European Commission

JRC TECHNICAL REPORT

Linking the 'Recovery and Resilience Plan' and Smart Specialisation. The Greek Case

JRC Working Papers on
Territorial Modelling and Analysis
No 09/2022

Author:
Tolias, Y.

2022

Joint Research Centre

This publication is a Technical report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Contact information
Name: Anabela M. Santos
Address: Edificio Expo, C/Inca Garcilaso 3, 41092 Sevilla (Spain)
Email: anabela.MARQUES-SANTOS@ec.europa.eu
Tel.: +34 95 448 71 61

EU Science Hub
https://ec.europa.eu/jrc

JRC129830

Seville: European Commission, 2022

How to cite this report: Tolias, Y. (2022). Linking the 'Recovery and Resilience Plan' and Smart Specialisation. The Greek Case. JRC Working Papers on Territorial Modelling and Analysis No. 09/2022, European Commission, Seville, JRC129830.

The **JRC Working Papers on Territorial Modelling and Analysis** are published under the supervision of Simone Salotti, Andrea Conte and Anabela M. Santos of JRC Seville, European Commission. This series mainly addresses the economic analysis related to the regional and territorial policies carried out in the European Union. The Working Papers of the series are mainly targeted to policy analysts and to the academic community and are to be considered as early-stage scientific papers containing relevant policy implications. They are meant to communicate to a broad audience preliminary research findings and to generate a debate and attract feedback for further improvements.

Linking the 'Recovery and Resilience Plan' and Smart Specialisation. The Greek Case

Yannis Tolias

JRC TECHNICAL REPORT

JRC Working Paper on Territorial Modelling and Analysis No 09/2022

Index

Linking the 'Recovery and Resilience Plan' and Smart Specialisation. The Greek Case

Yannis Tolias (corresponding author)
tolias@innovatiasystems.eu
Innovatia Systems, Thessaloniki, Greece

Disclaimer: The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

Version: 13 May 2022

Abstract

This work analyses the alignment of investments in the Greek Recovery and Resilience Plan ('the Greek RRP') with the Smart Specialisation Strategies priorities (2021-2027) of the country and its regions to identify potential synergies and complementarities between funding instruments. The structure and methodology follows the approach that was applied in the Portuguese case by Marques Santos (2021). This methodology uses the information available in the Plan and its annexes and establishes the steps for carrying out a detailed analysis to identify and to classify the investments and actions able to enhance Research and Development and Innovation (R&I) and regional innovation ecosystems. The analysis indicates that up to €0.91billion of the Greek RRP (5.1% of the non-repayable EU support) directly supports the Smart Specialisation processes in Greece by providing for new or upgraded research infrastructures, mobility of researchers, and basic research in public-sector research organisations (universities and research centres), without explicitly earmarking funding for the smart specialisation priorities at the national or at the regional level. Moreover, an additional amount of €1.14billion (6.4% of the non-repayable EU support) contributes in an indirect manner to agri-food, tourism/creative industries and reskilling/upskilling, which are all smart specialisation priorities both at the national and at the regional level. Concluding, the Greek RRP mobilises a considerable amount of public funds and stimulates additional investments in a very short timeframe. The main challenge will be valorising these investments with appropriate policy measures using the approximately €5billion that are earmarked for policy objective 1 in the national and the regional operational programmes of this programming period, which by design are fully aligned with the national S3.

Keywords: Covid-19 crisis; Innovation; Government Policy; Greece.

JEL Classification: E32; O31; G38.

Acknowledgement: The author would like to thank Nicholas Lazarou, Karel Haegeman and Anabela Marques Santos (European Commission, Joint Research Centre) for their support and valuable comments, for their extensive review on earlier versions of this report.

Executive Summary

This work analyses the alignment of investments in the Greek Recovery and Resilience Plan ("the Greek RRP") with the priorities of the Greek Smart Specialisation Strategy ("the Greek S3") for 2021-2027.

In the aftermath of the debt crisis between 2008 and 2016, Greece's recovery was weak. The Covid-19 pandemic further cancelled any prospect of sustaining the growth trend between 2017 and 2019 by inflicting a GDP drop of 9.02% in 2020, compared to the EU27 average of 5.9%. To facilitate the post-pandemic recovery of the European Economy and mitigate the social and economic impact of the pandemic, the European Union launched in 2020 the Recovery and Resilience Facility and earmarked €723.8billion of support, of which a maximum of €17.77billion in the form of non-repayable support and a maximum of €12.72billion in loans in current prices will be directed to Greece. To claim this support, Greece submitted its RRP on 27 April 2021. The Greek RRP aims to "cover the gap in investment, GDP and employment of the last decade" by creating up to 200 thousand new, well-paid and permanent jobs and by increasing the national GDP by 7 percentage points by 2026.

Smart Specialisation is an innovation policy concept that aims to boost regional and national innovation, contributing to growth and prosperity by helping and enabling territories (i.e. regions or countries) to focus on their strengths or rectify weaknesses. Smart Specialisation Strategies, first launched within the Cohesion policy of the European Commission for the 2014-2020 programming period and continue in the current programming period by being a prerequisite for the policy objective of a more competitive and smarter Europe (Policy Objective 1 of the European Regional Development Fund). For the programming period 2021-2027, Greece has earmarked more than €5billion of community contribution and national funds under PO1, directly supporting its socio-economic transformation through eight priority areas.

Due to the apparent overlap of the objectives of the Greek RRP and the Greek S3, the analysis of their alignment is highly relevant. The Greek RRP can contribute to the Greek S3 by addressing barriers to innovation or by supporting the national and the regional research and innovation ecosystems. The Greek RRP can also improve its thematic concentration by aligning with the results of the S3 prioritisation exercises, especially priority areas and the outputs of the Entrepreneurial Discovery Process.

Following a detailed text analysis of the Greek RRP, we have identified seven measures that directly support the Greek S3, having a budget of €0.91billion, or 5.14% of the non-repayable EU support. The Greek RRP as a whole does not provide details of the territorial allocation of its budget; this is also true for the measures that are directly linked with the Greek S3, where only an amount of €207million (22.65% of the budget of measures that directly support the Greek S3) can be readily associated with five regions. Although multiple heterogeneous actions are included under a single measure in many cases, these seven measures mainly provide for new or upgraded research infrastructures, mobility of researchers, and basic research in public-sector research organisations (universities and research centres). Although these topics

are in line with the systemic recommendation of the Pissarides Report for uninterrupted support for 'blue-sky' research by excellent research teams, the relevance to the S3 could improve by adding more specific thematic constraints, i.e., by earmarking funding to S3 priority areas. Moreover, the R&I component of the Greek RRP seems to prioritise mature, ready-to-be-funded projects, irrespective of the S3 priority areas they belong to. This is consistent with the nature of the RRP as a funding instrument for reaping fast gains. Finally, the Greek RRP does not provide significant budgetary allocations to address the pressing financial barriers to innovation faced by small- and medium-sized enterprises in Greece, as identified by the latest Community Innovation Survey.

Regarding the Greek RRP measures that indirectly support the national S3, the text analysis indicates that they add up to €1.143billion, or 6.43% of the non-repayable EU support. Almost half of this amount (€567million) is earmarked to support the twin transition—mainly the Green, of the agri-food sector, which, beyond being a national S3 priority, is a regional priority in 12 out of the 13 Greek regions. Moreover, €162million are earmarked for various actions in support of Culture, Tourism and Creative Industries, which is also a national and a regional priority in 10 regions. Finally, €75million are earmarked for supporting the digital transition in manufacturing.

