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ROUND 2

COVID-19MED POLICY BRIEFS

COVID-19 IMPLICATIONS IN THE MEDITERRANEAN

Designing Realistic Green Economic Recovery Plans after the COVID-19 Pandemic: Evidence from Cyprus and Policy Implications for the Mediterranean

Med Brief No19 - June 2021

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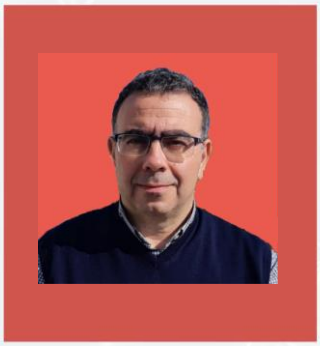

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Peer Reviewers: **Blanca Moreno-Dodson, Constantin Tsakas, Maryse Louis.**

Keywords: Climate-compatible growth, Energy systems model, Input-output model, Multi-criteria decision analysis, Policy formulation, Stakeholder engagement, Sustainable Development Goals

Executive Summary:

As current production and consumption patterns of humanity exceed planetary boundaries, many opinion leaders have stressed the need to adopt green economic stimulus policies in the aftermath of the COVID-19 pandemic. This brief summarises a study that developed an integrated framework to design an economic recovery strategy aligned with sustainability objectives through a multi-criterion, multi-stakeholder lens. Its aim was to enable decisions by policymakers through transparent processes that include both expert evidence based on quantitative open-source modelling, and qualitative input by diverse social actors in a participatory approach. We employed an energy systems model and an economic input-output model to provide quantitative evidence and designed a multi-criteria decision process in which we engage stakeholders from government, enterprises, and civil society. As a case study, we selected green recovery measures that are relevant for the European Union member state of Cyprus in the Eastern Mediterranean and assessed their appropriateness with numerous criteria related to environmental sustainability, socio-economic and job impact, and climate resilience.

The results highlight trade-offs between immediate and long-run effects, between economic and environmental objectives and between expert evidence and societal priorities. Importantly, we found that a 'return-to-normal' economic stimulus is not only environmentally unsustainable but also economically inferior to most green recovery schemes. Policy implications for Mediterranean countries, both in and out of the EU, are outlined, and the need for regional cooperation in the form of a Mediterranean Green Deal is emphasised.

1. Introduction

Since mid-2020, despite the persistence of the COVID-19 pandemic, the response of governments around the world has partly moved from the provision of immediate relief to the design and implementation of economic recovery measures for the short and medium term. Many world leaders and international organisations have argued for stimulus packages that could make the recovery more resilient and sustainable, contributing to the transition to a climate-neutral world. Global economic support for relief and recovery from the pandemic has risen to significant levels since spring 2020 – but as regards the conformity of such stimulus measures with climate compatible growth and broader sustainability objectives, the picture is mixed.

In this context, we developed during the second half of 2020 a science-policy framework to screen for country-specific measures that contribute to the needed short-term economic stimulus, while also integrating climate policies and building resilience. We implemented this approach in the case of the Mediterranean EU Member state of Cyprus. This brief provides a summary of the detailed report (Zachariadis et al., 2020), which was prepared by researchers in Cyprus in collaboration with academics and policy experts from the United Kingdom and the World Bank. This could represent a best practice that could be replicated in other Mediterranean countries.

2. Mediterranean Context

As described in another Policy Brief of CMI-FEMISE (Basbug and Elgin, 2020), economic recovery packages adopted by non-EU Mediterranean countries up to November 2019 were insufficient to address the needs of households and individuals, and stronger temporary economic stimulus was necessary especially for sectors and workers that were hardest hit by the COVID-19 pandemic. The study presented here describes a science-policy approach to green recovery for a Mediterranean country that is a member of the EU; however, **the focus is not on specific stimulus measures that may be more relevant for EU countries, but on the methodology and stakeholder participation, which can be applied in any other country**. In fact, members of this research group have recently applied a similar approach in other countries, among which Tunisia (Howells, 2021a, 2021b); proper capacity-building and engagement of stakeholders can help overcome country-specific constraints related to political acceptance, inequalities, cultural barriers etc.

