National Council for the Environment and Sustainable Development

RECOMMENDATION FOR THE NATIONAL ENERGY AND CLIMATE PLAN 2021-2030 (PNEC 2030)

(REFERRING TO THE PRELIMINARY VERSION OF THE PNEC 2030, JUNE 2023)

November 2023

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Introduction

As part of the review of the National Energy and Climate Plan 2030, produced by the Portuguese Environment Agency (APA) and the Directorate-General for Energy and Geology (DGEG), the National Council for the Environment and Sustainable Development (CNADS) decided to set up a Working Group (WG) to comment on the document.

The WG, co-coordinated by Councillors Jaime Braga and João Joanaz de Melo and including Council members Ana Tapadinhas, José de Matos, Luísa Schmidt and Nuno Ribeiro da Silva, was mandated to promote a reflection on the Plan and draw up a proposal for a Recommendation, to be submitted to the plenary at a later date.

This Recommendation was generally approved at a plenary session on 9 November and approved in its final version by electronic consultation, with a majority of 27 votes in favour, which took place between November 23 and 28, 2023.

Diagnosis: some key indicators

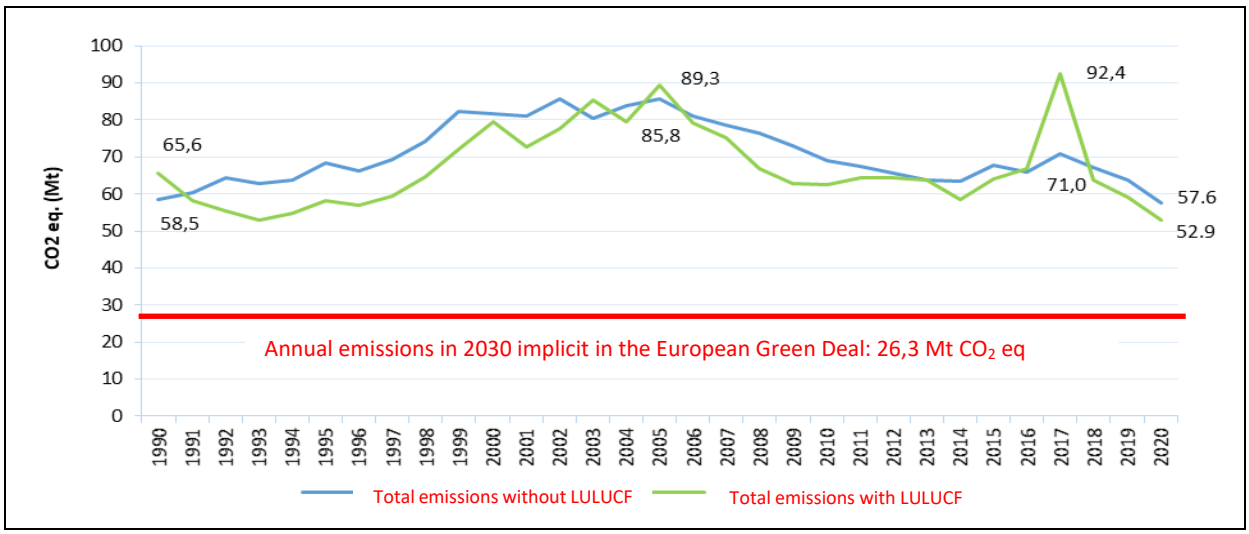

Figure 1 - National GHG emissions, Portugal (adapted from APA, 2023)

