

*Climate change, energy transition and carbon neutrality recommendations**

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1. INTRODUCTION

This policy letter will focus on how new climate change, clean energy and carbon neutrality policies may be conducive to economic growths in an industrial economy such as the Basque region. These will be based on relevant global experience, especially the latest policy recommendations to the G20 Global Leaders. We have adapted these to offer some key policy recommendations for the Basque government which should support them developing relevant new policies on meeting their international commitment to achieve carbon neutrality by 2050 or earlier.

2. CLIMATE CHANGE GLOBAL ISSUES

Climate change, energy transition, carbon neutrality, climate-resilient infrastructure and water are among the most pressing global issues with drastic impacts worldwide. Climate studies and scientific data have indicated that these climate risks will continuously increase in the foreseeable future. Their impacts will grow in a non-linear manner with disastrous impacts globally. Coping with climate risks and achieving carbon neutrality will require countries committing to new mitigating actions plus providing predictable and effective policy frameworks.

Carbon neutrality should be accelerated and achieved by countries globally in the second half of the century and preferably by 2050. This is in line with the Paris Agreement goal of «holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature

* Spanish version available at <https://euskadi.eus/ekonomiaz>.

increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change».

To mitigate further climate change and global warming consequences, governments worldwide should formulate new policies to advance, scale and deploy low carbon technologies, energy efficient processes. They should promote innovations, especially on clean energies and carbon recycling, so as to facilitate their transformation into low emission and carbon neutral economies soon.

Carbon neutrality and sustained economic growths can only be accomplished if many multiple policy levers are activated jointly by governments and societies worldwide. In addition to promoting technology and innovations, governments globally must also make use of new effective enabling policy frameworks, including carbon pricing or taxes plus the elimination of inefficient fossil fuel subsidies, for a just climate transition which will combine environmental sustainability with creating a more equal and inclusive economy.

Infrastructures globally are critical for economic activities and extremely vulnerable to the impacts of climate change. Major climate events in recent years have destroyed critical infrastructures such as roads, bridges, power networks, and human dwellings. In a time of rapid climate change and intensifying natural hazards, infrastructure systems are under pressure to deliver resilient and reliable services. Therefore, there are high needs for various governments and business communities to improve the climate resilience of infrastructures globally via better building design standards, risk assessments and financing vehicles. These are key enablers for climate change control, economic development and improving the quality of life for people globally.

Water is at the source of life but also key for economic activity. The protection of freshwater systems and the ocean globally are critical to ensure human well-being, economic growth and biodiversity. Globally, growing water demands and climate change have seriously affected water supplies and have resulted in water scarcity. Similarly, the ocean is at great risk due to rising temperatures, vast amounts of marine litter and pollution, overfishing, and unsustainable urban development of coastal regions. All countries should put in place new policies that safeguard their freshwater systems and the ocean via national and international regulations and governance mechanisms.

The global COVID-19 pandemic has served as a serious wake-up call plus a strong reminder of the urgency and importance of these new climate and carbon neutrality policies and actions. In the post-COVID-19 economy, promoting alternative low carbon technologies and carbon neutrality will be sound economic strategies. These are expected to boost the number of new jobs created by the green energy and finance sectors whilst reducing carbon emissions. In essence, we must strive

to leverage COVID-19 recovery to build back better, improve resilience, promote the green agenda and improve global sustainability.

3. **BASQUE ECONOMY, CLIMATE & CARBON OUTLOOKS**

The Basque region is Spain's fifth largest regional economy, with a gross domestic product GDP accounting for around 7 percent of the total national GDP of Spain. The region's exports are more or less evenly balanced between the rest of Spain and markets beyond Spanish borders. It also has the lowest unemployment rates in Spain.

The Basque region is one of the most important industrial regions in Spain. The Basque Country's economy has been strongly manufacturing-based since the beginning of the 20th century. Manufacturing is accounting for over 25% of total GDP of the region. The industrial production is diverse. All of the activities derived from metal, including the production of steel and machine-tools, are very important for the local economy. However, other sectors such as the chemical and petrochemical sectors and refineries are also noteworthy, accounting for a very significant part of the region's GDP. The strongest industrial sectors of the Basque economy are machinery, aeronautics and energy. New technologies plus research and development (R&D) initiatives are becoming very relevant, and the same applies to technology parks. Basque companies are manufacturing a wide variety of capital goods, durable goods and other intermediate products for domestic consumptions and exports.

The Basque Government has declared their strong commitments to Climate Change, reducing carbon emissions and developing new Net Zero Carbon Pathways. They have entered into the global Climate Ambition Alliance. This is an international network bringing together regions, cities and companies from around the world that are committed to fighting climate change. The alliance brings together the countries, regions and cities that are working toward achieving net-zero CO₂ emissions by 2050 or earlier, in line with the Paris Agreement. The Basque Country has joined the global network of 65 countries, 10 regions, 102 cities, 93 companies and 12 investors that have already joined the global Climate Ambition Alliance.