Moreover, such a science-policy framework can contribute to addressing climate change challenges in the frame of an initiative taken by the government of Cyprus on coordinating climate change action in the Eastern Mediterranean and Middle East. This initiative builds on the extensive evidence that the region is a hot spot of climate change. With the objective to develop a Regional Action Plan on Climate Action, a detailed work program has been developed, consisting of both a scientific component (ongoing during 2020-21) and an intergovernmental component (to follow from end 2021 onwards). For the scientific part, thirteen thematic Task Forces have been set up with topics ranging from energy and water to cultural heritage and tourism, with the participation of over 200 scientists, in order to collect existing knowledge, identify gaps in research and policy needs and provide a toolkit of possible actions to address climate challenges. This knowledge base will feed into the intergovernmental part of the Initiative, in which national Contact Points from the region will be mandated with the development of a Regional Action Plan for Climate Change. A Ministerial Meeting and a Leaders' Summit are planned for 2022 to prepare and launch the implementation of the Initiative and to install the appropriate coordination and monitoring mechanisms. The milestone for presenting results of the scientific component and initiating work of the intergovernmental component will be the 2nd Climate Change International Conference to be organized in Cyprus on 13-15 October 2021.

3. Approach and Results

As shown in Figure 1, our framework involves multi-criteria decision analysis, which incorporates both quantitative data derived from models and qualitative input provided by stakeholders. The use of such input is not only necessary because models cannot adequately simulate all possible impacts; it is also essential for ensuring stakeholder participation in the formulation of policy, thereby increasing the likelihood of social acceptance of the recovery interventions. **The framework has general application, and the underlying tools and processes are selected in such a way as to allow their adoption in other national or regional contexts**.

Figure 1: Approach to designing and assessing a green economic recovery strategy.

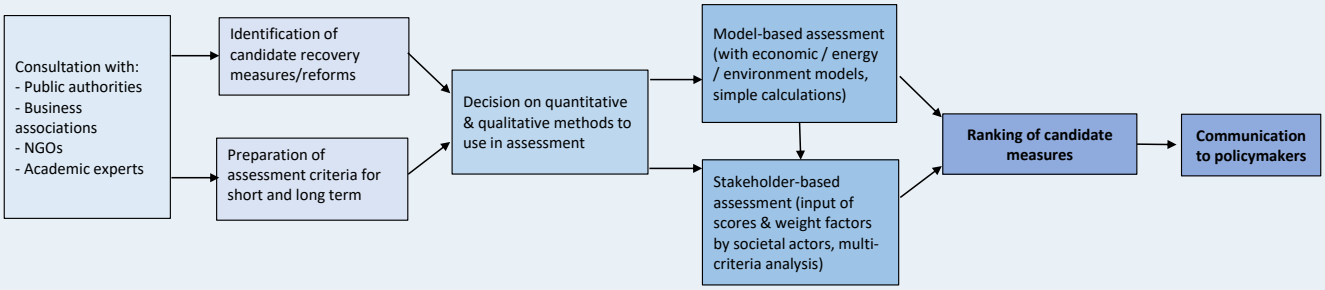


Table 1: List of the green recovery measures for Cyprus that were considered in the study.

