scenario, which aligns with the WAM scenario from the final NECP, to assess the transparency gap. The absence of certain key indicators in the NECP prevents the official scenario from being replicated and robustly assessed. The transparency scenario has been built to estimate the impact of those missing indicators.

Figure 15: Transparency gap on total emissions in Italy. (including LULUCF)

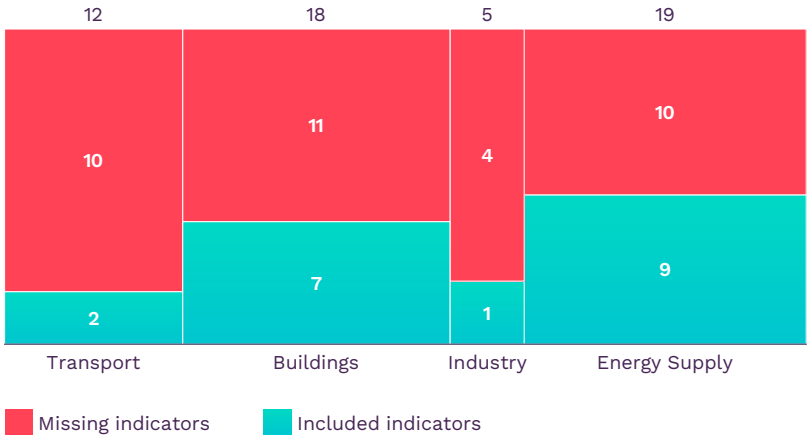


Source: ©ECNO 2025

Stock-take of the indicators

The Italian NECP provides a foundational framework for advancing Italy's energy transition. While it includes some important indicators, many key indicators are missing, compared to the obligations defined by the Governance Regulation. Addressing these gaps is crucial to enhance understanding and tracking of Italy's progress toward its targets.

Figure 16: Indicators included in the Italian NECP. (from the mandatory indicators in the Governance Regulation 2018/1999)



Source: ©ECNO 2025

While the **transport sector** is discussed in the NECP, and some partial information can be found for some indicators, most of the indicators are not available or only partially available. Amongst the crucial lacking indicators is the projected total transport demand, both for freight and passenger transport, which is the primary driver for the sectorial energy demand.

To coherently drive investments in road, rail, and marine infrastructure, the forecasted fleet composition (i.e., the number of trains, buses, trucks, etc.) and the modal share of each means of transportation must be estimated. These indicators are only partly available (a number for EVs was found for 2030, but very little information for other vehicles) and are not sufficient to assess the coherence of the NECP. The incomplete fleet description has an impact on the other the rest of the economy. The development of new vehicles influences industrial emissions linked to the production of these vehicles, as well as the production of energy needed per energy carrier.

Table 12: Missing indicators in the transport sector.

	Availability	Mandatory indicators[6]	Impacts on other sectors			
			Buildings	Energy	Industry	Agriculture
Transport	●	Total passenger transport demand		×		
	●	Passenger aviation demand		×		
	●	Modal shares in passenger transport		×	×	
	●	Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in passenger		×	×	
	●	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in passenger		×	×	
	●	Total inland freight demand		×		
	●	Modal shares in freight transport		×	×	
	●	Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in freight		×	×	
	●	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in freight		×	×	
	●	Share of biofuel consumption in aviation transport				×
	●	2 out of 12 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

The key missing indicator in the **building sector** is the floor area evolution. Indeed, the total area evolution is a direct driver of the total energy need in the building sector, especially for the heating demand, which represents the main end use in terms of direct emission in the building sector. This missing indicator also directly influences other sectors. Unavailable data on changes in floor area introduce uncertainty regarding the total demand for new heating systems, the total demand for building and insulation materials, and the demand for new potential infrastructure needs. These uncertainties directly impact the industry and the energy supply sector, and their required level of support.

6 For further explanations on the mandatory nature of these indicators, see justification in annex 8.2.

Table 13: Missing indicators in the buildings sector.

	Availability	Mandatory indicators		Impacts on other sectors			
				Transport	Buildings	Energy	Industry	Agriculture
Buildings	●	Residential	Floor area			×	×	
			Renovation depth			×	×	
			Ban of EPC labels			×	×	
			Trigger points (enforced renovation)			×	×	
			Share of space heating covered by electricity			×		
	●	Non-residential	Floor area			×	×	
			Renovation rate			×	×	
			Ban of EPC labels			×	×	
			Trigger points (enforced renovation)			×	×	
			Share of energy demand covered by biomass			×		×
	●	7 out of 18 mandatory indicators are available in the NECP						

The **industrial sector** offers a focus on hydrogen consumption but lacks detailed insights into other important energy carriers, such as biofuels and e-fuels. This leaves some questions about how Italy plans to reduce emissions in industrial processes. Furthermore, these indicators are crucial for ensuring security of supply and the sustainable use of all renewable fuels.

Table 14: Missing indicators in the industry sector.

	Availability	Mandatory indicators	Impacts on other sectors				
			Transport	Buildings	Energy	Industry	Agriculture
Industry	●	Share of electricity in final energy consumption			×		
	●	Share of gas in final energy consumption			×		
	●	Share of e-fuel in final energy consumption			×		×
	●	2 out of 5 mandatory indicators are available in the NECP					

For **energy supply**, the NECP provides a clear focus on renewable energy deployment but omits details on the role and capacity of gas-fired and biomass plants. The absence of projections for gas-fired power stations introduces uncertainty in network balancing since these gas-fired capacities currently play a critical role in grid flexibility. Missing indicators on hydrogen and e-fuel imports and exports also make it difficult to evaluate alignment with broader European strategies in these areas.