In the light of the findings above, we can assert that in terms of research and innovation, the Greek RRP has prioritised investment in the supply of excellent research in the Greek national innovation system, without addressing any other aspects of support. The main challenge for Greece will be to valorise these investments with appropriate policy measures using the approximately €5billion that are earmarked under policy objective 1 in the national and the regional operational programmes of the current programming period, which by design are fully aligned with the national S3.

1. Introduction

In the first years after Greece's accession to monetary union (2001-2007), Greece recorded high average growth rates of over 4%, due to the beneficial influence of lower financing costs, a stable exchange rate environment, and a significantly lower inflation risk. Nevertheless, these favourable conditions were not used to improve the productive model of the country, while the increased liquidity through the increased lending to both the private and the public sector was used to stimulate domestic consumption and support non-tradable sectors of the economy rather than stimulating productive investment and exports. This led to an increase in GDP to levels that were systematically higher than the country's potential (see **Error! Reference source not found.**), i.e., "unsustainable" growth rates, which was one of the causes of the Greek debt crisis that followed (2008-2015). On the contrary, during the decade 2010-2019, Greece's GDP was systematically below its potential, which confirms the country's development prospects and reinforces the need for appropriate policy action for these prospects to be valorised (Pissarides, et al. 2020).

Figure 1. GDP at market prices; contribution to GDP growth, percentage change on previous period.

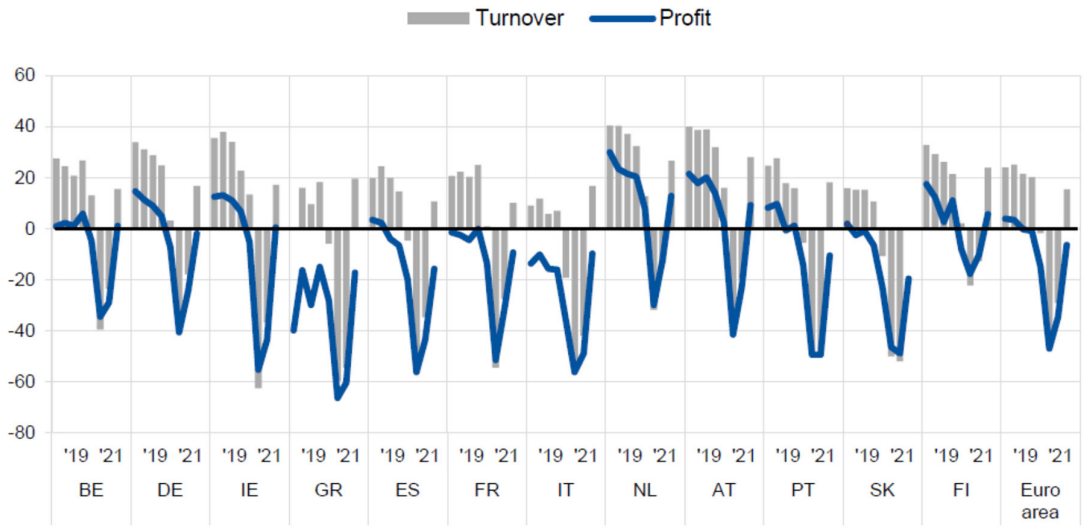
Source: Eurostat

Economic activity recovered during 2021, following the significant recession in 2020, which was the result of the COVID-19 pandemic. Fiscal support measures, the progress of the vaccination program, the adaptation of consumers and businesses to the extenuating circumstances imposed by the pandemic, the significant recovery of the tourism sector, contributed to immediate restart of the economy as early as the second quarter of 2021 and led to a significant growth of GDP by 8.3% compared to 2020. Particularly important was the recovery of both private consumption (due to deferred household consumption, supported by rising disposable income) and exports of goods and services. At the same time, increasing corporate investment and public consumption sustained domestic demand (Bank of Greece 2021, p. 100).

As expected, and in line with the rest of the Euro Area, the pandemic has affected the growth and the profitability of the Greek SMEs, which, according to the latest SAFE survey (European Central Bank

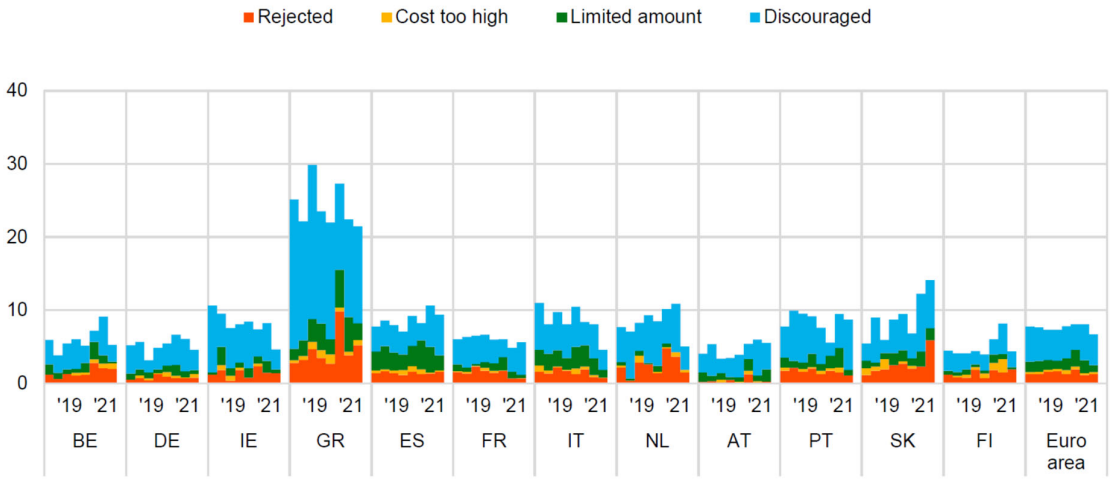
2021) were also weaker before the pandemic (see **Error! Reference source not found.**). Moreover, in the aftermath of the credit crisis, the Greek SMEs face higher barriers for accessing bank loans (see **Error! Reference source not found.**), which, in conjunction with the effects of the pandemic on turnover and profits, has created a dire situation in terms of current capital and prospects for investment. According to SAFE survey data reported by the Bank of Greece, public support to SMEs has been identified as the most significant factor for the external funding of SMEs since 2020 (Bank of Greece 2021, p. 242), and in contrast to the other Euro Area countries, access to finance still remains the most acute problem among Greek SMEs (**Error! Reference source not found.**).

Figure 2. Changes in turnover and profits of SMEs across the Euro Area



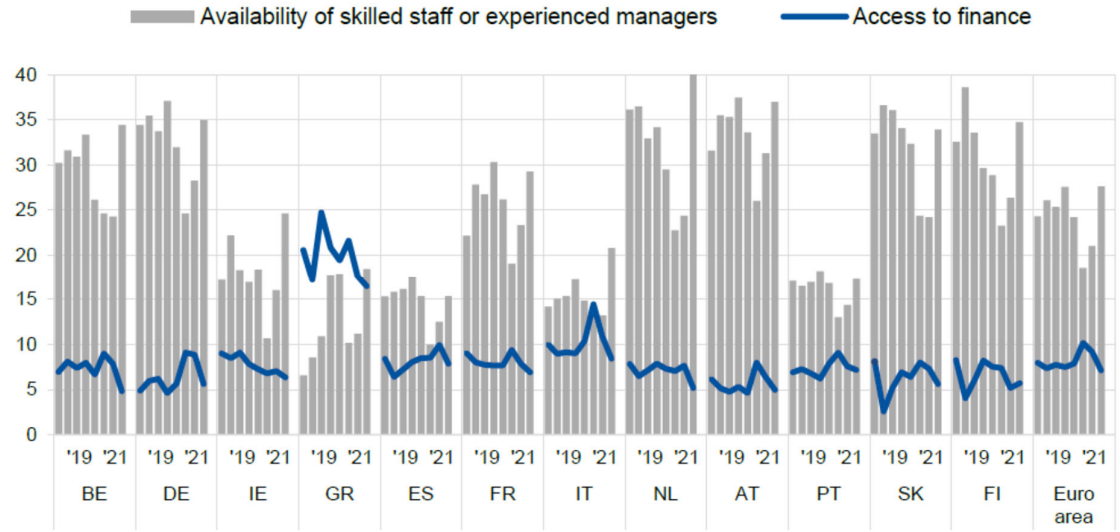
Source: European Central Bank 2021, Chart 33, p. 40