Name of measure	***Sector***	***Investment in Cyprus in 2020-2030 (M€)***
M1. Immediate launch of grants for energy renovations of buildings from unused budget of 2020-21	Buildings	30
M2. New grant scheme for energy renovations of existing buildings, 2021-27	Buildings	140
M3. Grants for energy renovations of buildings under construction for upgrade to Near-Zero Energy Buildings	Buildings	70
M4. Installation of smart electricity meters	Electricity	55
M5. Virtual net billing for encouragement of photovoltaic installations by enterprises	Electricity	136
M6. Subsidy to loans of businesses certified with an environmental management system	Industry	2
M7. Business4Climate scheme - grants to enterprises with a verified low-carbon action plan up to 2030	Industry	10
M8. Implementation of existing Sustainable Urban Mobility Plans (SUMP)	Transport	100
M9. Construction of tram in the capital city of Nicosia	Transport	225
M10. Scrappage scheme for old cars to be replaced with battery electric vehicles	Transport	12
M11. Replacement of streetlights in municipalities and villages with energy efficient lighting	Electricity	45
M12. Tree planting along urban and intercity roads	Nature	85
M13. Fiscally neutral carbon taxation for economic sectors out of the EU Emissions Trading System	Horizontal	0.5
Total		**911**

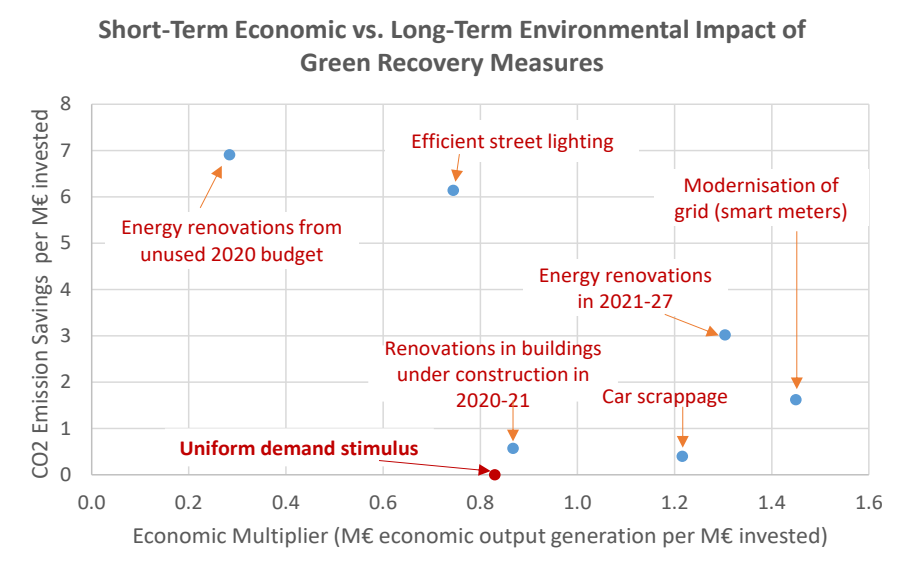
Since the outbreak of the pandemic, due to our close engagement with decision makers in Cyprus in previous years for the preparation of the country's long-term energy and climate strategy, we were familiar with policies that would be known to national experts – but we were also aware of measures that had not yet gained support by authorities though necessary to accelerate decarbonisation in the country in line with the objectives of the European Green Deal. After extensive deliberations with stakeholders from the public and private sector of the country, **we arrived at thirteen recovery measures to evaluate further**; these are listed in Table 1 and constitute a mix of adopted policies for 2030 – which could start immediately and fast to help the recovery – and more visionary measures that would enable the green transition of Cyprus. They are associated with energy efficiency

improvement, sustainable mobility, promotion of renewable energy, and nature-based interventions. We used a wide array of sustainability criteria for assessing these thirteen interventions in the short and long term, adapted from a comprehensive checklist that was developed by the World Bank especially for post-COVID19 economic stimulus interventions (Hammer and Hallegatte, 2020). A total of 23 criteria were used, ranging from effects of a measure on energy use and emissions to impacts on economic growth, jobs, energy security, social equity, and public acceptance. As the EU decided in 2019 to explicitly include the seventeen United Nations Sustainable Development Goals (SDGs) in its regular macroeconomic monitoring procedure, we linked each criterion with the SDGs that it addresses. A list of all criteria is provided in the Annex.