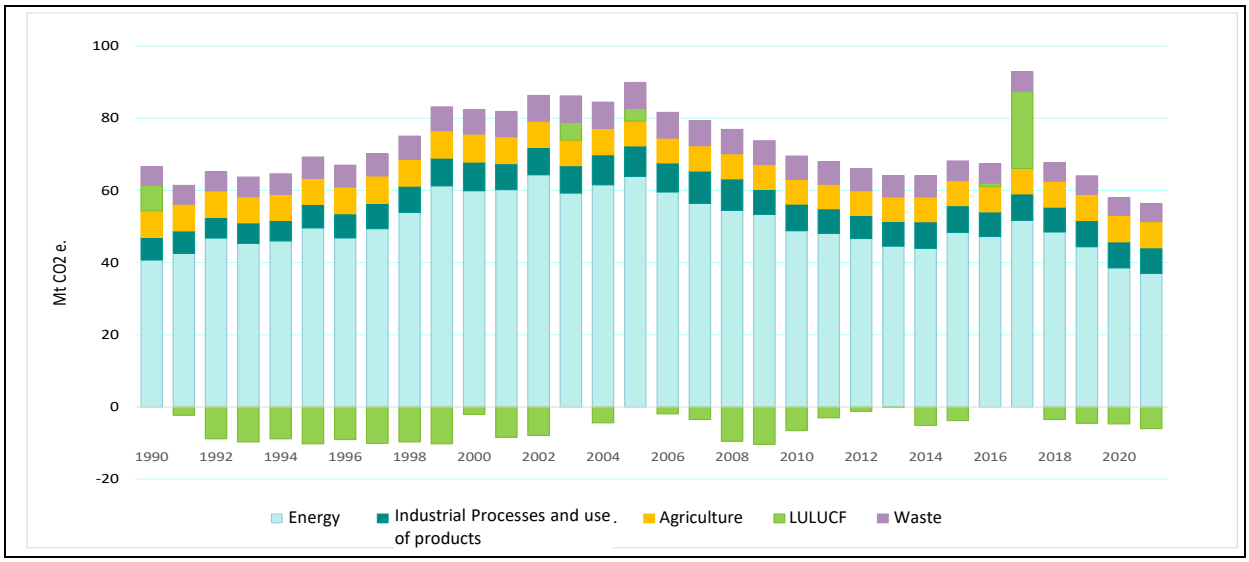

Figure 2 - GHG emissions by sector, Portugal (source: APA, 2023)

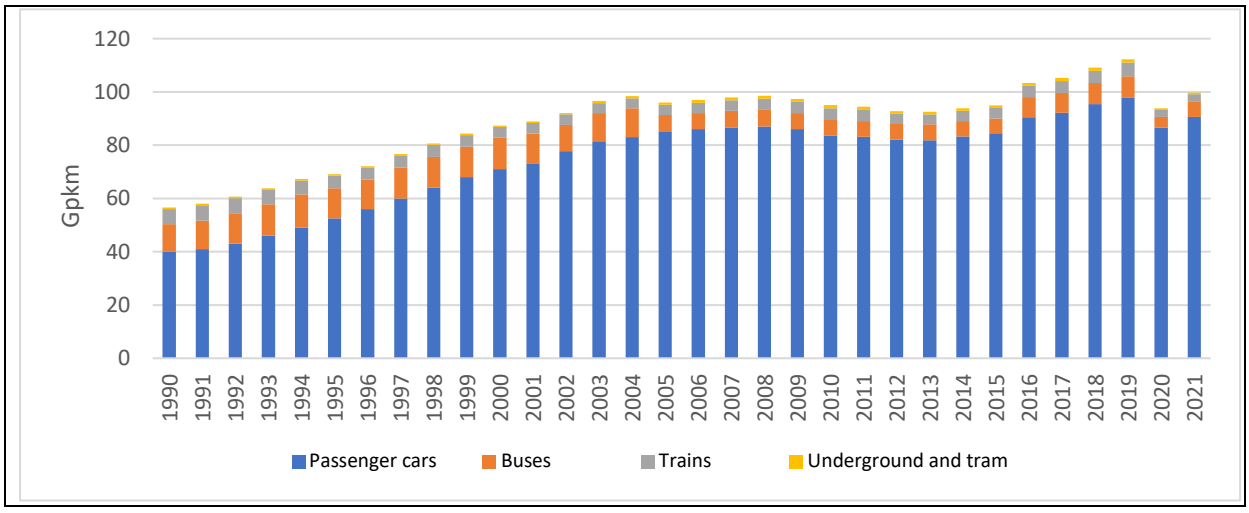

Figure 3 - Modal distribution of passenger transport, Portugal (adapted from EC, 2023)