Figure 3. Obstacles to obtaining a bank loan for SMEs



Source: European Central Bank 2021, Chart 40, p. 43

Figure 1. The most important problems faced by SMEs across the Euro Area



Source: European Central Bank 2021, Chart 36, p. 41

Overall, despite the rebound of GDP in 2021, the effects of the COVID-19 pandemic further decelerated Greece's weak recovery after 10 years of debt crisis that cost 25% of its GDP. Although the official statistics on the effects of the COVID-19 pandemic at the regional level are expected in January 2023, an analysis by the Greek Tourism Confederation (SETE)[1] indicates that they will primarily affect five regions that receive 88% of the income from tourism (South Aegean, Crete, Attica, Central Macedonia and Ionian Islands).

In this context, the European Commission launched in 2020 the Recovery and Resilience Facility with a total allocation of €723.8billion within the Next Generation EU to facilitate the recovery of the EU economy from the COVID-19 pandemic. For Greece, the European Union's financial contribution will be a maximum of €17.77billion in the form of non-repayable support and a maximum of €12.72billion in loans in current prices.

This report applies the methodology developed by JRC B7 for Portugal (Marques Santos 2021) and provides an analysis of the RRP of Greece to identify investments and/or actions related to RDI and/or regional innovation eco-systems, and performs text analysis to identify components or investments in the Greek RRP that are explicitly associated with Smart Specialisation, thus providing a preliminary identification of the Greek RRP components with regional impact and the regional map of the RRP thematic areas. The report is based on a detailed text analysis of the public version of the Greek RRP

(1) See https://insete.gr/wp-content/uploads/2020/05/21-12_Ionian_Islands-2.pdf, table 8.

(Hellenic Republic 2021), the EC Staff Working Document SWD(2021) 155 final (European Commission 2021) and EC Council Implementation Decision of the plan COM(2021) 328 final (European Commission 2021) and related annexes.

Beyond this introductory section, the report is structured as follows: section 0 provides a summary of the Greek RRP including its territorial dimension; section 3 examines the Greek RRP from the perspective of supporting the National Smart Specialisation Strategy for the period 2021-2027, and finally section 0 provides the concluding remarks.

2. The Greek Recovery and Resilience Plan

On 27 April 2021, Greece formally submitted its national recovery and resilience plan (from now on, "the Greek RRP") to the Commission, in accordance with Article 18(1) of Regulation (EU) 2021/241. That submission followed a consultation process, conducted in accordance with the national legal framework [2] (Hellenic Republic 2021, p. 155).

The Greek RRP comprises four pillars: (1) Green Transition, (2) Digital Transition, (3) Employment, Skills and Social Cohesion and (4) Private Investment and Economic Transformation, which are further broken down into 19 axes as shown in Table 1. The column labelled "Additional Investments" in Table 1 refers to private investments in the fields of green and digital transition, innovation, creation of economies of scale and exports, co-financed by at least 50% with investors' equity and loans from the financial markets and/or European financial institutions such as the European Investment Bank and the European Bank for Reconstruction and Development (Hellenic Republic 2021, p. 9). There are three foreseen paths to finance private investments through the loan facility (Hellenic Republic 2021, p. 135):

- Loans through the European financing institutions (EIB, ERBD) will cover up to 50% of the investment cost of large, strategic investments, mainly by large private companies;
- Loans through commercial banks are expected to support investments by private companies of all sizes. RRP loans will finance up to 50% of the investment cost, with the remaining 50% to be financed 40%-60% by private equity and commercial bank loans;
- Investments through a new Equity Investment Fund-of-Funds. A Mezzanine FoF will provide up to €400million of financing to equity investment firms which, in turn will provide up to 70% of investment equity to small and medium enterprises. Innovate Now will provide

[2] The overall strategy and the key pillars of intervention were defined by the Ministries in close collaboration with the members of the Pissarides Committee. Then the Economic and Social Committee was asked to organize a second round of consultations with relevant stakeholders. Finally, the draft RRP of Greece was open for an online public consultation between 25 November and 20 December 2020.

up to €100million of financing to equity investment firms to support up to 70% of their equity to small and medium enterprises in the ICT sector.

According to the Council Implementing Decision, the European Union's financial contribution will be a maximum of €17.77billion in the form of non-repayable support and a maximum of €12.72billion in loans in current prices.

The plan foresees the creation of up to 200 thousand new, well-paid and permanent jobs and an increase of 7 percentage points to the national GDP. It also foresees several complementarities mainly with the MMF2021-27 as shown in Table 2.

Table 1. Structure of the Greek RRP

Pillar	Axis	RRP Budget (€million)	Additional Investments (€million)
1 Green Transition	1.1 Power-up: Transition to a new, environmentally friendly, energy model	1 200	2 574
	1.2 Renovate: Energy upgrading of the buildings stock and planning reform	2 544	4 279
	1.3 Recharge & Refuel: Transition to a green and sustainable transport system	520	1 197
	1.4 Sustainable use of resources, climate resilience and environmental protection	1 762	2 345
2 Digital Transition	2.1 Connect: Connectivity for citizens, enterprises and government	453	453
	2.2 Modernise: Digital transformation of the public sector	1 308	1 308
	2.3 Digitalisation of businesses	375	475
3 Employment, Skills, Social Cohesion	3.1 Increasing job creation and participation in the labour market	760	760
	3.2 Education, vocational education, training and skills	2 311	2 412
	3.3 Improve resilience, accessibility and sustainability of healthcare	1 536	1 536
	3.4 Increase access to effective and inclusive social policies	601	601
4 Private Investment and Economic Transformation	4.1 Making taxes more growth-friendly, improve tax administration and tax collection	183	183
	4.2 Modernise the public administration	184	184
	4.3 Improve the efficiency of the justice system	231	331
	4.4 Strengthen the financial sector and capital markets	25	25
	4.5 Promote research and innovation	444	554
	4.6 Modernise and improve resilience of key economic sectors	3 520	6 121
	4.7 Improve competitiveness and promote private investment and trade	234	409
	4.8 Loan Facility	12 728	31 819

Source: Hellenic Republic (2021:9-11).

Table 2. Greek RRP complementarities with MFF 2021-2027 and other European funding sources.