Table 15: Missing indicators in the energy supply sector.

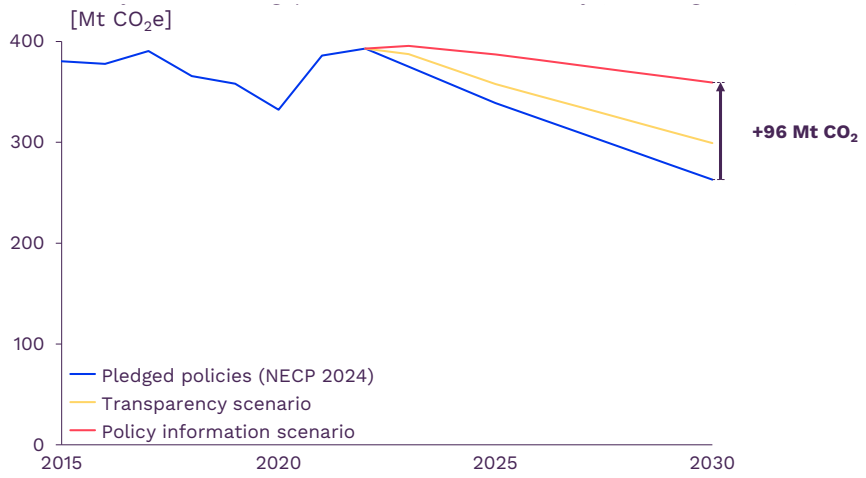
	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Industry	Agriculture
Energy Supply	🔴	Total capacity of combined heat and power (CHP) plants				
	🔴	Total capacity of gas power plants				
	🔴	Total capacity of oil power plants				
	🔴	Total capacity of coal power plants				
	🔴	Share of biomass to produce electricity				×
	🔴	Share of renewable waste to produce electricity				
	🔴	Production of refineries				
	🔴	Energy mix to produce centralized heat				
	🔴	Energy mix to produce heat and electricity CHP			×	
	🔴	Net import/export of hydrogen				
	🔴	Net import/export of e-fuels			×	
	🔵	8 out of 19 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

6.3 Policy information gap on emissions for Italy

The policy information gap with the WAM from the final NECP is estimated at around 96 $MtCO_2e$. This means the PaMs included in the Irish NECP are not sufficient to reach national targets. This policy information gap could lead to higher-than-expected GHG emissions. The policy scenario is constructed by deviating from the transparency scenario when the ambitions and indicators are not sufficiently supported.

Figure 17: Policy information gap on total emissions in Italy. (including LULUCF)

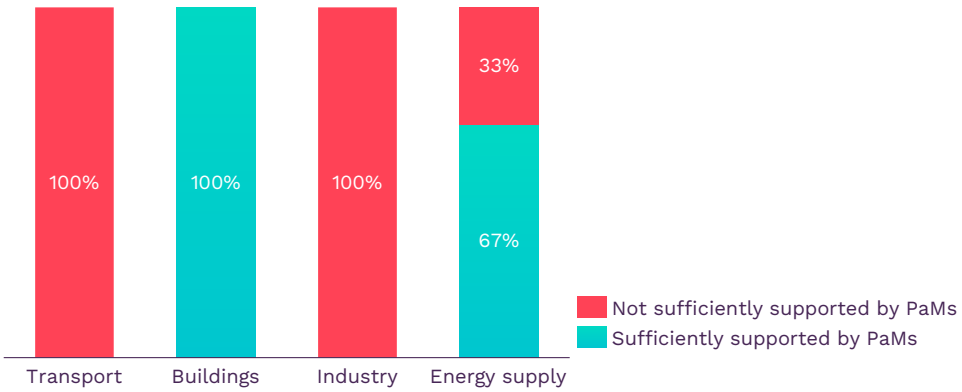


Source: ©ECNO 2025

Available policies and measures

The Italian NECP outlines a set of PaMs to support the country's energy transition. However, several areas would benefit from additional detail and strengthening to align with Italy's targets under EU climate commitments fully.

Figure 18: Proportion of indicators in the Italian NECP adequately supported by policies and measures.



Source: ©ECNO 2025

This assessment is limited to the indicators provided in the NECP. Policies and measures related to missing indicators from the previous section are not analysed. The methodology evaluates whether the proposed policies and measures are plausible in achieving their stated goals. For instance, the NECP does not include an indicator for hydrogen imports and exports in 2030. Consequently, any measures related to this objective are excluded from the analysis, as it is not possible to assess their plausibility without a defined objective.

The **building sector** is lacking ambition and indicators but stated ambitions – when given – are generally consistent with historical trends.

Table 16: Key observations.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Energy Supply	Solar PV capacity	Multiply by 3	The NECP highlights the critical role of solar and wind energy, with plans to triple solar PV capacity by 2030. While several measures, such as feed-in tariffs and incentives for energy communities, aim to support this goal, the PaMs outlined in the NECP primarily emphasize solar thermal energy. This creates uncertainty about how the solar PV capacity target will be achieved, especially given the potential competition between these two technologies for available space.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Industry	Hydrogen consumption	330 ktoe of renewable hydrogen	The NECP's focus on hydrogen as a key decarbonization tool is a positive step. Measures like funding hydrogen valleys and production facilities are promising, but additional clarity is needed on infrastructure readiness, including transport and storage. Ensuring that policies are in place to support scaling up these efforts will be crucial.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Energy supply	Biomethane consumption	37 TWh of biomethane in the heat and transport sectors	The NECP includes an ambition to consume 37 TWh of biomethane in the heat and transport sectors, in addition to current consumption. However, a conservative estimate of already secured production capacity stands at approximately 6 TWh. The NECP does not provide a clear strategy or set of measures to address this significant gap, raising questions about the feasibility of this target.