The Basque Government has also taken part in the meeting of the Steering Committee of the Under2 Coalition, of which Basque has been a member since the coalition was founded. The Under2 Coalition is a global community of state and regional governments committed to ambitious climate actions in line with the Paris Agreement. It brings together more than 220 governments representing over 1.3 billion people and 43% of the global economy. Its members are committed to keeping global temperature rises to under 2°C and to increasing their efforts to reach 1.5°C, along with achieving net-zero greenhouse emissions by 2050.

Basque Government has also declared publicly their commitment to tackling the climate crisis. They have announced that they are establishing a legislative framework to set carbon neutral targets for 2050 or earlier. Basque government has been working on its own climate change strategy, KLIMA2050 since 2015. Furthermore, external auditors of the UN IPCC panel of experts had been in the Basque region to assess the Basque greenhouse gas emissions inventory. This is an audit that the Basque Country has undertaken voluntarily.

4. POLICY RECOMMENDATIONS

Looking ahead, the Basque government and companies will have to develop their new Climate Change and Net Zero Pathways so as to meet their carbon neutrality target by 2050 or earlier. Global experience has showed that these new climate change, clean energy and carbon neutrality policies will also promote social and economic growths in an industrial economy such as the Basque region. Relevant policy recommendations will be given based on latest global research and developments. In particular it will include our recent work with the G20/B20 Global Advisory Taskforce plus our latest policy recommendations to the G20 Global Leaders and the B20 International CEOs. Relevant conclusions from the author's recent books titled «Climate Change and Clean Energy Management: Challenges and Growth Strategies» and «Renewable Energy Management in Emerging Economies» will also be incorporated. We have adapted these to offer relevant new policy recommendations for the Basque Government plus key actors in the Basque industrial sector and Basque innovation eco-system. We hope that these will support high level policy formulation and developments. The key policy recommendations are summarised below:

Energy transition and clean energy growth will be critical to ensure the success of the new energy and climate policies. It is important for Basque government to commit to firm policies and actions on accelerating the Basque region energy transition away from fossil fuels and moving towards carbon neutrality. The government should provide predictable, effective policy frameworks to achieve carbon neutrality. Sustainability is key and it is most apparent in the sustainable use of energy, local resources, environment, freshwater systems and the ocean. Climate, and the anthropogenic changes to it, calls for strong mitigation actions but it also requires us to strengthen climate resilient infrastructures and services.

The Basque government and companies should all now commit to achieving carbon neutrality by 2050 or preferably earlier, as they have announced previously. They have to accelerate new policy formulation and implementation towards this important goal. This is in line with the Paris Agreement goal of «holding the increase in the global average temperature to well below 2°C above pre-industrial lev-

els and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. This should significantly reduce the climate risks and the global warming impacts to the region. If no actions are taken then global temperatures could rise by 4°C by 2100 which could then result in 30-40% destruction of the local and global GDPs which will have disastrous consequences.

New policies on promoting the new circular carbon economy (CCE) will be important. These should revolve around optimising various closed-loop regional systems and will be vital to achieve the Paris Agreement goals. CCE policies will encourage efforts to reduce carbon accumulation in the atmosphere through the «4Rs». These include: Reduce the amount of carbon entering the economy; Reuse carbon without chemical conversion; Recycle carbon with chemical conversion; and Remove excess carbon from the atmosphere. Likewise, Carbon-mitigating technology and energy efficient processes are critical to achieving the balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases.

Basque government and companies should promote and deploy suitable low carbon technologies and energy efficient processes. They should promote innovation, especially on carbon recycling, so as to transform it's economy into a new low emission carbon neutral economy soon. New policies should be introduced to create an enabling environment for the deployment of relevant low carbon technologies. New low carbon technologies should be advanced via effective public policy supports, including supports for research and development plus international collaborations.

Global experiences have shown that new policies to promote various natural based solutions and circular economy concepts should have additional environmental, economic and social benefits. It is recognised that the Basque region and companies may have different requirements and timelines to achieving carbon neutrality based on their national or local circumstances. Hence it is recommended that the Basque government, inline with other countries globally, should develop new plans and policies to support innovative carbon technologies and carbon pricing. These will include Carbon Capture Utilization and Storage CCUS plus other energy efficiency processes together with a Carbon Emission Trading System (CETS) inline with international standards. The various new low carbon technologies together with a modern carbon emission trading system CETS should be central pillars of the Basque environmental masterplan and carbon neutrality roadmap to make good their commitments on the Paris Agreement. It is appreciated that different regions and companies will have to take into account differing local and individual requirements, maturity levels and sector relevance on developing their own specific local policies and action plans. Hence it is very important that the Basque government should coordinate and drive all these new policies and actions so as to enable the Basque region to achieve their international commitment to achieve carbon neutrality by 2050 or earlier.

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