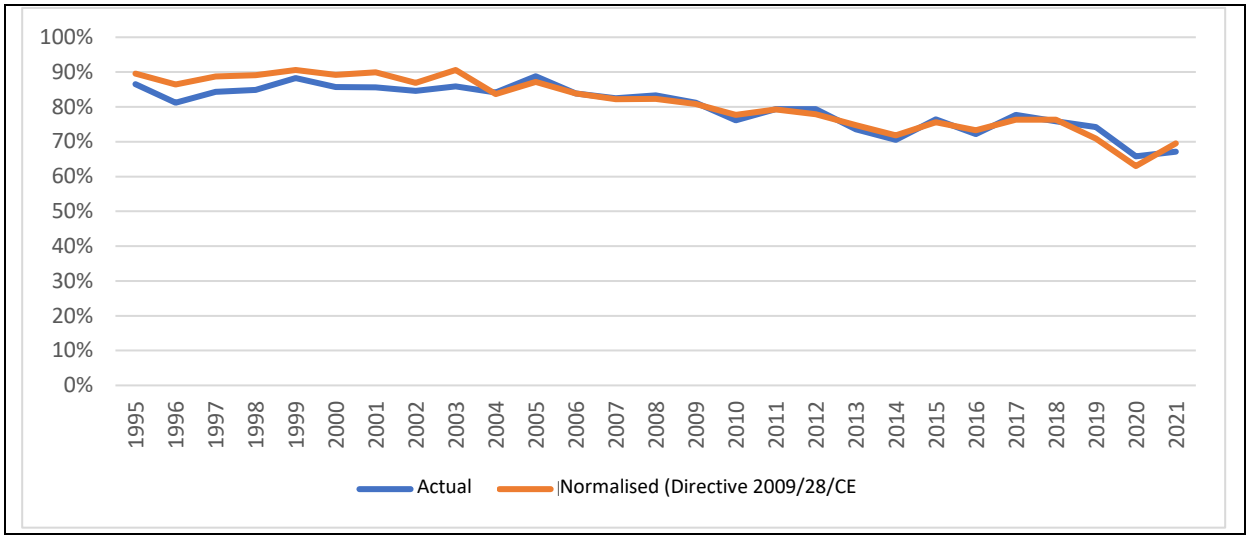

Figure 4 - Energy dependence, Portugal (adapted from DGEG, 2023)

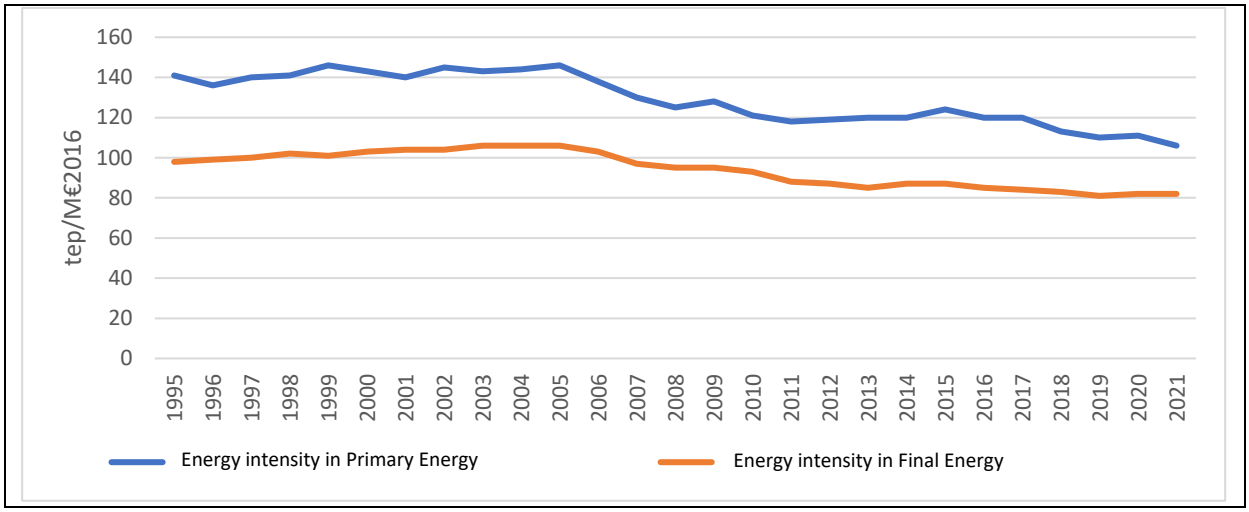

Figure 5 - Primary and final energy intensity, Portugal (adapted from DGEG, 2023)