7 Analysis of the Swedish final NECP

7.1 Key findings for Sweden

The final Swedish NECP lacks many indicators (transparency gap) and the policies and measures to achieve them (policy gap).

Transparency gap

As for the indicators, some essential targets are missing from the final NECP, e.g., the share of renewable energy. In addition, more specific indicators are missing in all sectors. Indicators for transport and buildings are missing. For the energy sector, we considered a publication that is not included but cited in the final NECP, the report 'Scenarier över Sveriges energisystem 2023'[7]. The Swedish NECP could easily improve the transparency of its NECP by adding the energy projections from this report directly into its NECP. The same goes for the buildings sector: if the objectives of Sweden's long-term renovation strategy for 2020 are maintained, and these renovation indicators and targets integrated into the NECP, it would increase its transparency.

7 https://www.energimyndigheten.se/49428c/globalassets/statistik/prognoser-och-scenarier/langsiktiga-scenarier/langsiktiga-scenarier-over-sveriges-energisystem-2023.pdf

Policy information gap

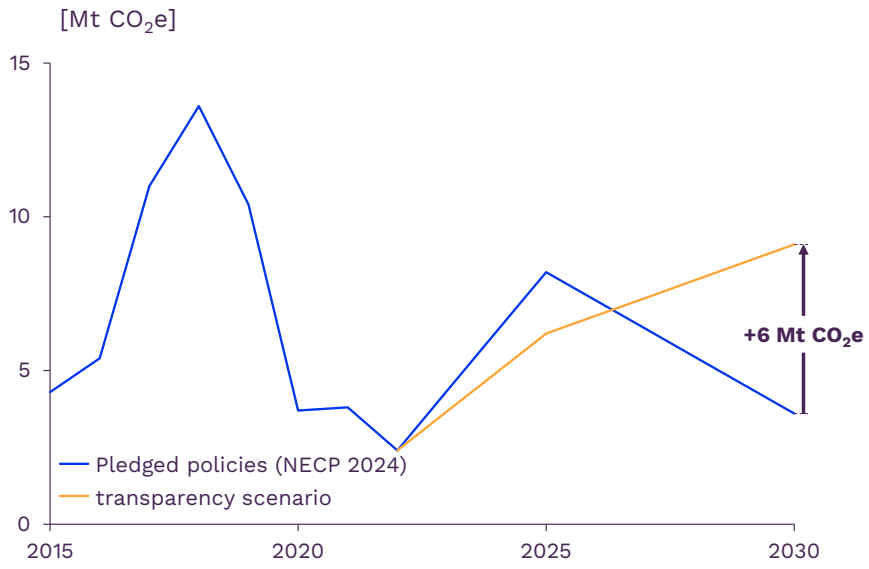
For PaMs, the final NECP lacks detailed information on existing policies and measures, making it hard to fully assess the NECP's coherence. The main recommendations are:

- Provide projections to show how the existing and planned policies and measures will deliver on the national targets on mitigation, renewable energy, energy efficiency, but also on investments needed for these policies and measures.
- If existing PaMs are not sufficient to reach targets, the NECP should specify additional actions to complement the existing ones, including information on their scope, timeline, investments need, and mitigation impacts.

7.2 Transparency gap on emissions for Sweden

The transparency gap in the Swedish final NECP is estimated at around 6 $MtCO_2e$. This gap arises from many missing key indicators, which increases the risk of missing emissions targets and limits a robust assessment of the official scenario. To address this, a transparency scenario was constructed to estimate the impact of missing indicators. By using all available indicators in the NECP, this scenario approximates GHG emissions projections and is compared to the 'Pledged Policies (NECP 2024)' scenario, which aligns with the WAM scenario from the Swedish final NECP. The comparison highlights how missing key indicators can result in significantly different GHG emissions projections and puts the stated ambition at risk.

Figure 19: Transparency gap on total emissions in Sweden. (including LULUCF)

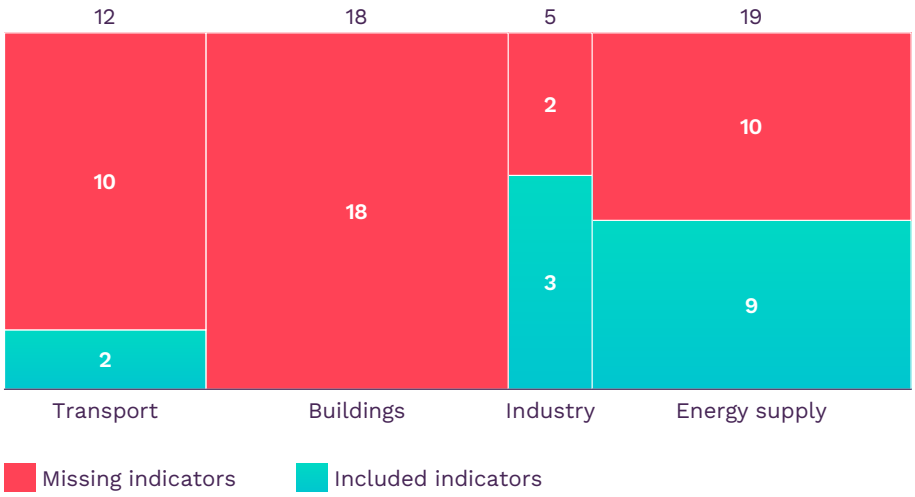


Source: ©ECNO 2025

Stock-take of the indicators

The transparency of the Swedish NECP is very limited, and the plan lacks key indicators in all sectors. Most of the key indicators defined by the Governance Regulation are missing. Addressing these gaps is crucial to enhance understanding and tracking of Sweden's progress toward its targets. Energy projections are generally absent from the NECP. Although scenarios were produced for the national long-term strategy (LTS) in the report 'Scenarier över Sveriges energisystem 2023', these are not integrated into the NECP.