Quantitative evaluation was performed with an economic input-output model and the open-source energy systems model OSeMOSYS (Howells et al., 2011; Taliotis et al., 2020). The qualitative part involved state-of-the-art multi-criteria decision methods engaging stakeholders from government, enterprises, and civil society.

Results from energy and economic models. Figure 2 illustrates model-based results by displaying economic versus environmental effects of the modelled interventions. Results confirm the conclusion of analyses of previous recovery plans in western economies: **measures performing best in the short run are partly different from those with the largest positive effect in the longer term**. With regard to economic growth, energy efficiency measures yield the largest emission savings up to 2030, whereas in the short run measures M4 and M5 (installation of smart electricity meters and virtual net billing)[1] create the highest economy-wide effects. Impacts on employment are similar but not identical to those on economic output.

Figure 2: Relationship between short-term impact of measures on economic output and long-term effect on carbon emission savings.



[1] These two measures involve modernisation of the electricity grid and institutional reforms that would allow the introduction of flexible electricity tariffs – which can induce savings in electricity demand – and enable households and businesses to generate their own electricity (mainly from solar photovoltaic panels) under economically favourable conditions and hence increase the use of renewable energy in the country.

It is particularly interesting to observe the results of a scenario that assumes a 'return-to-normal' economic stimulus, where all recovery funds are allocated uniformly to households and businesses, and consumption continues as before. Figure 2 shows that a business-as-usual recovery is not preferable; it performs better than only two out of all the green measures. It also has a mediocre effect in terms of employment generation, whereas four green measures (shift to public transport, smart electricity meters, building energy renovations and even car scrappage in the short term), have more than double job benefits.

Results from multi-criteria assessment. Models cannot simulate all impacts, and the relative importance of each assessment criterion should not be determined by experts or public authorities alone. Therefore, a variety of stakeholders were invited to provide input for this assessment. They were selected in order to be representative of public authorities, businesses, and civil society, and participated in a dedicated workshop in October 2020, applying two state-of-the-art multi-criteria methods. To enable better interaction of the authors with stakeholders, to provide appropriate explanations about recovery measures and sustainability criteria, and to offer direct assistance for filling in the required data, the workshop was held with physical presence and therefore the number of participants had to be limited to ten, for social distancing reasons. Stakeholders were asked to provide a score for each measure per criterion, and then a weight factor of each criterion.

Figure 3: Evaluation of recovery measures M1-M13 according to groups of criteria based on stakeholder input (left) and final ranking of measures (right).

	Ranking of recovery measures through multi-criteria analysis and stakeholder input
M13	Fiscally neutral carbon tax reform for sectors out of the EU Emissions Trading System
M5	Virtual net billing for encouragement of photovoltaic installations
M2	New grants for energy renovations of existing buildings, 2021-27
M7	Grants to enterprises with verified low-carbon action plan up to 2030
M1	Immediate launch of grants for energy renovations from unused budget of 2020-21
M8	Sustainable Urban Mobility Plans
M6	Subsidy to loans of green businesses
M9	Construction of tram in the capital city of Nicosia
M12	Tree planting
M3	Energy renovations of buildings under construction within 2020
M4	Installation of smart electricity meters
M11	Energy efficient street lighting
M10	Replacement of old cars with electric vehicles

A review of the input of each workshop participant revealed that their preferences varied significantly by criterion, highlighting the different priorities of each stakeholder. For example, representatives of private enterprises valued short-term criteria more strongly than long-term ones, in contrast to other stakeholders. On the other hand, some governmental stakeholders provided a higher weight to long-term environmental criteria compared to short-term ones. Overall, most participants assigned a higher importance to the long term than to the short term, whereas there was no consistent preference to environmental versus economic/social criteria.

Figure 3 displays on the left the results of this evaluation averaged over all stakeholders. **The carbon tax reform (measure M13) received a high score for its environmental performance in both the short and the long term, and actions related to sustainable mobility (M8 and M9) also had a good score on long-term environmental performance**. Conversely, measures M5, M6 and M7, which mainly target businesses, got the highest scores regarding long-term economic effectiveness.