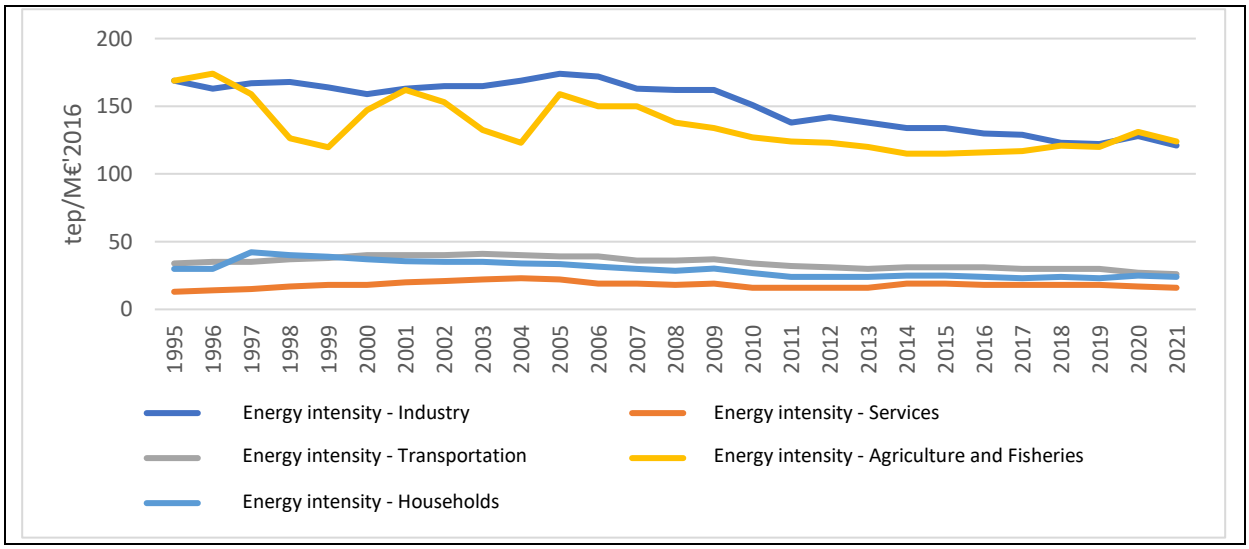

Figure 6 - Energy intensity by sector, Portugal (adapted from DGEG, 2023)

General principles

CNADS advocates the application of the following principles in the development of the PNEC:

1.The PNEC must be built with everyone and for everyone: economic sectors, small and large companies, public institutions, families and non-governmental organizations.

2.The discussion and decision-making process must be transparent, participatory and concerted.

3.The current situation, both in terms of the environment and climate and the state of our energy system, is worrying. We will therefore have to use a variety of tools, carefully choosing the most appropriate ones for the different objectives and sectors.

4. The first priority of energy policies must be energy efficiency, across all sectors. In particular, passive and recovery measures must be prioritised.

5. The transition to renewable energies, being unavoidable, must be carried out to the extent necessary, subject to the best cost-impact-effectiveness ratio, in all sectors.

6. New economic instruments are needed to promote the energy transition, since the existing ones are often ineffective or insufficient, but almost always unnecessarily bureaucratic. Given the limited means of the State, it is essential that public means are used as effective levers for private investment, which implies careful design of the various instruments.

7. Whenever feasible, fiscal instruments should be favoured over calls/subsidy-type instruments, because the former have the triple advantage of being more comprehensive, more transparent and less bureaucratic. Tax policy must have broader objectives than merely collecting revenue for the State, and give clear signals to taxpayers and the market towards climate action, energy transition and social cohesion. In short, it must be a coherent, continuous policy, creating confidence in citizens and businesses.