Axis code	Axis Name	MFF 2021-27						Other EU Funds										
		PO1	PO2	PO3	PO4	PO5	EMFF	InventEU	CEF	JTF	Horizon	Digital EU	SMP	Erasmus	Health	AMIF	LIFE	CAP
1.1	Power-up: Transition to a new, environmentally friendly, energy model		X							X								
1.2	Renovate: Energy upgrading of the buildings stock and planning reform		X			X												
1.3	Recharge & Refuel: Transition to a green and sustainable transport system		X															
1.4	Sustainable use of resources, climate resilience and environmental protection		X															
2.1	Connect: Connectivity for citizens, enterprises and government	X																
2.2	Modernise: Digital transformation of the public sector	X		X														
2.3	Digitalisation of businesses	X		X														
3.1	Increasing job creation and participation in the labour market				X													
3.2	Education, vocational education, training and skills				X													
3.3	Improve resilience, accessibility and sustainability of healthcare				X													
3.4	Increase access to effective and inclusive social policies				X											X		
4.1	Making taxes more growth-friendly, improve tax administration and tax collection																	
4.2	Modernise the public administration																	
4.3	Improve the efficiency of the justice system																	
4.4	Strengthen the financial sector and capital markets																	
4.5	Promote research and innovation	X									X							
4.6	Modernise and improve resilience of key economic sectors	X		X		X												
4.7	Improve competitiveness and promote private investment and trade																	
4.8	Loan Facility							X										

Source: Analysis of the recovery and resilience plan of Greece 2021

Legend: MFF = EU's multiannual financial framework 2021-2027; PO1 = Policy Objective 1 – A Smarter Europe; PO2 = Policy Objective 2 - A greener, low-carbon Europe ; PO3 = Policy Objective 3 - A more connected Europe = ; PO4 = Policy Objective 4 - A more social Europe; EMFF = European Maritime and Fisheries Fund; CEF = Connecting Europe Facility; JTF = Just Transition Fund; SMP = Single Market Programme; Health = EU4Health programme; AMIF = Asylum, Migration and Integration Fund; LIFE = Funding instrument for the environment and climate action; CAP Common agricultural policy funds.

Table 3. Degree of coverage of the six pillars of the Facility by the Greek RRP components as assessed by the Member State (MS) and the European Commission (EC).

Axis code and name			Pillars[1] of Reg EU/2021/241											
			(a)		(b)		(c)		(d)		(e)		(f)	
			MS	EC	MS	EC	MS	EC	MS	EC	MS	EC	MS	EC
1.1	Power-up: Transition to a new, environmentally friendly, energy model	1 200	●	■			○	□	○	■				□
1.2	Renovate: Energy upgrading of the buildings stock and planning reform	2 544	●	■			○	□	○	■				
1.3	Recharge & Refuel: Transition to a green and sustainable transport system	520	●	■			○	□	○					
1.4	Sustainable use of resources, climate resilience and environmental protection	1 762	●	■	○			■	○	■	○	□		
2.1	Connect: Connectivity for citizens, enterprises and government	453			●	■	○	□	○					
2.2	Modernise: Digital transformation of the public sector	1 308	○	■	●	■			○	■	○			
2.3	Digitalisation of businesses	375	○		●	■	○	■						■
3.1	Increasing job creation and participation in the labour market	760		■	○	■	○	■	●	■	○	□		■
3.2	Education, vocational education, training and skills	2 311		■	○	■	●	■	○	■	○	□	●	■
3.3	Improve resilience, accessibility and sustainability of healthcare	1 536		■		■		□	○	□	●	■		
3.4	Increase access to effective and inclusive social policies	601		□	○	■	○	□	●	■		■	○	■
4.1	Making taxes more growth-friendly, improve tax administration and tax collection	183		□	○	■	○	□			●	■		
4.2	Modernise the public administration	184				■		■	○		●	■		
4.3	Improve the efficiency of the justice system	231		■	○	■	○	■	○	□	●	■		□
4.4	Strengthen the financial sector and capital markets	25				■	○	□			●	■		□
4.5	Promote research and innovation	444		□		■	●	■		□			○	■
4.6	Modernise and improve resilience of key economic sectors	3 520		■	○	■	●	■	○	■	○		○	
4.7	Improve competitiveness and promote private investment and trade	234					●	■			○	■		
4.8	Loan Facility	12 728		■		■		■						

Source: Adapted from the Greek RRP (2021, 31-33) and the EC Staff Working Document (2021, 34-35).

Legend:
[1] The six pillars according to Regulation EU/2021/241 are (a) Green Transition; (b) Digital Transformation; (c) Smart, sustainable and inclusive growth, including economic cohesion, jobs, productivity, competitiveness, research, development and innovation, and a well-functioning internal market with strong SMEs; (d) Social and territorial cohesion; (e) Health and economic, social and institutional resilience, with the aim of, inter alia, increasing crisis preparedness and crisis response capacity and (f) Policies for the next generation, children and the youth, such as education and skills.
Degree of coverage as assessed by the Member State: "■" component significantly contributes to the pillar; "□" component partially contributes to the pillar.
Degree of coverage as assessed by the European Commission: "●" component significantly contributes to the pillar; "○" component partially contributes to the pillar.

On 17 June 2021, the European Commission provided a positive assessment of the Greek RRP (SWD(2021) 155 final). On 13 July 2021, it was formally approved by the European Council, which allows Greece to sign the grant and loan agreement and start receiving the funds for the implementation of its Plan. The Commission analysis of the Greek RRP concludes that it deserves a rating of A under all the evaluation criteria mentioned in Annex V of RRF Regulation except 2.9, where the ranking was B. In summary, according to the Commission's internal working document (2021):

- The plan follows a holistic approach to achieve recovery, while enhancing socio-economic resilience. Overall, the plan is balanced and focuses on Greece's main challenges that, besides the twin transition, relate to the country's social and educational needs, the strengthening of the public administration and the justice and financial systems, the enhancement of competitiveness in key sectors, as well as the need to boost the productive potential of the economy by promoting research and innovation and improving the business environment.

- It represents, to a large extent, a comprehensive and adequately balanced response to the economic and social situation, thereby contributing appropriately to all six pillars referred to in Article 3 of the RRF Regulation, taking the specific challenges and the financial allocation of Greece into account.

- It is expected to contribute to effectively addressing a significant subset of economic and social challenges identified in the country-specific recommendations, including the fiscal aspects thereof, and recommendations made pursuant to the Macroeconomic Imbalances Procedure.

- It is expected to have a high impact on strengthening the growth potential, job creation, and economic, social and institutional resilience of the Member State, on contributing to the implementation of the European Pillar of Social Rights, including through the promotion of policies for children and youth, and on mitigating the economic and social impact of the COVID-19 crisis, thereby enhancing the economic, social and territorial cohesion and convergence within the Union.

- It is not expected to do significant harm to environmental objectives within the meaning of Article 17 of Regulation (EU) No 2020/852 (the principle of 'do no significant harm').

- It is expected, to a large extent, to make a significant contribution to the green transition or to address the challenges resulting from it and ensures that at least 37% of its total allocation contributes to the climate target.

- It is expected, to a large extent, to make a significant contribution to the digital transition or to address the challenges resulting from it and ensures that at least 20% of its total allocation contribute to support digital objectives.

- Its implementation is expected, to a large extent to bring about a structural change in the administration and in relevant policies and to have a lasting impact.

- Its monitoring arrangements are expected to be adequate to ensure effective monitoring and implementation of the recovery and resilience plan, including the envisaged timetable, milestones and targets, and the related indicators.

- The justification provided by Greece on the amount of the estimated total costs of the recovery and resilience plan is to a medium extent reasonable, plausible, in line with the principle of cost-efficiency and commensurate to the expected national economic and social impact on the economy. Greece has provided sufficient information and evidence that the amount of the estimated cost of the reforms and investments of the recovery and resilience plan to be financed under the Facility is not covered by existing or planned Union financing.

- The arrangements to prevent, detect and correct corruption, fraud and conflicts of interest when using the funds provided under the Facility, including the arrangements aimed to avoid double funding from the Facility and other Union programmes, are assessed to be adequate, provided that the pending issues are addressed before the first payment request, through the dedicated milestone.

- Taking into consideration the qualitative assessment of all components of Greece´s recovery and resilience plan, their individual weight (importance, relevance, financial allocation) and their interactions, the plan contains measures for the implementation of reforms and public investments which, to a high extent, represent coherent actions.