Figure 20: Indicators included in the Swedish NECP. (from the mandatory indicators required by the EU Governance Regulation 2018/1999)



Source: ©ECNO 2025

For the **transport sector**, while some partial information can be found for some indicators, most of the indicators are not available or only partially available. Amongst the crucial lacking indicators is the projected total transport demand, both for freight and passenger transport, which is the primary driver for the sectorial energy demand.

To coherently drive investments in road, rail, and marine infrastructure, the forecasted fleet composition (i.e., the number of trains, buses, trucks, etc.) and the modal share of each means of transportation must be estimated. Information on these indicators is only partially available (a number for EVs was found for 2030, but little information for other vehicles) and is not sufficient to assess the coherence of the NECP. The incomplete fleet description has an impact on the rest of the economy, as described in the table below. The development of new vehicles influences industrial emissions linked to the production of these vehicles as well as the production of energy needed per energy carrier.

Table 17: Missing indicators in the transport sector.

	Availability	Mandatory indicators[8]	Impacts on other sectors			
			Buildings	Energy	Industry	Agriculture
Transport	●	Total passenger transport demand		×		
	●	Passenger aviation demand		×		
	●	Modal shares in passenger transport		×	×	
	●	Total inland freight demand		×		
	●	Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in passenger		×	×	
	●	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in passenger		×	×	
	●	Modal shares in freight transport		×	×	
	●	Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in freight		×	×	
	●	Registration of new LEV vehicles per type (HEV/PHEV) and per mode in freight		×	×	
	●	Share of biofuel consumption in marine transport				×
	●	2 out of 12 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

The **Swedish NECP lacks all mandatory indicators for the buildings sector**. It omits data on floor area demand, renovation targets and indicators, and technology mix evolution. This absence of clear objectives creates uncertainty for stakeholders regarding construction, renovation, and in the energy sectors, despite buildings accounting for approximately 40% (140 TWh) of Sweden's final energy consumption (355 TWh) in 2020. Potential improvements to the transparency of the plan in this sector include publishing updated long-term renovation plan targets and including the building sector energy mix projections from the 'Scenarier över Sveriges energisystem 2023' report.

8 For further explanations on the mandatory nature of these indicators, see justification in annex 8.2.

Table 18: Missing indicators in the buildings sector.

	Availability	Mandatory indicators		Impacts on other sectors			
				Transport	Energy	Industry	Agriculture
Buildings	●	Residential	Floor area		×	×	
			Renovation rate		×	×	
			Renovation depth		×	×	
			Ban of EPC labels		×	×	
			Trigger points (enforced renovation)		×	×	
			Efficiency of new buildings		×		
			Share of energy demand covered by district heating		×	×	
			Share of energy demand covered by biomass		×		×
			Share of space heating covered by electricity		×		
	●	Non-residential	Floor area		×	×	
			Renovation rate		×	×	
			Renovation depth		×	×	
			Ban of EPC labels		×	×	
			Trigger points (enforced renovation)		×	×	
			Efficiency of new buildings		×		
			Share of energy demand covered by district heating		×	×	
			Share of energy demand covered by biomass		×		×
			Share of space heating covered by electricity		×		

Transport Buildings Energy Industry Agriculture

The Swedish NECP lacks transparency in final energy consumption indicators by sector for the **industry sector**. While more indicators are present due to information from the 'Scenarier över Sveriges energisystem 2023' report, energy scenarios remain insufficiently transparent regarding the share of hydrogen and e-fuels in the industrial energy mix. This lack of clarity impacts investment mobilization and infrastructure planning for these energy carriers, which are crucial if they are to play a role in decarbonising Swedish industry.

Table 19: Missing indicators in the industry sector.

	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Energy	Agriculture
Industry	●	Share of hydrogen in final energy consumption			×	
	●	Share of e-fuel in final energy consumption			×	
	●	3 out of 5 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

For the **energy supply sector**, the transparency of the Swedish NECP, illustrated by the number of included indicators, is comparable to the other NECPs analysed in this study. The Swedish final NECP includes a great deal of information and projections on the energy supply sector, compared with other sectors. However, some important indicators are still missing, such as the electrical capacity of several energy carriers (hydropower, gas, oil, coal). In addition to the production volumes (TWh) available in the NECP, the capacity volumes (GW) are essential for assessing the security of supply of a network, especially in a context of decarbonisation of the network, where fossil-fired capacity will be used less and less frequently but will still be needed to respond to major peaks in demand. These indicators are furthermore necessary for a comprehensive assessment of electricity imports. Energy imports and exports are also missing from the final NECP for several energy carriers (fossil fuels, hydrogen, e-fuels). The possible dependence of several, or even many, Member States on hydrogen imports, for example, could generate strong competition and put decarbonisation measures at risk.

Table 20: Missing indicators in the energy supply sector.

