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# Administrative Capacity or Regional Need? An Ex-ante Analysis of Public Investment Allocation in Greece: Evidence from the "Antonis Tritsis" Programme

Visiting Professor Dr. Evangelos Makryvelios (Corresponding author)

Department of Business Administration

School of Economics and Political Sciences,

National & Kapodistrian University of Athens,

PO Box 105 59, Athens, Greece

Professor Dr. Theodore Papadogonas

Department of Business Administration

School of Economics and Political Sciences,

National & Kapodistrian University of Athens,

PO Box 105 59, Athens, Greece

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**Abstract**

This paper offers an initial exploration of the spatial allocation of public investment under the "Antonis Tritsis" Programme, a national funding instrument allocated to local government within Greece's highly centralised fiscal system. It examines whether funding allocation is driven primarily by regional needs or by the administrative capacity of regions. This study draws on administrative data covering all infrastructure projects approved in Greece during the 2020-2025 period at the regional level (NUTS-2) and employs descriptive statistical measures, inequality indices and alignment indices to explore the relationship between investment allocation and socioeconomic indicators. The findings reveal significant spatial

inequalities at the project approval stage, suggesting that allocation processes introduce territorial disparities even before investments are implemented. The analysis does not provide strong empirical support of the need-based allocation hypothesis, while administrative capacity seems to play an important, albeit not exclusive, role. In general, allocation can be interpreted as a combination of mechanisms in which regional need, administrative capacity and program design features interplay to determine allocation. The study contributes to the international literature by highlighting the importance of ex ante analysis and proposing a replicable empirical framework for assessing public investments allocation in contexts characterised by institutional disparities, such as the Greek case.

**Keywords:** Ex ante evaluation, public investment allocation, spatial inequality, cohesion policy, regional development, administrative capacity, place-based policy, Greece

## 1. Introduction

Public investment programmes for local governments play a crucial role in supporting regional development, particularly in fiscally decentralised environments in which local governments and regions lack sufficient autonomy and investment capacityinvestments (Rodr ́guez-Pose & Ezcurra, 2010). In such institutional contexts, funding schemes provided by central authorities act as substitutesfor local investment, playing a crucial role in resource allocation and regional development outcomes (Barca, 2009; Rodr ́guez-Pose, 2013; Lambrinidis et al., 2005; Rodr ́guez-Pose et al., 2016).

Although these measures are inherently redistributive a key issue tends to be overlooked: To what extent does the allocation of public investment respond to regional needs, and to what extents it shaped by differences in the administrative and technical capacity of the recipient regions? While the international literature has emphasised the role of administrative capacity for absorbing and efficiently using resources (European Commission, 2017; Fratesi & Perucca, 2014; Rodr ́guez-Pose & Garcilazo, 2015), the discussion is mainly concerned with ex post assessments. Thus, the factors determining access to resources and allocation at the approval stage remain less understood (Crescenzi & Giua, 2020).

This is especially pertinent in contexts characterised byunevenly administrative capacities. In such a setting, demand, -driven allocation mechanisms where beneficiaries have to design and apply for projects, may create unequal access to resourses across regions , with a bias toward those with a higher institutional and technical capacity (Bachtler et al., 2013; Rodr ́guez-Pose, 2013). In this respect, an initial spatial bias might be introduced in the allocation of resources, even before projects start (Crescenzi & Giua, 2020).

Greece represents a characteristic example of such an institutional setting. Local government is embedded in a highly centralised fiscal system and is characterised by a high levels of central government transfers and limited local autonomy (OECD 2018, 2019). This situation was further aggravated during the fiscal adjustment phase, resulting in a decrease in public investment and in the administrative and technical capacity of local government, especially in smaller and regional municipalities (Mendez & Bachtler, 2016).

In this framework, the "Antonis Tritsis" Program, launched in 2020, is one of the major sources of funding for local government. It was designed to finance investments in basic infrastructure, environmental sunstainability and digital development, while at the same time aiming to tackle existing infrastructure backlogs and promote local development (European Commission, 2017; Barca, 2009). Nevertheless, despite the programme;s importance, the allocation of resources during the approval stage has not yet been systematically examined.

This study addresses this gap by providing an ex ante analysis of the spatial allocation of approved projects and resources of the "Antonis Tritsis" Program for 2020-2025. Unlike existing studies that focus primarily on ex post outcomes, this paper examines allocation at the approval stage, identifying early-stage selection mechanisms that may generate spatial inequalities before implementation. We explore two research questions about allocation: (i) how closely is the resource allocation in line with the indicators of regional needs, namely population, GDP per capita, and unemployment, and (ii) how much does the administrative capacity affect the allocation of resources.

This work adds to the international literature in three ways. First, it expands the debate on the role of administrative capacity as a selection mechanism in accessing national financing instruments beyond implementation stage (Rodr ́guez-Pose, 2013). Second, it highlights the importance for ex ante evaluation to timely detection of spatial inequalities in public infrastructure planning (Dimitriou et al., 2016). Third, it offers an empirical approach that can be replicated for exploring resource allocation in national programs in the presence of institutional asymmetries (Doumpos & Cohen, 2014).

The remainder of the article is structured as follows: Section 2 reviews the literature, Section 3 outlines the theoretical framework and hypotheses, while Section 4 provides information on the methodology and data. Section 5 reports the empirical findings, while Section 6 discusses the results, summarises the main conclusions and policy implications.