2.1 The territorial dimension of the Greek RRP

The Greek RRP has identified a total of 170 investments and reforms, each one of them having a distinct Measure Identity (Measure ID). A detailed text analysis has shown that only two of these (corresponding to 1.17% of interventions, and 2.45% of non-repayable support) under Axis 1.1, having a budget of €437million, explicitly contain a geographic dimension.

Moreover, 17 investments and reforms, having a budget of €2.265billion (10% of interventions, 12.8% of non-repayable support), can, on the basis of their description, be partially associated with subnational territorial attributes, e.g., regions. However, their territorial budget allocation is not provided.

From the above, we conclude that the Greek RRP was conceived as a national funding scheme whose regional financial allocations are still largely undefined. In fact, one of the main reservations expressed during the public consultation of the Greek RRP was the lack of specificity in the breakdown of expenditure (Hellenic Republic 2021, p. 155, 7th para.).

3. The Greek RRP as a potential instrument to support Smart Specialisation

3.1 Bottlenecks and challenges for innovation

According the Pissarides Committee Report (Pissarides, et al. 2020, section 5.4) Greece's position in international innovation rankings is slightly above the average (57th in the ranking of pillar 12 of the Global Competitiveness Index among 140 countries, and 41st in the Global Innovation Index among 129 countries with five other EU Member-States in the south of Europe being between 27 and 32). In terms of the five classes of actors within an innovation ecosystem (i.e., research organisations, innovation intermediaries, innovative enterprises, users of innovations and human resources), the Pissarides Report asserts that none is at the level required for Greece to have a competitive innovation ecosystem. Although there is an increasing number of innovative companies in the recent years, their number is still low; applied research performs relatively good in competitive EU-funded programmes; human resources are abundant in terms of talent and education, but not as to experience. However, Greece is still behind in terms of innovation intermediaries and technology transfer, basic research (for radical and far-reaching discoveries), and users of innovation since the public sector does not innovate as fast as needed, and in the private sector there are very few companies that can become early adopters of new technologies. The Pissarides Report suggested the following system-wide policy recommendations across three dimensions:

- **Research Organisations** (Higher Education Institutes and Public Research Centres). Evaluation of the research performance and identification of the research teams with the best prospects to further develop competitive research; Provide €500million for basic research, on top of the existing institutional funding, to excellent research teams within four years, following the concepts and delivery methods of ERC Grants; Establish a National Science Organisation to plan, evaluate and fund research in Greece with a long-term horizon and replace the General Secretariat for Research and Innovation and the Hellenic Foundation for Research & Innovation.

- **Technology Transfer.** Restructure and improve the effectiveness of Technology Transfer Offices; disengage contract research by higher education or public research organisations from the constraints of the public accounting system used by research organisations to improve flexibility.

- **Support to innovative enterprises.** Improve the tax regime for Greeks of the diaspora wishing to work for innovative enterprises established in Greece; simplify the legislative framework and provide incentives for proof of concept projects in the public sector; provide tax incentives for Business Angels;

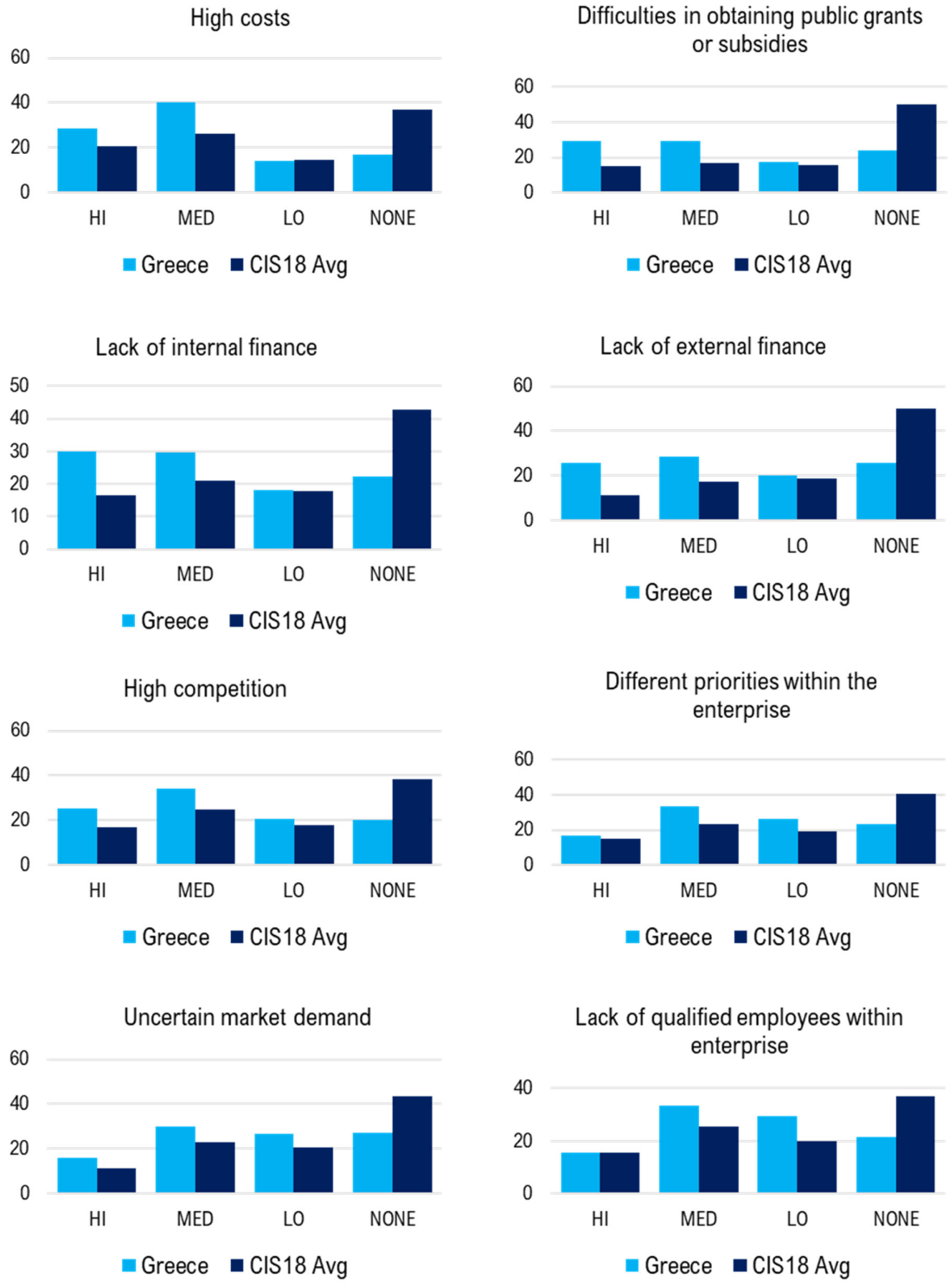
- **Promote the development of innovation hubs and innovation clusters, improve the support services provided therein.**

A report on the barriers for the diffusion of innovation in Greece commissioned by the General Secretariat for Research and Innovation (GSRI) of the Ministry of Development and Investment ([3]) has identified 41 barriers to innovation in the national innovation system in six categories (17 related to the structure and the characteristics of Greek enterprises, 5 related to higher education and research organisations, 7 related to human resources, 4 related to the linkages across the quadruple helix, 3 related to funding, and 3 related to legislation) (Seven Sigma PC 2020, pp. 131-132). A ranking of their importance was not attempted. Moreover, the same report (Annex B, pp. 113-129) examined the degree of implementation of 60 recommendations proposed by the Foundation for Economic and Industrial Research (IOBE) in 2012[4] to reduce the barriers to the commercial exploitation of innovations in Greece: the report finds that 11 of these recommendations were implemented in full, 35 partially and 14 were not addressed at all.