We then derived the final ranking of the recovery measures based on model results and stakeholder input, using average scores and weights of all stakeholders; this is shown on the right part of Figure 3. Some outcomes were expected – for example, grants for more energy efficient buildings, encouragement of photovoltaic installations, and investments in public transit. However, some results were more surprising. **A measure that is often considered unpopular and politically difficult – a budget-neutral carbon tax – was identified as a top priority.** In view of the extensive discussions about the social acceptance of such pricing schemes worldwide (Klenert et al., 2018), this seems to be a surprising but also encouraging result, as carbon pricing is widely considered by economists as a necessary ingredient of effective decarbonisation policies. In the context of the current pandemic, Engström et al. (2020, p. 805) call this kind of reform "excellent climate policies [which] also help deal with the coronavirus crisis by allowing reductions to labour taxes". A plausible explanation for the high score of this measure among Cypriot stakeholders is that exactly this kind of green tax reform (comprising an increase in environmental taxes to be compensated by reductions in labour taxation) has been promoted in Cyprus by some experts since 2015, with a consistent attempt to inform governmental authorities, NGOs and trade unions about its advantages. The resulting top performance in this assessment may be an indication that targeted and well-supported information flow to diverse stakeholders has been effective and may lead to societal acceptance of such a reform in the near future. Nevertheless, one has to be cautious in transferring this finding to other Mediterranean countries, both because of political turmoil and social unrest that an increase in environmental taxes may cause, and because some countries still apply fossil fuel subsidies, which are essentially negative carbon prices; careful removal of such subsidies would be a necessary first step to align energy prices with its true costs to society. Technical and financial support from the EU to south Mediterranean countries would be very useful in addressing this issue efficiently and fairly.

On the other hand, **modernising the energy infrastructure was not prioritised by stakeholders, because of the implementation delays that made the short-term benefits**

uncertain. It has been recognised in the literature that heterogeneity of stakeholders results in preferences which diverge from those of experts (Zelt et al., 2019). Even when they contradict modelling results and expert opinions, these views need to be taken seriously, considering the direct experience of stakeholders and decision-makers: some measures may have lower social acceptance than experts believe, and may require more in-depth work to consider stakeholders' concerns.

4. Conclusion

This policy brief has presented a multi-stakeholder framework to design an economic recovery strategy aligned with sustainability objectives. This needs to be complemented by a broader look at recovery measures, including those not directly related to energy and climate change. For instance, public investments will be directed to health and social care and information and communication technology, and green and climate considerations will need to be included in the design of these investments. Combining this framework with further work in other Mediterranean countries such as that mentioned above (Howells, 2021a, 2021b) can increase the usability of our approach to a broader set of nations in the region. Although it is always possible to do more sophisticated analyses to refine policy prioritisation, timeliness is always critical in a crisis. Our two-step approach – combining modelling when tools and data are available, and stakeholders' opinion to prioritise action – is one solution to find a compromise between timeliness and confidence. Because this approach is transparent and uses open-source methods, it can be applied in different countries and multiple policy contexts.

5. Summary and Recommendations

An appropriate science-policy framework for a green recovery should start from existing governmental plans on economic development and climate change mitigation, with the aim to select projects that provide the largest benefits in terms of short-term economic stimulus and job creation while being in line with the country's long-term decarbonisation objectives.

Irrespective of whether quantitative energy and economic models are available in a country, model-based evidence must be complemented by qualitative expert judgement for a series of sustainability and resilience criteria. For this purpose, input from multiple stakeholders from the public, private, and non-governmental sectors is needed. In the case of our study, results from stakeholder input confirmed that no single measure is the perfect one, hence a portfolio of measures is necessary – which reinforces the importance for policymakers to consider multiple criteria before arriving at decisions for investments and reforms.