8. The carbon tax must grow in a predictable and economically significant way, as it will be difficult to achieve the reduction targets without this instrument. The revenue obtained in this way must be reinvested in the economy and in households, with the dual goals of promoting a cost-effective reduction of polluting emissions, and achieving positive socio-economic effects.

9. For reasons of efficiency, capacity of response and interoperability, it is essential to promote user-friendly digital platforms, but also to maintain alternative modes of access for segments of the population without effective access to such platforms.

10. It will be essential to support municipalities and other local actors whenever measures require close monitoring to be effective. In this regard, it is crucial to create a nationwide network of municipal 'one-stop shops' for energy, dedicated to energy literacy and facilitating access to financing instruments.

11. Energy poverty is a reality in Portugal, which is why it is crucial to implement local strategies to combat it, prioritizing rehabilitation measures for active and passive climatization systems.

12.Incentive mechanisms should always have cost-effective performance indicators as a reference or criterion, avoiding a priori technological discrimination.

Significant gaps

The version of the PNEC analysed suffers from a significant number of shortcomings:

- In many areas, the PNEC does not contain clear targets or indicators (e.g. targets for quality-of-service performance in transport);

- In most areas, the PNEC expresses correct intentions, but the definition of guidelines and priorities is insufficient, and the concrete measures are non-existent or poorly substantiated;

- The PNEC fails to substantiate essential options and calculation criteria, especially in energy demand and supply forecasts;

- The PNEC does not take into account the effects of technological evolution, innovation and energy prices, and does not consider market logic, or the polluter-pays and user-pays principles. As a result, the savings potential already recognized is not sufficiently exploited;

- In the few cases in which the PNEC sets clear targets, there is a lack of specification of the means necessary to achieve these targets, or of demonstration of the effectiveness of these means (example: requalification of the housing stock on a national scale).

General methodological guidelines

The key indicators needed for the analysis should be provided with time series since 1990, as this is the reference year of the European Green Deal, including among others:

- GHG emissions by sector
- Primary energy consumption by source
- Final energy consumption by sector
- Primary and final energy intensity by sector and sub-sector
- Energy dependence
- Modal distribution of passenger and freight transport

The targets for reducing emissions and energy intensity should be clarified, explaining the respective assumptions and the differences involved in the existence of two reference years (1990 and 2005, respectively, of the Green Deal and the rules for preparing the PNEC).

Taking into account the known savings potential, the CNADS recommends an efficiency target for each sector of a 2% reduction in energy intensity per year until 2030 (measured by final

energy consumption per unit of gross added value at constant prices). This target, while ambitious, will be achievable with appropriate incentive measures.

The assumptions used in the production and consumption forecasts should be explained and discussed, carrying out an appropriate sensitivity analysis of these assumptions, especially those that are difficult or impossible to control on a national scale.

Sector guidelines

In buildings

In this version of the PNEC, it seems clear to us that the contributions of building renovation to energy efficiency/savings are overestimated, since heating consumption (the most important) is relatively low, because the climate is benign and families don't actually heat their homes as the theoretical models predict. The improvement in the energy class does not result in proportional reductions in consumption. The reference data contained in the PNEC regarding m^2 of refurbishment and the costs of refurbishment per m^2 need to be revised and substantiated (see attached technical note on building refurbishment).

Recalling some points from the CNADS position paper (2022) on energy efficiency in buildings, the CNADS recommends:

- Priority should be given to measures to promote refurbishment, which affects both families and companies, public and private institutions, and guarantees everyone effective investment mechanisms, in terms of value, time and evaluation procedures;

- In the housing sector, tax incentives for middle-class families with their own homes should be favoured. For the "hard to reach" groups (which have multiple variants), local support units must be created, if necessary multi-partner, with social, technical and financial expertise;

- We need to create a market signal in favour of energy efficiency: define more progressive tariff levels in the residential sector;

- We must focus on decentralized energy production, promoting the concept of the "prosumer", both on a private level and through the creation of renewable energy communities. Administrative facilitation and adequate remuneration for the electricity injected into the grid by "prosumers" is a necessary condition for the success of this essential component of the energy transition. As an alternative or complement, greater support for investment in decentralized generation should be considered, with a special focus on photovoltaic solar energy in the business and public sectors;

- The State has special responsibilities in the social housing sector, and collaboration between the Government and local authorities is needed to systematically improve this sector;

- Measures for the improvement of public buildings should be considered in addition to the RRP.