	Availability	Mandatory indicators	Impacts on other sectors			
			Transport	Buildings	Industry	Agriculture
Energy Supply	🔴	Total capacity of hydropower production				
	🔴	Total capacity of gas power plants				
	🔴	Total capacity of oil power plants				
	🔴	Total capacity of coal power plants				
	🔴	Production of refineries				
	🔴	Energy mix to produce heat and electricity by Combined Heat and Power (CHP)			×	
	🔴	Share of biomass to produce electricity				×
	🔴	Net import/export of fossil fuels				
	🔴	Net import/export of hydrogen				
	🔴	Net import/export of e-fuels			×	
	🔵	9 out of 19 mandatory indicators are available in the NECP				

Transport Buildings Energy Industry Agriculture

7.3 Policy information gap on emissions for Sweden

This section aims to identify gaps between the goals of the Swedish NECP and its actual policies. However, this task is challenging due to two main issues. First, the final NECP lacks detailed information on existing PaMs. Second, many indicators and targets are missing from the plan entirely. These problems make it hard to fully assess the NECP's coherence. As a result, the analysis of Sweden's NECP is not as thorough as for other EU countries in this report. We can only provide some examples of the analysis in this section. A quantitative estimate of a policy scenario and gap was not possible due to these limitations.

The main recommendations are:

- Sweden should provide projections to show how the existing and planned PaMs will deliver on the national targets on mitigation, renewable energy, energy efficiency, but also on investments needed.
- If existing PaMs are not sufficient to reach the stated targets, the NECP should specify additional actions and complement the existing ones and include information on their scope, timeline, investments need, and mitigation impacts.

Available policies and measures

As mentioned above, the following analysis is for illustrative purposes, given the lack of indicators in the NECP. For example, for the buildings sector, as none of the mandatory indicators are included in the NECP, it is impossible to analyse whether the policies and measures are sufficient to achieve the targets. The analysis is also complicated by the lack of policies and measures, as is the case, for example, for the industry sector, which does not include any specific measures for the development of its energy mix between now and 2030.

Table 21: Key observations.

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Transport	Biofuel use	33 TWh in 2030[9]	Biofuel use was projected to reach 33 TWh by 2030, twice the 2020 level. This increase was linked to mandatory GHG emission reductions for fuel suppliers. These were required to add more biofuels to their products. However, in 2023, the government lowered the reduction requirement to 6% for 2024-2026. They also removed reduction targets for 2027-2030. Because of these changes, the original biofuel use target now seems unrealistic. The current policies in the NECP are not likely to achieve this goal.

9 from Scenarier över Sveriges energisystem 2023, https://www.energimyndigheten.se/49428c/globalassets/statistik/prognoser-och-scenarier/langsiktiga-scenarier/langsiktiga-scenarier-over-sveriges-energisystem-2023.pdf

	Indicators	Stated ambition in 2030 (from NECP)	Justification
Energy Supply	Wind production	77 TWh in 2030[10]	To reach 77 TWh of wind-generated electricity, the annual growth rate between now and 2030 should be over 15%, i.e., higher than its historical value (13% annual average between 2014 and 2023). To achieve this growth rate, the financing rate will have to increase from its current level. However, **the NECP contains no specific measures on the financing of wind power between now and 2030**.

10 from Scenarier över Sveriges energisystem 2023, https://www.energimyndigheten.se/49428c/globalassets/statistik/prognoser-och-scenarier/langsiktiga-scenarier/langsiktiga-scenarier-over-sveriges-energisystem-2023.pdf

8 Annexes

8.1 Detailed methodological approach

Assessing the transparency gap

The methodology used to estimate the transparency gap is based primarily on the EU Governance Regulation, as explained below.

Figure 21: Transparency assessment process.

Source: ©ECNO 2025

The detailed steps in the methodology, shown above, consisted of:

1. **Analysing the Governance Regulation** (Regulation 2018/1999) to compile a list of all mandatory information (i.e., indicators) that must be communicated in the NECPs. This collection of mandatory indicators formed the basis of the transparency gap assessment.

2. **Linking mandatory indicators to Pathways Explorer levers.** In this step we checked for overlap between the mandatory indicators found in the Governance Regulation and the 'levers' of the Pathways Explorer platform. This step was crucial because only those Pathways Explorer levers with some link to an EU obligation and not found in the NECP can lead to a transparency gap. Put differently, the Pathways Explorer model will generate a less ambitious scenario than the WAM scenario in the NECP when information on the mandatory Pathways Explorer levers is not available. It is important to stress that there is an element of interpretation in this stage. The Governance Regulation indicators rarely correspond exactly to the Pathways Explorer levers, and thus we had base an assessment of overlap on expert judgment.

   Links between the Pathways Explorer and the Governance Regulation were assessed as weak, medium, or strong. In general, a moderate level of overlap was found; these linkages are presented in annex 8.2 of this document. For the buildings, transport, and energy production sectors, information on **more than half of the Pathways Explorer levers** must be made available in the NECP. Conversely, there are few obligations to report on levers/indicators linked to industry or AFOLU.

3. **Reading the NECP (document and annexes) to identify information on the mandatory Pathways Explorer levers.**

4. **Generating a transparency gap scenario, based on the ambition levels for each Pathways Explorer lever.** If information was present for all mandatory indicators, the Pathways Explorer output was similar to the WAM scenario depicted in the plan. On the other hand, when a mandatory lever had no value in the NECP, it automatically followed the trajectory based on a historical trend up to 2030. This resulted in a less ambitious scenario than the WAM, and therefore a transparency gap.

