

# MANIFEST FOR GROWTH RECOVERY ECONOMIC STABILIZATION POST-COVID-19

Portugal is going through the largest recession in memory, which requires vigorous and appropriate policies to recover the economy and relaunch growth. There is no room for mistakes that could be costly for the present and future generations. The main cause of our near stagnation in the previous two decades was the misuse of resources, resulting from economic policies and wrong business decisions. The recent economic and banking crisis is the strongest evidence of its terrible consequences.

The country cannot once again embark on an adventure like the Hydrogen Strategy, which will absorb a significant part of the resources, financing unprofitable projects, using technologies that, because they are not yet mature, will only raise production costs and consumer prices or burden the taxpayer, via state subsidies, and thus ultimately reduce growth.

What the country needs is productive investments, focused on exports, which promote the modernization and dynamization of the productive structure or strategic infrastructures, which can increase productivity and, thus, reduce poverty and prevent us from continuing to approach the bottom of the European Union, in income per capita.

We cannot accept the economic and energy public policies and hydrogen strategy proposed by the Government, in a country with around 20% poverty, and in need of strong productive investment to be able to increase its per capita income. Only with viable, competitive projects, with an appropriate balance in financing and risk sharing between public funds allocated to the project and private investment, which increase competitiveness in the tradable goods sector, can our potential growth rate be increased, guarantee well-paid jobs and foster economic and social cohesion.

## **The urgency of a new Growth Strategy**

1. After the near stagnation of the per capita income in the last two decades, Portugal is suffering the biggest drop in GDP in memory, due to the effects of the lockdown policy adopted by the Government, in order to contain the spread of COVID-19.

The latest estimates by Banco de Portugal and the European Commission point to a drop close to 10% in Gross Domestic Product (GDP) in 2020 –a loss of 20 billion euros. This evolution is due to the government's unpreparedness, like European countries, to combat the epidemic, when compared to the most effective policies of Asian countries, with much lower economic costs.

2. Recovery will be slow, with GDP growth of 5.2% for 2021 and 3.8% in 2022, so that only in 2023 will pre-crisis levels will be recovered. But this depends on the policies that the

government adopts. And we must warn that in such a deep economic crisis, in which a strong contribution from the banks was requested, a new banking crisis may be expected, which will lead to the need for new bank recapitalizations.

3. Added to this threat is another one, that of a financial crisis. To reduce debt, which is expected to reach a record high of 134% of GDP, it will be essential to re-enter a downward trajectory of public debt, which implies returning to a primary structural surplus of 3% of GDP. Since we already have a record fiscal pressure, and its increase would only lead to a reduction in economic growth, the only option is to cut current government spending and increase the efficiency of public policies and administration. Is the government aware of this need? The intervention of the European Central Bank (ECB) through the massive purchase of bonds may mitigate the problem, but this will not last forever, and does not replace compliance with the rules of the Euro Fiscal Pact.

4. The basic problem, which arises most acutely after this colossal crisis, is the challenge of the low growth of the Portuguese economy, which has maintained a trajectory of potential GDP with an annual growth rate of 1.5%. If we do not accelerate this trajectory, we are on the way to the bottom of the European Union (EU), and now with higher probability, due to the destruction that the epidemic has caused.

5. The EU has made a range of financial aid available to Member States which is a unique opportunity to recover the economy. The “Next Generation EU” program alone is expected to provide 26.1 billion euros in grants and loans in addition to the Multiannual Financial Framework for 2001-2017 of 29.8 billion euros. Will this money be channeled towards strengthening the productive capacity of companies or strategic infrastructures?

6. The main cause of the lack of convergence for the EU has been the wasting of the country's resources in unprofitable projects resulting from poor public and business management. The banking crisis, which has already cost taxpayers, shareholders, and customers more than 40 billion euros, is the most visible manifestation of these errors. Have we learned from our mistakes?

7. How to accelerate growth? A new economic policy embodied in a New Growth Strategy is essential, incorporating economic policies focused on improving the competitiveness of companies and strengthening exports, assisted by a set of political reforms to strengthen institutions and reinvigorate democracy.