On the way to design and implement a green recovery, a combination of simple methods with more sophisticated models is necessary to provide meaningful support to policymakers. Moreover, our findings clearly demonstrate trade-offs between the short term (2022), the long term (2030) and the climate neutrality (2050) targets, as well as the superiority of many green measures in comparison to business-as-usual demand stimulus.

More specifically, we found the following, which are of broader importance for decision makers:

- Some immediate measures with attractive short-term impact have short-lived benefits and turn out to be inferior in both economic and environmental terms by 2030.
- Institutional or regulatory changes, such as the gradual implementation of carbon pricing or the reform of electricity rules to enable decentralised power generation, may have long-term impacts with low cost.
- Modernising the energy infrastructure and nature-based solutions like tree planting are very promising for the longer term but turn out not to be preferable by many stakeholders, either because they put more value to short-term benefits or because they do not consider such measures to be feasible or cost-effective.
- Blunt economy-wide demand stimulus measures are not only environmentally unsustainable but also economically mediocre – they perform worse in promoting economic growth and employment than most of the green measures examined in this paper. This provides evidence against a 'return-to-normal' stimulus which can be found in very few studies in the literature.

Obtaining input by diverse societal stakeholders contributes to the 'democratization' of the policy formulation process (Jordan and Turnpenny, 2015) and enables ownership of the measures by national decision makers**. Linking the sustainability criteria with the UN Sustainable Development Goals facilitates the alignment of national recovery programmes with the EU and international policy agenda.** Solid empirical analysis of previous economic stimulus programmes can provide valuable evidence and inform policy making; this is especially relevant when distinguishing between the effects of smaller and larger green infrastructure projects (Engström et al., 2020), and investments benefiting high- and low-skilled workers (Popp et al., 2020) – aspects that are not captured by the simpler modelling framework used in this study. However, as the size of the post-pandemic fiscal stimulus is larger than anything similar in the past, and as policy makers need fast guidance to steer between health protection, economic relief and climate resilience, it may not be sufficient to rely on sophisticated analyses based on data from a few large industrialised countries. Therefore, the approach described in this paper may provide meaningful support for any country seeking guidance in designing its own green recovery plan. In any case, the process will need to be adapted to the local context and involve the right actors to ensure the resulting proposal has the right credibility and ownership in the country. Regional cooperation through capacity-building and exchange of experiences between Mediterranean policymakers can be extremely valuable for this purpose.

Implications for collaboration in the Mediterranean

The Mediterranean comprises countries of various size and population levels, at different stages of economic development, with a significant variety in natural, human and financial resources, and facing diverse political and economic challenges. They share, however, a

common future. They are located in a hotspot for climate change, with substantial expected adverse impacts on their welfare. Time is very limited, and the progress needed for decarbonisation is very substantial.

In this context, the importance of regional cooperation cannot be overstated. In the frame of the above-mentioned Cyprus Climate Initiative, the report of the Task Force on Energy, to be presented later in 2021, has identified coordination actions like sharing and co-developing energy infrastructures and networks, facilitating technical exchanges and capacity-building activities and conducting regional integrated assessments as essential elements towards decarbonisation. The European Union's model, although not fully transferable to other Mediterranean countries, can serve as a good example of a determined and consistent approach towards global climate stabilisation. **Along the lines of the European Green Deal, it should be possible to develop a Mediterranean Green Deal.**

In this frame, and in line with the objectives of the Climate Initiative, it would be very helpful to develop a comprehensive policy toolkit for a green post-pandemic recovery. Some policy instruments of such a toolkit will be more relevant for some countries, while other tools may be more suitable for others. However, common features will apply: satisfying a large portion of energy needs with zero-carbon electricity and heat; utilising the region's natural resources to provide zero-carbon fuels like synthetic hydrocarbons and hydrogen; improving energy efficiency in industry, buildings, and transport; and aligning the economic and research priorities of the countries with the strategic vision to a low-carbon future. Beyond technologies and sectoral approaches, a successful green transition requires a holistic framework that addresses the systemic changes needed in our socio-economic structures. Such a framework would encompass enabling actions in a wide range of industrial, education, labour, social and financial policies.