In industry and services

- Incentive systems should be focused on efficiency and should reach not only large consumers, but all energy-consuming economic agents;

- Public funds should be used to support not measures that are already profitable, but measures with high savings potential, although not practicable under current market conditions. For example, measures could be supported which, in an energy audit, demonstrate high savings potential, but payback periods of 3 to 6 years.

In transportation

- We need clear targets for indicators such as modal split and the quality of public transport services (frequencies, intermodality, travel times);

- Mechanisms need to be put in place to systematically promote intermodal public transport, in terms of infrastructure, timetables and fares;

- Priority should be given to cost-effective railways as the backbone of heavy-duty passenger transport systems. See attached technical note on guidelines for the National Rail Plan;

- Public incentives for private cars (even electric cars) should be discontinued and transferred to improving public transport;

- The construction of major public transport works should be subjected to the demonstration of low environmental impact solutions, cost-effectiveness and transparency of the business model.

Annex - technical notes

About the rehabilitation of buildings

The reference data contained in the PNEC regarding the m^2 of rehabilitation and the rehabilitation costs per m^2 need to be revised and substantiated. In the housing sector, the PNEC estimates annual averages of rehabilitated area of around 25 million m^2 in the period from 2018 to 2030 and around 21 million m^2 in the following decade, which compares with current annual data for total licensing of new construction and rehabilitation work, housing and non-housing, which is around 10 million m^2. As State works (central and local authorities) are not subject to licensing, it is difficult to assess the weight of this segment. Most renovation work is not subject to licensing, making it difficult to know how much of the total amount

spent and the area renovated is relevant to the energy efficiency component. In the case of refurbishment costs, there are figures of 82 €/m^2 in 2030 (2020 prices), which is not enough for the most commonly needed improvements (replacing windows and insulating roofs), let alone for insulating opaque façades.

If we take as a reference the data calculated for the value of construction in the residential building segment in 2022 (Source: M.C. Nogueira/APMC, 2023; Euroconstruct, 2023), which includes work not carried out by construction companies, we are talking about something like 3 000 million euro a year in new construction and around 6 800 million euro a year in refurbishment, renovation and maintenance (figures estimated at constant 2017 prices), of which less than 50% should have an impact on energy efficiency. Translated into m^2, this would be something like 2 million m^2/year (20 000 to 25 000 dwellings/year) and 8 to 10 million m^2/year (80 000 to 100 000 dwellings/year), respectively for new construction and refurbishment, at best.

In conclusion, achieving 100% of housing buildings rehabilitated by 2040 is not feasible with the means currently available, either financial or in terms of the capacity of the construction and rehabilitation sector to respond.

Taking the Long-term Building Renovation Strategy official estimates as a reference, it will be necessary to invest 110 000 M€ in the housing stock over 30 years. To illustrate the budgetary effort, consider the following scenario: assuming that the most prioritised interventions to benefit 3 million homes in 10 years correspond to 40% of that figure, it will be necessary to invest a total of 44 000 M€ in this period (i.e. increase the annual gross value of building construction/rehabilitation in Portugal by 50%). Let's assume that the incentives will be directed mainly at the rehabilitation of buildings and the installation of photovoltaic panels and solar water heating; let's also assume that, in order to mobilise these investments, the net public contribution rate of the incentives for most middle-class families will be 15% (the balance between a tax benefit of 30% and the increase in VAT and corporate income tax revenue), and for hard-to-reach families it will be 70% (the average balance between contribution rates that vary according to income, and which could be as high as 100%, and the foreseeable increase in VAT and corporate income tax revenue) — indicators in line with international experience and national studies. These figures are indicative only, to understand the budgetary effort required.