8. The new economic policies must cover, among others, (i) development of the health care sector, articulating public, private and social sectors, protecting populations from recurrent pandemics and improving equity in access; (ii) improvement of the business research and innovation system, with the reinforcement of both university-company connections and the skills of interface institutions, namely technological centers and institutes of new technologies, launched in the Specific Program for the Development of Portuguese Industry (PEDIP), stimulate technological research aimed at companies and business innovation, as well as the insertion of doctorates in companies; (iii) investment in

integration infrastructures with Europe, namely in rail links, with the European gauge, in the Atlantic corridor; (iv) re-industrialization based on the knowledge based economy, on the greater integration of robotics, artificial intelligence and 3D printing, on digital and environmental transitions, on increasing productivity and the business dimension and on the strengthening of technology-based clustering (a new Porter Project), strengthening the new technological clusters in which the country already has a reasonable base - materials, biotechnology, information and communication technologies, health sciences, aeronautics, mobility - and supporting the technological upgrade of clusters linked to traditional sectors; (v) attracting Foreign Direct Investment (FDI) taking advantage of the re-shoring and near-shoring process that the global crisis will accelerate. In this context, it is extremely important to have the objective of attracting three or four major projects from integrating companies, such as AutoEuropa, that increase exports and contribute to the development of new companies that are suppliers that later also become exporters; (vi) stimulating the acceleration of the quality of human capital through the improvement of the quality of education at all levels, namely in terms of school programs and greater demands on teachers and students, and the strengthening of vocational education, given the lack dramatic specialized intermediate staff; (vii) creation and institution of the country's strategic planning capacity; (viii) growth-friendly tax reform; and (ix) reform of the justice system in order to allow the resolution of disputes within a reasonable time and through a fair process, with special emphasis on the tax process and the award of rights and obligations between investors and the State.

9. The 45 billion euros of grants that Portugal will receive from the EU until 2027 should be mostly channeled to the private sector, and with special preference for boosting exports. In this context, it is important to emphasize an industrial policy that allows the launch of a new PEDIP 5.0, timely presented by the AEP - Associação Empresarial de Portugal, which enables the reinforcement of business innovation, building value chains and completing clustering of industries Particular attention should be given to the attraction of FDI and international partnerships with leading players in the various sectors, hand in hand with the recapitalization of Portuguese companies.

### **The limitations of the Energy Policy until 2030**

10. We are deeply concerned with Energy policy, which nowadays is a mere by-product of environmental and climate policies, as presented in the government Energy Plan for 2020-2030 and the Hydrogen Strategy for 2020-2050.

The Hydrogen Strategy is consubstantiated in a project that intends to be the biggest ever launched in Portugal, whose intrinsic added value is not justified. It appears as merely instrumental in the objectives of decarbonization and energy transition and it may consume substantial European funds. This is not compatible with the use of these funds to support projects that promote the dynamism and modernization of the productive structure, with a balanced sharing of risks between the private and public sectors.

The energy efficiency of the hydrogen cascade is extremely low, its handling is highly dangerous, and the dependence on precious metal technologies (platinum), makes its massification problematic.

11. Energy policy has been one of the other factors blocking growth. Portuguese consumers have already paid around 22 billion euros in production subsidies to renewable energies (wind and solar power plants) and back-up, subsidies that have not contributed to growth, and have been a waste of resources, feeding powerful lobbies, at the expense of competitiveness and burdening even the most disadvantaged classes. Moreover, Portuguese consumers incur, at present, in a debt electric tariff of 3 billion euros.

The biggest mistake was the introduction of technologies that were still immature, such as wind a massive scale, without creating national added value and employment. However, the average price of supply of these renewable energies has dropped significantly with the technological evolution that has occurred. If it were installed today, the cost would be between 40 and 60% lower than what we are still paying for the 7 000 MW of installed intermittent power. The new Energy Plan proposed by the government foresees the addition of another 11 GW by 2030 of wind and solar. This will seriously create over-capacity and burden the generation capacity, due to its intermittency. The lack of adequacy to periods of greater demand, implies the need for redundant power plants to occur to these failures, increasing the amount of electricity that is already sold at zero price on the wholesale markets.

12. A factor that continues to aggravate the negative consequences of the predominance of this base of intermittent electrical technologies (wind and solar power plants) in Portugal is the reduced capacity of the interconnections between Spain and France, making Iberia almost like an electrical island in relation to the European continent. The expansion of interconnection would enlarge the market and would make it more competitive. However, it should not be used for an expansion of our intermittent energies, since paying Portuguese consumers the tariffs at politically high prices (feed-in), would lead us to start subsidizing European customers.

13. There is a simple principle that our leaders have not yet plainly understood: energy policy only contributes to growth if there is a reduction in production costs, as is the case with improving energy efficiency, or if we were replacing a more expensive energy for a cheaper source of energy.

The introduction of more expensive energy sources, which will replace cheaper ones, may reduce carbon emissions, but it represents a sacrifice for our income and for our competitiveness, affecting exports and employment. In practice, this is a subsidy from us to the most polluting countries. Nobody explained to the Portuguese citizens these facts!