5. Why estimate a transparency gap to assess the transparency of an NECP? A priori, a checklist of indicators to be communicated could suffice to assess the transparency of an NECP, but this would not generate comprehensive messages about the risks of not meeting climate targets and would not include clear estimates of the actual emissions gap.

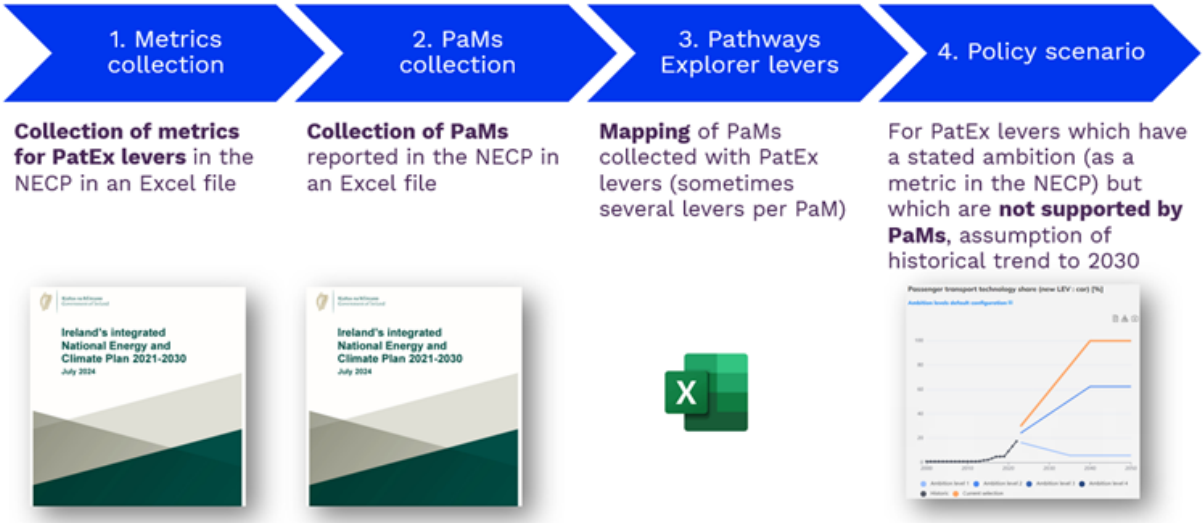
Assessment of the policy information gap

The assessment of policy information gaps reflects the need to separate two possible 'criticisms' of NECPs. On the one hand, the lack of transparency on mandatory indicators (discussed above), and on the other, the lack of policies and measures (PaMs) in place to address required changes. To investigate the latter, we used the concept of a **policy information gap as also defined by the ESABCC.**

This approach is based on an interpretation of principles set out in the Governance Regulation, translated into a methodology using the Pathways Explorer to generate a policy scenario, as described below. It is not based on official impact assessments.

The legal rationale for considering policy information gaps can be found in Article 2.1.c of the Governance Regulation: 'The integrated national energy and climate plans shall consist of a description of the planned policies and measures in relation to the corresponding objectives, targets and contributions as well as a general overview of the investment needed to meet the corresponding objectives, targets and contributions.'

Figure 22: Policy assessment process.



Source: ©ECNO 2025

In concrete terms, the steps in the methodology, shown above, consist of:

1. **Searching through the NECPs for values available for the Pathways Explorer lever metrics** (e.g., modal share in 2030, etc.). The aim here was not to find a value for all the metrics of the levers, but rather to see which levers come with a stated goal in the NECP. Ultimately, the aim was to check whether this ambition is then adequately covered by policy mix.

2. **Compiling the PaMs presented in the NECP** in an Excel file. In this Excel file, the PaMs were structured according to sector, status (in place/planned), regulatory/economic, and sever other dimension. When an impact assessment on GHG emissions, energy, or costs was available (rarely in practice), this information was also documented.

3. **Mapping the PaMs individually to one or more of the Pathways Explorer levers.** This step is crucial because it allowed us to identify where there is a clear policy goal in the NECP (step 1) but no underlying PaMs to achieve it (step 2).

4. **Using the Pathways Explorer to define historical trends through 2030 for levers with insufficient PaMs.** This resulted in a less ambitious scenario than the transparency scenario, and therefore a policy information gap.

8.2 Mandatory indicators per sector

Transport

Mandatory indicators	Source of the legal obligation
Total passenger transport demand	GovReg, Annex I, Part 2, 1.7
Passenger aviation demand	
Modal shares in passenger transport	
Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in passenger	GovReg, Annex I, Part 1, 3.1.3.iii
Registration of new LEV vehicles per type (HEV/PHEV) and per mode in passenger	
Total inland freight demand	GovReg, Annex I, Part 2, 1.8
Modal shares in freight transport	
Registration of new ZEV vehicles per type (BEV/FCEV) and per mode in freight	GovReg, Annex I, Part 1, 3.1.3.iii
Registration of new LEV vehicles per type (HEV/PHEV) and per mode in freight	
Share of biofuel consumption in road transport	GovReg, Annex I, Part 1, 2.1.2.iv
Share of biofuel consumption in marine transport	
Share of biofuel consumption in aviation transport	

Buildings

Mandatory indicators		Source of the legal obligation
Residential	Floor area	GovReg, Art. 2a, 2
	Renovation rate	
	Renovation depth	GovReg, Art. 2a, 1.c
	Ban of EPC labels	GovReg, Annex I, Part 1, 3.2.ii
	Trigger points (enforced renovation)	
	Efficiency of new buildings	
	Share of energy demand covered by district heating	GovReg, Annex I, Part 1, 2.1.2.iii
	Share of energy demand covered by biomass	GovReg, Annex I, Part 1, 2.1.2.iv
	Share of space heating covered by electricity	