These assumptions mean that, to fulfil the goal of guaranteeing all families living in Portugal decent and efficient housing, it will be necessary for the public treasury to invest in renovating the housing stock (in the form of tax benefits, other incentives, and EU funds) around 1 500 M€/year over the next 10 years. Taking the above assumptions as a reference scenario, and the planned expenditure in the RRP of 300 M€ by 2026 for energy efficiency in residential buildings, it may be necessary to multiply the current annual figure by 25.

These figures could certainly be revised downwards if we manage to optimize the processes and technologies to be applied, but the order of magnitude will not be far from these amounts. It should also be noted that if the energy transition and the implementation of efficient technologies and processes are successful, the operating costs of energy use will reduce over time and will therefore make it possible to unlock additional resources.

Returning to the conclusions of the CNADS position paper (2022) on energy efficiency in buildings:

Of the 3 million families in Portugal living in homes with poor energy performance (class C or lower, uncomfortable homes), around 2 million are middle-class families, most of whom own the home they live in.

Attractive tax incentives can be a democratic, horizontal, effective and relatively simple instrument to promote efficiency in housing for the majority of middle-class families: families invest in improving their own home, with an immediate gain in comfort. In this day and age, it's a more attractive investment than banking or the financial market. This approach is equally valid for companies in general (although SMEs and some families may require additional incentive measures). It is also a way of boosting the real economy, with very positive macroeconomic effects. An economic and fiscal strategy to promote energy efficiency with annual reductions of 2% in energy intensity will generate significantly better macroeconomic indicators than those of the base scenario: GDP +2.4%, employment +1.4%, effects on the well-being of disadvantaged households +1.8% (Melo et al., 2020).

Taking into account national and international experience, we believe that nominal tax benefits of around 30% of the investment, particularly in terms of personal income tax (households) and corporate income tax (companies), will help mobilize priority investments over a 10 to 15 year horizon. Real spending by the State will be around half the nominal incentive, because it will recover VAT from end consumers and CIT from installers.

Tax measures could include reduced VAT rates on installation and construction work, complemented by zero-rate repayable financing, as has been applied in several European countries.

Financing these measures can be done at the cost of eliminating perverse incentives. It's not a trivial exercise, but existing studies make two important points clear: the amount of existing perverse incentives is greater than the cost of effective measures to promote efficiency; and for companies, a stable and meaningful fiscal framework is far more important than one-off benefits (however much they may be appreciated at the moment).

About railway network

Resuming to the CNADS position paper on the National Rail Plan (Plano Ferroviário Nacional PFN, CNADS, 2023):

1. The PFN must have a comprehensive content, from a dual social and environmental perspective, in terms of the quality of the service, the mitigation of national asymmetries, and its material options, duly analysed in terms of their effectiveness, costs and timing.

2. The PFN will have to take into account clear objectives of coverage and territorial cohesion, and the effectiveness of inter-modality, which is a prerequisite for a real reduction in travel times, which are the real driving force behind the desirable shift from cars to rail. The typology of services must be rethought in this light, in a context of scarce financial resources.

3. The PFN should be based on concrete objectives for the coordination and quality of services, which implies setting clear targets for a set of indicators, for example: journey times on a national origin-destination matrix; percentage of population served and number of stations for the various services.

4. The PFN must be based on a transparent, effective and competent governance model, namely in terms of its design, coordination, decision-making, investment execution and operation, including information for users, decision-makers and the general public — certainly with positive consequences for acceptance of the Plan.

5. The PFN should contribute to a governance model that assumes the rail network as an essential public service and puts users at the centre of the equation. It must re-evaluate the model for financing and operating the railway (with a view to an economically viable, high-quality offer), reducing the frequent disruptions that nowadays affect the quality and reliability of these services — because credibility and users' trust in the public transport is indispensable, especially in the railway.

6. The PFN should contribute to the digitisation of the entire railway system: providing users with good maps of the networks, real-time information on travel offers, fares and timetables, making it easier to buy tickets and providing seamless door-to-door travel solutions; in addition to the essential statistical information, support for planning and marketing.