14. Climate change represents a major challenge for humanity, but it is essential to have a sense of proportions. The country with the highest participation in CO<sub>2</sub> emissions in 2017 (European Commission data, Edgar) was China contributing 29.3% of the global total,

followed by the USA with 13.8%. Germany contributed 2.15%, and Portugal a mere 0.15%. If we divide the proportion of the emissions by the proportion of the world population, we find that this ratio is 3.2 for the USA, 1.97 for Germany and only 1.13 for Portugal. Therefore, not only do we have an exceedingly small proportion of contribution to global emissions, but our rate is already much lower than that of these large countries.

There is, therefore, no reason to put the goal of drastic carbon reduction at the top of the agenda for our well-being, or to “save the planet's climate”: a 50% reduction in our emissions only reduces global emissions by 0.075%, with a high cost for the country, following the proposed climate-environmental policies. Consequently, our contribution to the world's reduction in emissions should be negotiated with the Commission on an equitable way.

### **The errors of the National Hydrogen Strategy (EN-H2)**

15. To date, there is no country that has adopted an energy plan in which hydrogen plays a central role, despite the proposals of some industrial groups. Reports from credible entities such as the International Energy Agency (IEA), and Oxford University / Imperial College, consider that there are still many uncertainties from a technological point of view, and that this alternative is not only the most expensive today, but it will continue to be so in the next twenty years.

16. Unfortunately, the National Hydrogen Strategy (EN-H2) maintains the serious consequences of the Special Regime Production regime (feed-in tariffs), which supported early intermittent and immature renewable technologies, continuing to invest in emerging and very risky technologies to store electricity at the expense of consumers.

On the contrary, we propose that for hydrogen production, which is an attempt to indirectly store electricity, the respective promoters must bear the inherent development costs, with a limited contribution from the European Funds for Science and Technology, as they know how to better assess the risks than civil servants.

17. In fact, in terms of the proposed electrolyzers, with technologies capable of producing hydrogen with sufficient purity to be able to supply fuel cells, the dominant dimension is only 5 Megawatt (MW) prototypes. There is news of a project in the port of Ostend in Belgium, to start in 2025 with a dimension of 300MW. But all of these are well below the dimension foreseen in the EN-H2 of above 1000 MW.

18. The European Commission has proposed a vast research and development (R&D) program for hydrogen production, aiming to decarbonizing the generation of electricity from fossil fuels and heavy transport, without accounting for the costs for families and companies. Portugal assumes itself as the world champion of this project, by proposing in EN-H2 a financial envelope that is about 10 to 20% of the total projected by the European Commission, a country that represents 1.6% of the Union's GDP. R&D should mainly be

undertaken by large economies such as the USA, Japan and Germany. According to the International Energy Agency, Germany, a country with an economy 16 times greater than ours, plans to invest 9 billion euros by 2030, almost the same amount as Portugal!

19. The EN-H2 approved by the Government, intends to install, by 2030, 2 GW in electrolyzers to produce hydrogen, at a cost of 7 billion euros, destined only for internal consumption. The main use would be the replacement of 15% of natural gas through injection into natural gas networks, and 5% in road transport for which it is intended to build between 50 to 100 fuel stations by 2030, which would expand to 1,500 stations by 2040.

20. The only economic justification pointed out is the substitution of natural gas imports. For a small country with an open economy, an import substitution strategy does not make any sense, and even then, it would only have merit if it reduced the cost to the end user. But that is not what will happen; the cost of the injected hydrogen, despite using solar energy, will cost between double or triple the natural gas, so the final consumer will see his gas bill rise between 15 and 30%.

21. It should also be noted that even the introduction of hydrogen mixed with methane in the natural gas network up to a percentage of the order of 20% indicated in EN-H2, requires authorization from Spain, because the gas composition currently accepted in the Iberian Gas Market network, installed in both countries, does not allow it. And Spain does not participate in EN-H2, nor does any Spanish agreement is referred in the EN-H2.

22. The use for the supply of hydrogen-fueled cars aimed at EN-H2 has no technological basis. The degree of technological immaturity revealed is very evident in the confusion between the use of hydrogen mixed with methane in the natural gas network, and the use of hydrogen in fuel cells for road vehicles.

In fact, hydrogen mixed with methane cannot be used in fuel cells, so the network of natural gas mixed with hydrogen can only be used for heating. Because of this problem, the scenarios in the reports indicated above only consider viable in heavy vehicles with low emissions to be viable in the next twenty years.

23. It should also be stressed that hydrogen is a very light gas and that, therefore, the storage of hydrogen of a high degree of purity, requires conditions of very high pressures and very low temperatures that imply very high costs and safety risks, and its storage must be completely separate from the storage facilities for mixtures of methane and hydrogen. Any purpose of a hydrogen distribution network, or export, in order to be used in fuel cells (incipient technology and with short durability), to allow the supply of the automobile fleet with fuel cells would require a new specific distribution and storage network, completely autonomous from the current natural gas network with higher costs and unaffordable for the economy.