	Mandatory indicators		Source of the legal obligation
Buildings	Non-residential	Floor area	GovReg, Art. 2a, 2
		Renovation rate	
		Renovation depth	GovReg, Art. 2a, 1.c
		Ban of EPC labels	GovReg, Annex I, Part 1, 3.2.ii
		Trigger points (enforced renovation)	
		Efficiency of new buildings	
		Share of energy demand covered by district heating	GovReg, Annex I, Part 1, 2.1.2.iii
		Share of energy demand covered by biomass	GovReg, Annex I, Part 1, 2.1.2.iv
		Share of space heating covered by electricity	

	Mandatory indicators	Source of the legal obligation
Energy Supply	Total capacity of combined heat and power plants (CHP)	GovReg, Annex I, Part 2, 2.1.3
	Total capacity of solid-biomass and waste-fired power plants to produce electricity	GovReg, Annex I, Part 2, 2.1.4
	Total capacity of hydropower production	
	Total capacity of photovoltaic power production	
	Total capacity of onshore wind power production	
	Total capacity of offshore wind power production	
	Total capacity of nuclear power plants	
	Total capacity of gas power plants	
	Total capacity of oil power plants	
	Total capacity of coal power plants	
	Share of biomass to produce electricity	
	Share of renewable waste to produce electricity	
	Production of refineries	GovReg, Annex I, Part 2, 2.1.1
	Energy mix to produce centralized heat	GovReg, Annex I, Part 2, 2.3.1
	Energy mix to produce heat and electricity by CHP	
	Net import/export of electricity	Energy Union indicators, SoS1
	Net import/export of fossil fuels	
	Net import/export of hydrogen	
	Net import/export of e-fuels	

	Mandatory indicators	Source of the legal obligation
Industry	Share of electricity in final energy consumption	GovReg, Annex I, Part 1, 2.1.2.iv
	Share of gas in final energy consumption	GovReg, Annex I, Part 1, 2.1.2.iv
	Share of hydrogen in final energy consumption	GovReg, Annex I, Part 1, 2.1.2.iv
	Share of biofuel in final energy consumption	GovReg, Annex I, Part 1, 2.1.2.iv
	Share of e-fuel in final energy consumption	GovReg, Annex I, Part 1, 2.1.2.iv

8.3 Key scenario indicators

Fance					
Sector	Name	Unit	2021	2030	
				Transparency	Policy
Building	Renovation rate (non residiential)	%	1.60%	1.60%	1.60%
	Renovation rate (residential)	%	1.20%	1.00%	1.00%
	Floor area (non-residential)	1000m2	1.31E+06	1.37E+06	1.37E+06
	Household size	cap/household	2.17	2.04	2.04
	Demoliton rate	%	0.10%	0.10%	0.10%
	Share of heating via heat pump (without biomass and disctrict heating, for non-residential)	%	7.33%	17.47%	17.47%
	Share of heating via heat pump (without biomass and disctrict heating, for single family house)	%	28.88%	38.53%	38.53%
Transport	Freight demand	bn tkm	3.69E+02	4.14E+02	4.14E+02
	Share of new zero emission passenger car in sales	%	8.05%	70.28%	70.28%
	Occupancy of passenger car	pkm/vkm	1.76	1.83	1.83
	Load factor for trucs	tkm/vkm	13.25	13.27	13.07
	Switch from diesel to biodiesel for LDV	%	*baseline*	0.00%	0.00%
	Switch from liquid fossil fuel to synthetic fuel for LDV	%	*baseline*	0.00%	0.00%
Industry	Energy Efficiency gain (Cement production for illustration)	%	*baseline*	0.77%	0.77%
	Carbon capture (From cement production emission for illustration)	%	0.00%	0.00%	0.00%
	Technology shift (Steel production to hydrogen-DRI technology for illustration)	%	*baseline*	0.56%	0.56%
Energy Supply	Renewable Energy Capacity: Wind onshore	GW	18.54	32.26	32.26
	Renewable Energy Capacity: Wind offshore	GW	0.00	3.94	3.94
	Renewable Energy Capacity: Solar PV	GW	11.68	59.26	59.26
	Electricity generation capacity from fossil gas	GW	8.38	8.38	8.38
	Electricity generation capacity from coal	GW	3.01	0.00	2.25
	Import electricity	%	-10.37%	-0.94%	-0.94%

Ireland					
Sector	Name	Unit	2021	2030	
				Transparency	Policy
Building	Renovation rate (non residiential)	%	0.50%	3.00%	2.00%
	Renovation rate (residential)	%	0.70%	3.00%	2.00%
	Floor area (non-residential)	1000m2	1.16E+05	1.20E+05	1.20E+05
	Household size	cap/household	2.72	2.52	2.52
	Demoliton rate	%	0.10%	0.10%	0.10%
	Share of heating via heat pump (without biomass and disctrict heating, for non-residential)	%	5.24%	16.03%	28.44%
	Share of heating via heat pump (without biomass and disctrict heating, for single family house)	%	5.37%	16.12%	28.53%
Transport	Freight demand	bn tkm	1.32E+01	1.41E+01	1.41E+01
	Share of new zero emission passenger car in sales	%	5.42%	99.90%	99.90%
	Occupancy of passenger car	pkm/vkm	1.65	1.76	1.76
	Load factor for trucs	tkm/vkm	5.32	5.33	5.41
	Switch from diesel to biodiesel for LDV	%	*baseline*	17.68%	17.68%
	Switch from liquid fossil fuel to synthetic fuel for LDV	%	*baseline*	0.00%	0.00%
Industry	Energy Efficiency gain (Cement production for illustration)	%	*baseline*	4.40%	4.40%
	Carbon capture (From cement production emission for illustration)	%	0.00%	0.00%	0.00%
	Technology shift (Steel production to hydrogen-DRI technology for illustration)	%	*baseline*	0.28%	0.28%
Energy Supply	Renewable Energy Capacity: Wind onshore	GW	4.34	7.10	7.10
	Renewable Energy Capacity: Wind offshore	GW	0.03	4.02	4.02
	Renewable Energy Capacity: Solar PV	GW	0.09	6.53	6.53
	Electricity generation capacity from fossil gas	GW	2.63	2.63	2.63
	Electricity generation capacity from coal	GW	1.29	1.29	1.29
	Import electricity	%	5.37%	9.91%	9.91%