Geography and climate make it imperative for Mediterranean countries to address their common future in a coordinated manner. Policymakers can combine the available international knowledge with regional resources to facilitate the transition to climate neutrality, which will improve the well-being of all people in the region. International organisation and fora like the CMI's Climate and Energy Forum can play a crucial role in this regard.

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Annex

Criteria used for the evaluation of green economic recovery measures and their relation to UN Sustainable Development Goals (SDGs).

i) Performance criteria for the short term (for the next 2 years):

	Short name	*Explanation*	*Related SDGs*
Environmental impact	**Energy**	Energy savings (ktoe) per million Euros invested	7
	CO2	CO_2 emission savings (tn) per million Euros invested	13
	Other Environmental Impact	Other short-term environmental impact (on air quality, nature, water resources, land productivity, biodiversity etc)	3, 6, 11
Economic / social impact	**Economic multiplier**	Economic output generation (million €) per million Euros invested	8
	Jobs	Net employment generation (persons) per million Euros invested	8
	Demand in affected sectors	Does the initiative generate demand in the most affected sectors? Or does this initiative target new or different sectors? If in a different sector, can the workforce easily shift to this new sector? Does the initiative include measures to facilitate the transition of workers and the required investments?	4, 8
	Time to Implement	How long will it take to fully implement this initiative and to create jobs and activity (including project design, consultation processes, budget mobilization, procurement, etc.)?	8
	Infrastructure & Productivity	Does the measure improve existing infrastructure? Does this affect productivity in the short term?	9
	Technical feasibility	Is the intervention technically feasible with the country's capacity and know-how?	
	Affordability	Is there a risk that vulnerable households or firms will incur high costs due to the measure?	1, 10
	Social acceptance	Is the measure socially acceptable? Can it contribute to social objectives like reducing poverty and precarity?	1, 10

ii) Performance criteria for the longer term (mostly for 2030):

	Short name	*Explanation*	*Related SDGs*
Environmental impact	**Energy**	Energy savings (ktoe) per million Euros invested	7
	CO2	CO_2 emission savings (tn) per million Euros invested	13
	Low-carbon technologies / strategies	Does the intervention provide the technical means to better integrate or employ low-carbon technologies or strategies (for instance, through improvements to transmission and distribution infrastructure, public transit infrastructure, sidewalks or bike lanes, or by promoting denser urban development) that may yield benefits beyond the year 2030? Does it contribute to a deep decarbonisation objective by 2050?	13, 15
	Other Environmental Impact	Other short-term environmental impact (on air quality, nature, water resources, land productivity, biodiversity etc)	3, 6, 11, 15
Economic / social impact	**Economic multiplier**	Economic output generation (million €) per million Euros invested	8
	Jobs	Net employment generation (persons) per million Euros invested	8
	Energy security	Does the intervention increase local/national energy security?	7
	Infrastructure & Productivity	Will the intervention improve local economic productivity through access to better, more reliable infrastructure services?	9
	R&D and innovation	Can the intervention spur R&D or innovation in the specific technologies?	9
	Market Failures	Will the intervention address market failures, such as market distorting subsidies, pricing that fails to account for externalities, etc.?	8
	Economic / Climate Resilience	Does the intervention improve socio-economic resilience, that is, the ability of the population to cope with and recover from shocks? Does it improve their adaptive capacity, that is their ability to reduce negative impacts (such as adapting buildings to improve resilience to extreme temperature)?	1, 8, 10, 11
	Decarbonisation / Effect on NDC	Does the measure contribute substantially to decarbonisation of the economy by 2030? Does it significantly affect the country's NDC to be submitted to UNFCCC?	12, 13

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This Policy Brief is produced as part of the series of Policy Briefs on « Responding to the Challenges of COVID-19 in the Mediterranean » that is undertaken in partnership between FEMISE and the Center for Mediterranean Integration (CMI).