Even the few passenger cars on the market are between 3 and 4 times more expensive than traditional ones, and only the widespread supply networks in more developed countries - which no government has yet announced - can bring the price down.

24. According to the European Commission, gray hydrogen produced from natural gas, and which Galp already does, costs 1.5 euros per kg. If we add to this cost the cost of sequestering the carbon emitted, we will have a total of 2.5 euros per kg, in the production of the so-called blue hydrogen. The so-called green hydrogen obtained by electrolysis, from renewable sources, would cost, at least, with the existing technology, 5.0 euros per kg and, according to other sources, the cost can be three times higher than the production costs of blue hydrogen. For this reason, the Commission admits increased production in the next decade for blue hydrogen.

25. By 2040 EN-H2 plans to install 3 Gigawatts (GW) in electrolyzers that are mainly intended to replace 50% of fuel and natural gas consumption at thermoelectric plants, which would expand to 5 GW by 2050. This project would produce gas from electricity and afterwards would produce electricity again from gas, is one of the ways of storing energy produced by intermittent sources, which in Portugal are already largely surplus in periods of low hourly consumption. It is a pharaonic cost, of around 20 billion euros, to replace only 10% of final energy consumption.

26. There is no economic rationale to invest in the production of hydrogen from intermittent energies, at least for the next 10 to 15 years. Today it has a much higher cost than the hydrogen obtained from natural gas, and the industry in the sector expects a reduction of about 60% of its cost. It is worth the wait.

Generating electricity from green hydrogen will still have high costs. In fact, there is a double production process, with a high cost: first solar energy is used to produce hydrogen and then hydrogen is used again to produce electricity. Take a renewable energy cost of 25 euros per Megawatt-hour (MWh), as EN-H2 predicts. In an optimistic future scenario, even after a strong drop in costs, suppose that with a capacity factor of 50% hydrogen can be produced, by electrolysis, at 1.70 euros per kg (with current technology it is at least 2 to 3 times higher). Storing this hydrogen in underground caves costs at least another 0.30 euros. If this hydrogen is now used to produce electricity it would cost between 100 and 200 euros per MWh, which is much higher than the average cost of 40 to 50 euros per MWh of the most efficient alternative sources currently operating in Portugal.

27. The location of the hydrogen plant in Sines also raises two important problems, which have not been properly addressed. The electrolysis process to make hydrogen requires large amounts of pure water, which are not available in the region. To produce it, it would be necessary to install a seawater desalination plant, at an additional cost of about 20 euros per MWh, which would add to the final price mentioned above. EN-H2 refers to the

use of wastewater, which not only does not exist in the region, but its distillation would require increased costs.

There is yet another problem, related to transport and storage: the caves available for storage would be those of Carriço / Pombal, which are about 300 km away, further burdening the cost of production.

28. Hydrogen exports are only expected from the 2030s, but even the AEI does not consider the viability of international transport and trade within the desired horizon, as the cost of medium-long distance transport is remarkably high. In addition, currently the hydrogen produced by electrolysis is about 3 to 5 times more expensive than the hydrogen produced through natural gas, as it is produced in Portugal at Galp's refineries, so that only a strong reduction in costs would make it competitive at international level.

29. EN-H2 plans to invest 20 billion euros, with the allocation of direct grants from European funds or State guarantees to loans, due to the uncertainties existing for entrepreneurs, in order to make it marketable. This is not only an extraordinary amount for a highly indebted country, but it will compete with urgent investment needs that will have to be postponed or abandoned. And one should not fall into error and think that obtaining grants from the European Union improves its viability, as these funds could always be used for more profitable alternative applications, even in energy. This was the mistake often repeated in the great projects of the 2000s.

30. EN-H2 does not generate economic growth, as it increases production costs for the country. Most of the investments would be in equipment imported from Germany and other countries, whose producers would evidently be interested in its realization. Furthermore, it does not create significant employment or national added value.

31. We cannot repeat the biggest mistake in the massive introduction of renewables in the decade of the 2000s, which was the investment in technologies that were still immature. To enter the hydrogen economy as strongly as the Government intends is to repeat, with even higher costs, this error. The major research and development (R&D) projects of this type are for large economies, with great financial capacity, and with industry and research systems such as Germany and the USA. So far, Germany only plans to invest hundreds of millions of euros in experimental programs. Using an analogy, no one would think that Portugal could now enter the space race to put a man on Mars!

32. We reject the strategy proposed for a country with about 20% poverty, and in need of strong productive investment to increase its per capita income. We should insist that only with viable, competitive projects, with an adequate balance in financing and risk sharing between the public funds allocated to the project and private investment, that increase competitiveness in the tradable goods sector, can we increase our potential growth rate, guaranteeing well-paid jobs and fostering economic and social cohesion.