To put the above in contrast with the perception of Greek enterprises, we have processed data from the Community Innovation Survey 2018, and specifically on the level of importance of the hampering factor for innovation activities[5]. The results indicate that the main factors that hampered the innovation activities of Greek enterprises between 2016 and 2018 are, in decreasing importance, high costs (score of 2.17[6] out of 3.00, vs 2.10 out of 3.00 for the average CIS18 ranking), difficulties in obtaining public grants or subsidies (GR: 2.16, CIS: 1.98), lack of internal finance (GR: 2.15, CIS: 1.97), lack of external finance (GR: 2.08, CIS: 1.84) and high competition (GR: 2.06, CIS: 1.98). The other five factors (different priorities within the enterprise, uncertain market demand, lack of qualified employees within enterprise, lack of collaboration partners, and lack of access to external knowledge) were ranked in par with the other CIS participants. Figure 2 presents the distributions of the levels of importance of the top eight most important factors. The evidence suggests that prohibitive costs and low availability of funding are the main factors inhibiting innovative activities among Greek enterprises. The noteworthy low ranking of the factor related to the lack of qualified employees within the enterprise is consistent with the evidence in **Error! Reference source not found.** above.

([3]) https://gsri.gov.gr/meleti-epilysis-ton-ebodion-gia-tin-anaptyxi-kai-diachysi-kainotomias-septemvrios-2020/
([4]) The report entitled 'Barriers to Commercial Utilisation of Innovations in Greece' is not publicly available. (http://iobe.gr/research_dtl_en.asp?RID=51)
([5]) Eurostat table INN_CIS11_HAM; Enterprise: Total; Level of importance: High, Medium, Low, None. Size classes in number of employees: Total; Statistical classification of economic activities in the European Community (NACE Rev. 2): Innovation core activities (Com.Reg. 995/2012); Unit of measure: Percentage; Time: 2018.
([6]) The weighted average of the four categorical variables provided by the dataset was calculated as follows: High: 3, Medium: 2, Low: 1, None: 0. Therefore, a score of 3 indicates maximum importance for the factor, while a value of 0 indicates minimum importance.

Figure 2. Distributions of the levels of importance of factors hampering innovation activities: Greece and CIS2018 averages.



Source: Own elaboration of Eurostat Community Innovation Survey 2018 data.

3.2 The National S3 for 2021-2027

Table 4 presents the regional and the national priority areas for the respective 13 regional and the national S3s for the period 2014-2020. The national S3 priority areas for the period 2021-2027 were finalised by the General Secretariat for Research and Innovation in September 2021, following a public consultation. The eight national S3 priority areas of the period 2014-2020 remain mainly unchanged, having been rephrased as follows ([7]):

1. Industrial production, materials, construction
2. Culture, Tourism, Creative Industries
3. Agri-food
4. Environment, Sustainable Development, Circular Economy
5. Health and Pharmaceuticals
6. Smart Transport and Logistics
7. Sustainable Energy
8. Information and Communication Technologies

A new architecture has been decided for designing and implementing S3 in Greece in the programming period 2021-2027. Instead of following a hybrid model where a national and 13 regional S3s co-exist (fulfilling the ex-ante conditionality for both the national and the regional OPs), this time, the enabling condition 1.1 for policy objective 1 ([8]) will be fulfilled only at the national level, by a national S3 supported by the so-called 'regional antennae'. No further details are publicly available yet.

The national S3 was still under elaboration by the time this report was written, expected to be finalised by June 2022 together with the final texts of OP Competitiveness 2021-27 and the 13 Regional Operational Programmes that will be submitted to DG Regio by the end of May 2022.

([7]) Details are provided in Greek here: https://gsri.gov.gr/ethniki-stratigiki-exypnis-exeidikefsis-2021-2027/
([8]) See annex IV of regulation (EU) 2021/1060

Table 4. Regional S3 priorities 2014-2020.

Attica (EL30)	North Aegean (EL41)	South Aegean (EL42)	Crete (EL43)
• Creative Economy • Blue Economy • Sustainable Economy of Societal Needs	• Mechanisms and Means of Integrating Innovation and Entrepreneurship into the Economy • Development of the Agri-Food Sector • Tourism - Nature - Culture • Islands of Equal opportunity	• Experience-based Tourism • Agri-food • Fishing and Fisheries • Green Energy and Economic Sustainability	• The agri-food complex • The cultural-touristic complex • The environmental complex • The knowledge complex

Eastern Macedonia-Thrace (EL51)	Central Macedonia (EL52)	Western Macedonia (EL53)	Epirus (EL54)
• Capacity building and human capital • Targeted supply of knowledge to stimulate entrepreneurial dynamics • Agri-food complex • Emerging economic sectors	• Agri-food • Building materials • Textiles and apparel • Tourism • ICT • Energy technology • Environmental technology • Transportation and supply chain technology	• Sustainable energy and environmental management • Fur and leather apparel • Agri-food • Metals and- construction materials • Creative Tourism	• Agri-food • Experience Industry: Tourism, Culture & Creative industry • Academic institutions, ICT and young entrepreneurship • Health and wellbeing

Thessaly (EL61)	Ionian Islands (EL62)	Western Greece (EL63)	Continental Greece (EL64)
• Agri-food • Metals and construction materials • Creative Tourism • Sustainable Energy and Environment • Information & Communications Technologies • Healthcare and Rehabilitation • Capacity building	• Tourism • Agri-food • Marine/Blue economy • Cultural & Creative economy • Health services through biomedicine	• Agricultural production - Fisheries and food products • Tourism, Culture • Materials and microelectronics	• Agri-food, fisheries, and aquaculture • Experience industries (tourism, culture, creative industry) • Metal products • Green innovation and circular economy

Peloponnese (EL65)	Greece
• Agri-food and gastronomy • Tourism – Culture & Creative economy • Horizontal actions for manufacturing	• Materials - Construction • Culture, Tourism, Creative Industries • Agri-food • Environment & Sustainable Development • Life Sciences, Health & Medicine • Transport & Logistics • Energy • ICT

Source: General Secretariat for Research and Innovation, Ministry of Development and Investment.

3.3 The Greek RRP and the S3 2021-2027

In discussing its relevance to the National RIS3, the Greek RRP claims to be directly linked to the goals and priorities of the National Strategy for Research and Innovation for Smart Specialization 2014-2020, incorporating the results and experience from its implementation (p. 61, last paragraph). Two axes (4.5 and 3.2) are explicitly mentioned as relevant with the national S3.

Axis 4.5, having a budget of €443million, is the main component of direct S3-related interventions: it aims at enhancing public and private investment in R&D, strengthening the links between science and businesses, developing R&D infrastructure, and encouraging innovative companies to invest in R&D. Through these, the Greek RRP expects to increase competitiveness and the exploitation of intellectual property rights, empower the start-up innovation ecosystem, mobilise R&D expenditure, while reversing the 'brain drain'. In the analysis of investments and reforms under axis 4.5, the eight S3 priority sectors are explicitly mentioned only in one investment having a budget of €25million.