7. The construction of new lines, which in some cases is necessary, should not distract from prioritising upgrading (including electrification, straightening of routes, duplication if necessary, safety and communications systems, preparation for the ERTMS-European Rail Traffic Management System standard) and extending the service of existing lines — options that are certainly less expensive and guaranteed to have less environmental impact. The PFN could also contribute to territorial cohesion by considering the potential use of lines that are currently deactivated.

8. The PFN should be more explicit about international options, both in terms of lines and journey times, particularly in terms of integration into a network with an Iberian dimension, bearing in mind issues related to the opportunities of proximity between territories (and particularly peripheral cities) and the fact that Spain is our biggest trading partner, both in terms of imports and exports of goods.

9. A more in-depth assessment of speed objectives on national routes is recommended, since high speed, being a much more expensive solution, may not have the best cost/ service/ economic benefit/ environmental impact ratio. This option does not seem to have been sufficiently substantiated and considered.

10. The inter-city service is one of the most critical aspects of the success of the PFN. Good service quality and adequate frequency are essential conditions for its competitiveness and, consequently, for the shifting of transport options to rail. The PFN talks about a minimum of 28 cities, but is silent on the actual coverage of the network — which today already reaches 70 destinations (and there should certainly be more).

11. The railway has considerable potential for synergy with tourism, in several ways: quality rail mobility is essential infrastructure not only for residents but also for visitors; on certain lines tourists can make a decisive contribution to the viability of the service; and last but not least, rail tourism is now a tourist product in its own right, with great international success and the ability to attract different audiences (especially environmentally friendly ones).

12. In 2022, the daily number of passenger trains was 15 times higher than the number of freight trains, and car traffic (mainly individual transport) was the main emitter of greenhouse gases and other atmospheric pollution; strengthening passenger rail transport should therefore be prioritised. However, rail freight transport cannot be neglected, which will require a greater density of analysis than this version of the PFN contains. Where compatible, complementarities should be sought in passenger and freight transport, and the use of common lines for both valences should be considered.

About strengthening renewable generation

The targets set in the PNEC for increasing installed power and electricity generation based on renewable technologies are clearly demanding and ambitious.

Whilst recognising the virtue of setting stimulating objectives, we must not lose sight of the realities and, above all, be attentive to the evolution of the situation to try and circumvent the obstacles. Therefore, there will be at least two types of problems to consider:

-Difficulties that have already been identified and that are hindering the normal flow of the necessary investments and the adequacy of the targets set;

-Paying attention to the signs and conditions that frame the environment in which these investments are made.

With regard to the first topic, we must point out the following:

- Administrative/bureaucratic blockages to project licensing continue;

- The inability to develop and energise the management of electricity networks in order to respond in a timely manner to requests from promoters to connect to the networks continues;

- At the current rate, the objectives of increasing photovoltaic power, wind power and repowering existing installations will not be met;

- As for the targets, the figures given for offshore wind power and H_2 production are clearly unattainable. This is due to technical and economic reasons, regulations and the specification of standards, which leave no doubt that we are facing an optimistic inflation of the contribution of these technologies to the ongoing transition process.

With regard to the second topic, the following fact should be noted:

- The necessary and rational economic environment for attracting investment to the sector has evolved unfavourably. There have been postponements and suspensions of investment, as well as a drift of interest in applying capital to other sectors. Costs are rising.

- In addition to the more obvious facts, rising interest rates in a capital-intensive sector, rising equipment costs, also the delay and volatility of deadlines announced by licensing authorities and network operators, the supply of services and specialized work.

- Another parameter is causing great concern: the evolution of the prices paid by the market to generators. In fact, the growing number of hours in which solar, wind and hydroelectric generation is concentrated is driving market prices down to zero or negligible, creating insecurity and making it impossible to economise new projects. Particularly in the case of solar farms, this situation has already led large, medium and small investors to announce that they have given up on starting projects. Since the expansion of large-scale storage technologies is not immediately available, measures should be proposed to stabilise prices on the market, with the use of PPAs or long-term contracts being insufficient.

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[Approved on November 28, 2023, by majority vote, with 27 votes in favor, expressed via email]

The President

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