Italy					
Sector	Name	Unit	2021	2030	
				Transparency	Policy
Building	Renovation rate (non residiential)	%	2.80%	2.60%	2.60%
	Renovation rate (residential)	%	1.80%	2.70%	2.70%
	Floor area (non-residential)	1000m2	1.32E+06	1.37E+06	1.37E+06
	Household size	cap/household	2.36	2.21	2.21
	Demoliton rate	%	0.10%	0.10%	0.10%
	Share of heating via heat pump (without biomass and disctrict heating, for non-residential)	%	32.92%	56.00%	32.92%
	Share of heating via heat pump (without biomass and disctrict heating, for single family house)	%	7.75%	13.76%	8.75%
Transport	Freight demand	bn tkm	2.48E+02	2.61E+02	2.61E+02
	Share of new zero emission passenger car in sales	%	3.64%	26.38%	26.38%
	Occupancy of passenger car	pkm/vkm	1.71	1.80	1.80
	Load factor for trucs	tkm/vkm	15.91	16.12	16.12
	Switch from diesel to biodiesel for LDV	%	*baseline*	9.22%	0.00%
	Switch from liquid fossil fuel to synthetic fuel for LDV	%	*baseline*	0.00%	0.00%
Industry	Energy Efficiency gain (Cement production for illustration)	%	*baseline*	13.00%	0.58%
	Carbon capture (From cement production emission for illustration)	%	0.00%	0.00%	0.00%
	Technology shift (Steel production to hydrogen-DRI technology for illustration)	%	*baseline*	5.56%	2.22%
Energy Supply	Renewable Energy Capacity: Wind onshore	GW	11.25	26.29	20.46
	Renewable Energy Capacity: Wind offshore	GW	0.00	1.66	0.80
	Renewable Energy Capacity: Solar PV	GW	22.14	79.37	54.48
	Electricity generation capacity from fossil gas	GW	35.99	39.06	39.06
	Electricity generation capacity from coal	GW	8.40	0.00	0.00
	Import electricity	%	14.64%	10.10%	10.10%

Sweden					
Sector	Name	Unit	2021	2030	
				Transparency	Policy
Building	Renovation rate (non residiential)	%	2.30%	2.00%	/
	Renovation rate (residential)	%	0.80%	2.00%	/
	Floor area (non-residential)	1000m2	3.10E+05	3.19E+05	/
	Household size	cap/household	2.11	2.08	/
	Demoliton rate	%	0.10%	0.12%	/
	Share of heating via heat pump (without biomass and disctrict heating, for non-residential)	%	26.51%	26.51%	/
	Share of heating via heat pump (without biomass and disctrict heating, for single family house)	%	55.33%	55.33%	/
Transport	Freight demand	bn tkm	8.74E+01	9.68E+01	/
	Share of new zero emission passenger car in sales	%	15.50%	34.38%	/
	Occupancy of passenger car	pkm/vkm	1.28	1.31	/
	Load factor for trucs	tkm/vkm	14.16	14.23	/
	Switch from diesel to biodiesel for LDV	%	*baseline*	0.00%	/
	Switch from liquid fossil fuel to synthetic fuel for LDV	%	*baseline*	0.00%	/
Industry	Energy Efficiency gain (Cement production for illustration)	%	*baseline*	0.39%	/
	Carbon capture (From cement production emission for illustration)	%	0.00%	0.00%	/
	Technology shift (Steel production to hydrogen-DRI technology for illustration)	%	*baseline*	0.56%	/
Energy Supply	Renewable Energy Capacity: Wind onshore	GW	11.92	16.09	/
	Renewable Energy Capacity: Wind offshore	GW	0.19	19.41	/
	Renewable Energy Capacity: Solar PV	GW	1.61	3.40	/
	Electricity generation capacity from fossil gas	GW	0.84	0.84	/
	Electricity generation capacity from coal	GW	0.00	0.00	/
	Import electricity	%	-19.98%	-13.78%	/

9 Indexes

Abbreviations

AFIR	Alternative Fuels Infrastructure Regulation
EC	European Commission
EEA	European Environment Agency
EED	Energy Efficiency Directive
ESABCC	European Scientific Advisory Board on Climate Change
ETS	Emissions Trading System
EU	European Union
EUR	Euro
GHG	Greenhouse Gas
GWh	Gigawatt Hour
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LTS	Long-Term Strategy
LULUCF	Land Use, Land-Use Change and Forestry
MS	Member States
NECP	National Energy and Climate Plan
NECPR	National Energy and Climate Plan Progress Report
RED	Renewable Energy Directive
REPowerEU	Renewable Energy Power for the European Union

Figures

Tables

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