Axis 3.2 on education, training and skills, includes reforms at all levels of education with an overall aim to increase long-term employment and productivity by effectively addressing skills mismatch and creating a direct link between qualifications and labour market needs. It includes a specific reform called 'Strategy for Excellence in Universities & Innovation' with a budget of €471million that foresees, among others:

- a funding scheme of 70 research projects (Clusters of Research Excellence) directed to prominent national or international academics for incentivising them to carry out innovative and collaborative research projects with private sector companies in Greece;
- a funding scheme (Visiting Professorships) incentivizing 250 distinguished academic staff in foreign universities or research institutes, primarily targeting universities outside the EU, to join Greek universities for a period of maximum three years and participate in collaborative research projects with private sector companies from Greece or abroad;
- upgrading the research and educational infrastructures of selected Greek universities and university departments of applied sciences and technology;
- financing 249 industrial PhDs for three years in collaboration with private sector companies;
- providing funding to individual researchers or groups of researchers based on criteria of excellence.

Axis 4.6 contains a reform of the legal framework on the attraction of strategic investments, including the creation of a new category of investments with additional incentives, the simplification and consolidation of the licensing procedure, and the inclusion of new fields of economic activity. It also contains sector-specific interventions that support smart manufacturing, the creative Industries, tourism, agri-food and

aquaculture. These measures are flanked by reforms of the business environment provided by Axis 4.7, such as tax incentives, cooperation to promote economies of scale and extroversion of enterprises, the simplification of key administrative processes such as registering property and obtaining construction permits, and improvements in the quality of regulation particularly in areas such as manufacturing and logistics. Among others, proposed measures aim to support the sustainable development of agriculture and the promotion of Greek agricultural and food products.

Finally, several reforms and investments proposed under Axes 2.1, 2.2 and 2.3 indirectly support ICT by providing much needed updated infrastructure (e.g., the 5G corridors, the ultra-fast broadband infrastructure, the fibre interconnection of the islands) or incentives for businesses to digitally transform themselves.

Table 5 presents the reforms and the investments in the Greek RRP that are directly related ([9]) to the national S3, while Table 6 presents the reforms and investments indirectly related ([10]) to the national S3.

([9]) Direct linkages refer to investments in the RRP that can financially support any phase of innovative projects that are aligned with Smart Specialisation priority areas.
([10]) Indirect linkages refer to investments in the plan that affect the regional innovation eco-system of the territories, by acting in the barriers, obstacles, or challenges to innovation activities or business operations.

Table 5. Matching interventions and reforms of the Greek RRP and the Smart Specialisation priorities-Direct linkages.

Seq. No.	Axis	Measure ID	Description	Amount (€million)	Contribution to S3	Priority Area(s)	Region(s) affected
1	4.5	16624	Improve infrastructure in 13 (named) research centres and establishment of a new Research Centre in Ioannina (Epirus, EL54)	207	Updated research infrastructures in all Greek public Research Centres	All	Attica Central Macedonia Crete Western Greece Epirus
2	4.5	16618	(i) provision of horizontal financing for basic research; (ii) financial support to flagship research projects in interdisciplinary sectors with practical applications for the Greek economy; (iii) financial support to applied research for precision medicine implemented through a non-profit organisation Hellenic Precision Medicine Network; (iv) provision of funding for unmanned systems research and development centre to support applied research on drones; (v) establishment of an applied R&I institute on artificial intelligence, data processing and algorithm development; (vi) financial support for the delivery of market-translatable sustainable materials technologies; (vii) financial support for the participation in European partnerships, namely Euro-HPC (High Performance Computing) and Key Digital Technologies.	140	Retention of young researchers ('brain-gain') Focused applied research	(i) All (ii) All (iii) Health/Pharma (iv) None (v) ICT (vi) Materials (vii) ICT	All (not specified)
3	4.5	16654	Development of a "next generation" information system, which is expected to combine different types and forms of collaborative infrastructures to enhance institutions' decision-making in real time. The system shall be composed of state-of-the-art technologies, such as artificial intelligence, and shall be designed to meet the needs of a diverse range of end users on a long-term basis.	50	Focused applied research	ICT	All (not specified)
4	4.5	16971	Support 36 project proposals that are evaluated with a very high score in the "excellence" criterion in smart specialisation (RIS3) priority areas but were not financed under HORIZON 2020 due to budgetary constraints. The investment shall support the selected proposals with funding and is expected to attract co-funding from the private sector by strengthening the link between the public science sector and businesses	25	Applied research in S3 priority areas	All	Not specified
5	4.5	16622	Support 13 project proposals by small and medium-sized enterprises that have received the HORIZON 2020 "Seal of Excellence" quality label and are eligible for a grant, but not financed under HORIZON 2020 due to budgetary constraints.	18	Applied research in S3 priority areas	All	Not specified

Seq. No.	Axis	Measure ID	Description	Amount (€million)	Contribution to S3	Priority Area(s)	Region(s) affected
6	4.5	16621	Provide accredited start-ups with promotion services globally and expand these services to the entire national innovation ecosystem including research centres, innovation clusters, competence centres and highly innovative companies.	3	Support access to global markets to start-ups	All	Not specified
7	3.2	16289	(i) a funding scheme of 70 research projects (Clusters of Research Excellence) directed to prominent national or international academics for incentivising them to carry out innovative and collaborative research projects with private sector companies in Greece; (ii) a funding scheme (Visiting Professorships) incentivising 250 distinguished academic staff in foreign universities or research institutes, primarily targeting universities outside the EU, to join Greek universities for a period of maximum three years and participate to collaborative research projects with private sector companies from Greece or abroad; (iii) upgrading the research and educational infrastructures of selected Greek universities and university units of applied sciences and technology; (iv) financing 249 industrial PhDs for three years in collaboration with private sector companies; (v) providing funding to individual researchers or groups of researchers based on criteria of excellence; (vi) financing the development of the Educator Certificate, which is a program for the certification of pedagogical and teaching adequacy of school educators (half a year attendance of lessons in university and half a year teaching in schools as a trial internship for 30 000 candidate teachers) and (vii) the digital Transformation of the National Hellenic Libraries Network	471	(i) – (iv) Mobility in higher education and research, including intersectoral mobility (v) Blue sky research (vi) Not relevant (vii) Not relevant	All	All
	TOTAL:			**914**			

Source: Own elaboration based on the Greek RRP (Hellenic Republic 2021) and its assessment by the European Commission (COM(2021) 328 final and annex).

Table 6. Matching interventions and reforms of the Greek RRP and the Smart Specialisation priorities-Indirect linkages.

Seq. No.	Axis	Measure ID	Description	Amount (€million)	Contribution to S3	Priority Area(s)	Region(s) affected
1	3.2	16913	The reform aims to improve the lifelong learning framework with a view to increasing its quality and labour market relevance. Updated Labour Market Diagnosis; Horizontal upskilling programmes targeting various population groups and aimed at providing a) baseline and medium-level digital skills, b) green skills and c) financial literacy skills.	1.04	Digital and green skills to the workforce. Better understanding of the labour market.	All	All
2	3.2	16792	Labour force skilling, reskilling and upskilling through a reformed training model (Vocational Education & Training Reform). 1) improving quality control (e.g., evaluation systems tracking progress and performance of trainees); 2) updating their modules in accordance to current and future labour market needs, as part of the comprehensive reform of OAED's active labour market policies (ALMPs), 3) promoting e-learning and digitisation of training content, 4) reform of the 'Account for Employment and Vocational Training' (LAEK) that funds vocational training programs for employees.	131	Better forecasting of the demand for skills and preparation of relevant curricula.	All	All
3	4.6	16960	(1) set up of an IT System for the delineation of watercourses to contribute to nature and biodiversity protection, (2) establishment of a digital bank for building-plot ratio transactions, (3) development of a Single Digital Map, (4) set up of a central system for the measurement and monitoring of air pollutants and marine pollution to contribute to the improvement of air quality, and (5) establishment of interactive digital services and digital content production for the promotion of cultural exhibits with Augmented and Virtual Reality for Museums	174	(4) Monitoring of air and marine pollution; (5) Advanced ICT for culture	(4) Environment, Sustainable development and circular economy; (5) Culture, Tourism, Creative Industries	All
4	4.6	16715	This reform shall introduce labour and social security legislation for the cultural and creative sector with a view to increasing the share of declared work in the sector and supporting the industry's professionals and protecting their intellectual property rights. The objective of this reform is to increase the resilience of the cultural and creative sector	30	Improved monitoring of the cultural and creative sector and better protection of IPR	Culture, Tourism, Creative Industries	All
5	4.6	16735	Utilizing "arts on prescription", promoting social cohesion, and tapping on the silver economy	38	Supply-side measure to support the cultural sector and tourism	Culture, Tourism, Creative Industries	All
6	4.6	16970	Highways for Nature and Culture	30	Improve intermodal accessibility and facilities at 30 major cultural sites	Culture, Tourism, Creative Industries	All

Seq. No.	Axis	Measure ID	Description	Amount (€million)	Contribution to S3	Priority Area(s)	Region(s) affected
7	4.6	16485	Cultural Routes at Emblematic Archaeological Sites and Monuments	11	Create synergies between culture and tourism	Culture, Tourism, Creative Industries	All
8	4.6	16723	Skill building for creative and cultural professionals	5	Support to the digital transformation of the cultural sector	Culture, Tourism, Creative Industries	All
9	4.6	16921	Reskilling and Upskilling in Tourism	46	The reskilling programmes shall cover several specialisations and address the future needs of the sector for the post COVID-19 era	Culture, Tourism, Creative Industries	All
10	4.6	16721	Acceleration of smart manufacturing. Financial support for small and medium-sized enterprises in the industrial sector to upgrade their manufacturing equipment and infrastructure with state-of-the-art smart technologies with a low environmental impact. The measure shall also support industrial schemes and clusters of enterprises in important industrial value chains that promote the competitiveness of the Greek industry and its transition to Industry 4.0.	75	A value-chain oriented intervention to support transition to Industry 4.0	ICT Industrial production, materials, construction	All
11	4.6	16626	Economic transformation on the Agricultural Sector, covering a) Innovation and green transition on processing agricultural products, b) modernisation of the primary sector, c) green tourism development, d) cultivation restructuring and e) animal genetic improvement.	520	A demand-side measure to support various aspects of the transformation of the agricultural sector.	Agri-food; Environment, Sustainable development and circular economy; Tourism	All
12	4.6	16653	Digital Transformation of the Agri-Food Sector	47	A demand-side measure to support the digital transformation of the agri-food sector	Agri-food ICT	All
13	4.6	16584	Proposals for actions in the Aquaculture Sector. This investment comprises innovative equipment solutions, research, transfer of know-how and training of human resources with a view to modernising and diversifying aquaculture production. It also creates a genetic material bank for endangered species and commercial species of freshwater fish.	35	A holistic intervention to support the aquaculture sector.	Agri-food	All
	TOTAL:			**1 143.04**			

Source: Own elaboration based on the Greek RRP (Hellenic Republic 2021) and its assessment by the European Commission (COM(2021) 328 final and annex).

4. Conclusions

This study has analysed the Greek RRP from the perspective of its potential to support, either directly or indirectly, the Smart Specialisation Strategy of Greece.

A detailed text analysis of measures contained within the Greek RRP suggests that the amount earmarked for research- and innovation-related measures is €0.91billion, or 5.14% of the total budget. The Greek RRP as a whole does not provide details of the territorial allocation of its budget; this is also true for the R&I-related measures, where only an amount of €207million (22.65% of the R&I measures) can be readily associated with five regions (see Measure ID 16624 in Table 5). In many cases (e.g., Measures 16618 and 16289 in the same table), multiple heterogeneous actions are included under a single measure, thus hampering the granularity of any effort to match measures with regions, S3 priorities and estimate a budgetary allocation among S3 priority areas. Therefore, despite the Greek RRP's claim of adherence to the goals and the priorities of the national S3, the research- and innovation-related component seems to cater mainly for research infrastructures, mobility of researchers, and basic research in public-sector research providers (universities and research centres). Although these topics are in line with the systemic recommendation of the Pissarides Report for uninterrupted support for 'blue-sky' research by excellent research teams, the relevance to the S3 could improve by adding more specific thematic constraints, i.e., by earmarking funding to priority areas. Moreover, the R&I component of the Greek RRP seems to prioritise mature, ready-to-be-funded projects irrespective of the S3 priority areas they belong to (i.e., measures 16971 and 16622 that support a total of 49 projects that have already been selected for funding but didn't fit to the budgets of the respective calls). This is consistent with the nature of the RRP as a funding instrument for reaping fast gains. Finally, the Greek RRP does not provide any significant measure to address the pressing, as discussed in section 0 above, financial barriers to innovation faced by small- and medium-sized enterprises in Greece.

Regarding the Greek RRP measures that indirectly support the national S3 (see Table 6), we find that they add up to €1.143billion, or 6.43% of the non-repayable EU support. Almost half of this amount (€567million, Measure IDs 16626 and 16653) is earmarked to support the twin transition—mainly the Green, of the agri-food sector, which, beyond being a national S3 priority, is a regional priority in 12 out of the 13 Greek regions. Moreover, €162million are earmarked for various actions in support of Culture, Tourism and Creative Industries, which is also a national and a regional priority in 10 regions. Finally, €75million are earmarked for supporting the digital transition in manufacturing.

Any attempt to judge the Greek RRP from the perspective of addressing the main RDI bottlenecks that inhibit innovation activities and business operations of innovative companies would be unfair without taking into account the wider context of the national development plan for 2021-2027. Regarding research and innovation, the Greek RRP earmarks €0.91billion of public investment to support the research strand of the national innovation system and promote research excellence, thus addressing the supply of

knowledge. It also earmarks €1.143billion of public investment in two national priority areas of high importance to the economy: agri-food and tourism, aiming to reap early gains. The main challenge will be valorising these investments with appropriate policy measures using the approximately €5billion that are earmarked for policy objective 1 in the national and the regional operational programmes of this programming period, which by design are fully aligned with the national S3.

References

Bank of Greece. *Annual Governor's Report 2021.* Annual Report, Athens: Bank of Greece, 2021.

European Central Bank. *Survey on the Access to Finance of Enterprises in the euro area - April to September 2021.* Frankfurn am Main: ECB, 2021.

European Commission. *Analysis of the recovery and resilience plan of Greece.* Commission Staff Working Document SWD(2021) 155 final/2 of 4.8.2021, Brussels: European Commission, 2021.

European Commission. *Proposal for a Council Implementing Decision on the approval of the assessment of the recovery and resilience plan for Greece.* COM(2021) 328 final of 17.6.2021, Brussels: European Commission, 2021.

Hellenic Republic. *Greece 2.0 - National Recovery and Resilience Plan.* Athens: Hellenic Republic, 2021.

Marques Santos, Anabela. *Linking the 'Recovery and Resilience Plan' and Smart Specialisation. The Portuguese.* JRC Working Papers on Territorial Modelling and Analysis No. 05/2021, JRC126178, Seville: European Commission, 2021.

Pissarides, Christoforos, Dimitrios Vagianos, Nikolaos Vettas, and Constantinos Megir. "A Development Plan for the Greek Economy." Final Report, 2020.

Seven Sigma PC. *Proposals to overcome the barriers to the development and the diffusion of innovation (in Greek).* Report, Athens: GSRI, 2020.

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub

ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub - Joint Research Centre

Joint Research Centre

EU Science Hub