## 2. Literature Review

### *2.1 Spatial Inequality and Territorial Cohesion*

Spatial inequalities are a major concern in regional science, as they represent not only differences in levels of economic development, but also underlying institutional and investment inequalities. The literature has demonstrated that excessive spatial inequalities are likely to affect economic growth and convergence, especially in Europe (Tselios, 2009; Zhang et al., 2021). In particular, public investment plays a key role in spatial development. First, place-based policies can enhance regional resilience and promote convergence processes (Rodr ́guez-Pose et al., 2012; Fratesi & Perucca, 2014). Conversely, if investments fail to respond to local needs or are concentrated in regions that are already developed, they can entrench regional disparities. In addition, the spatial economics literature shows that public investments can have spill-over effects across administrative borders, increasing efficiency (Crescenzi & Iammarino, 2017). However, the effectiveness of these processes is constrained by the regional absorptive capacity, , limiting convergence in the absence of complementary interventions (Rovolis & Spence, 2022a, 2022b). In summary, the literature

shows that the allocation of public investment is not value-neutral,but affected by institutional and procedural factors. This leads to the question of whether current allocation mechanisms help or hinder convergence or, instead, perpetuate spatial inequalities.

### *2.2 Administrative Capacity*

Administrative capacity is a key element connecting policy design and development outcomes and can be defined as a multidimensional concept encompassing human, organisational, technical and institutional capacities (Curristine et al., 2007; Charbit & Romano, 2017). For example, in cohesion policy, it has been shown that high administrative capacity leads to higher resource absorption and improved development outcomes, while weak institutions have a constraining effect (Fratesi & Perucca, 2014). The notion of "low-performance traps" indicates that regions with low administrative capacity may fall into low absorption and effectiveness traps. Administrative capacity not only impacts the implementation phase, but also the funding stage, as regions with more efficient administrative capacity can develop more advanced project proposals. Despite this, most empirical research focusses on the implementation phase and overlooks the initial allocation stage. As a result, the function of administrative capacity as a selection mechanism for accessing funding is less investigated.

### *2.3 Ex-Ante Analysis of Resource Allocation*

Ex ante evaluation plays a crucial role in the planning of public investments, as it enables the assessment of potential impacts and the comparison of different investment options (Castro, 2008; Klakegg & Haavaldsen, 2011). The ex ante approach allows public authorities to minimise risk and increase transparency and accountability in decision-making. Although crucial, the use of ex ante evaluation is mainly applied at the project or program level and less at the spatial allocation level. Existing literature primarily focuses on the methodological aspects, like cost-benefit analysis and multi-criteria decision making (Kandakoglu et al., 2019; Sousa et al., 2021; Mavrotas & Makryvelios, 2021, 2023; Demetriou et al., 2013) rather than the spatial consequences of allocation decisions. In turn, understanding of how decisions at the approval stage influence the spatial allocation of public investments is lacking. This is especially pertinent in settings with varying administrative capacities, where early allocations can perpetuate or entrench spatial injustices.

## 3. Theoretical Background

### *3.1 Local Government Financing and Ex Ante Evaluation*

Ex ante evaluation is an important element in the planning of public investments, as it enables investment choices to be framed in line with broader economic and social goals before they are implemented (Dimitriou et al., 2016). Ex ante evaluation is different from ex post evaluation in that the former refers to the selection and allocation process, rather than the evaluation of results. In this regard, the allocation of public investments is not a neutral process, but incorporates a series of institutional, administrative and procedural considerations (Rodríguez-Pose, 2013). In particular, in demand-driven initiatives where access to public investments requires the preparation of advanced projects, allocation also

includes selection mechanisms that can affect the access of different regions. Hence, ex ante policy analysis of resource allocation is not only focused on the efficiency of investments, but also on the analysis of the mechanisms of beneficiary selection and spatial allocation.

### *3.2 Mechanisms of Public Investment Allocation*

In the literature on regional development and cohesion policy it is recognised that the allocation of public investment is driven by two main mechanisms: need-based allocation and capacity-driven allocation (Barca, 2009; Rodr ǵuez-Pose, 2013; Psycharis, 2008; Rodr ǵuez-Pose et al., 2016). The mechanism of need-based allocation assumes that resources should be allocated to regions with a greater gap in terms of development, measured through indicators such as population, economic development and employment. Within the framework of cohesion policy, this is associated with the objective of regional convergence and the equalisation of regional differences (Barca, 2009; Rodr ǵuez-Pose & Garcilazo, 2015). But the allocation of resources is not only determined by needs, but also by the administrative and technical capacities of the beneficiaries. The capacity to conceive, implement and execute projects and to meet institutional and procedural requirements function as selection mechanisms (Bachtler et al., 2013; OECD, 2018). Therefore, regions with greater capacity may have a higher probability of accessing resources, independent of their needs. The overall resource distribution is a combination of these two mechanisms. In contexts with high inequality of administrative capacity, the influence of this effect may constrain or trump the logic of needs, resulting in departures from the goals of territorial cohesion (Rodr ǵuez-Pose, 2013).

### *3.3 Conceptual Framework*

In line with the above, this paper defines the allocation of public investment as the outcome of the interaction between need and capacity. The conceptual framework is structured around the two main dimensions: (a) need-based allocation and (b) capacity-based allocation. The interaction between these factors results in three main allocation regimes: (i) need-based allocation, where funding is provided to the most deprived regions, (ii) capacity-based allocation, where administrative capacity plays the predominant role in determining access to funding, and (iii) mixed allocation, where the two mechanisms are both present and interact. This conceptual framework can be used for a systematic empirical analysis of whether resource allocation is a convergence factor or, on the contrary, a selection factor that may be responsible for spatial inequality.

Figure 1 illustrates the conceptual framework of the analysis, showing the interplay of regional need, capability and program design on resource allocation.

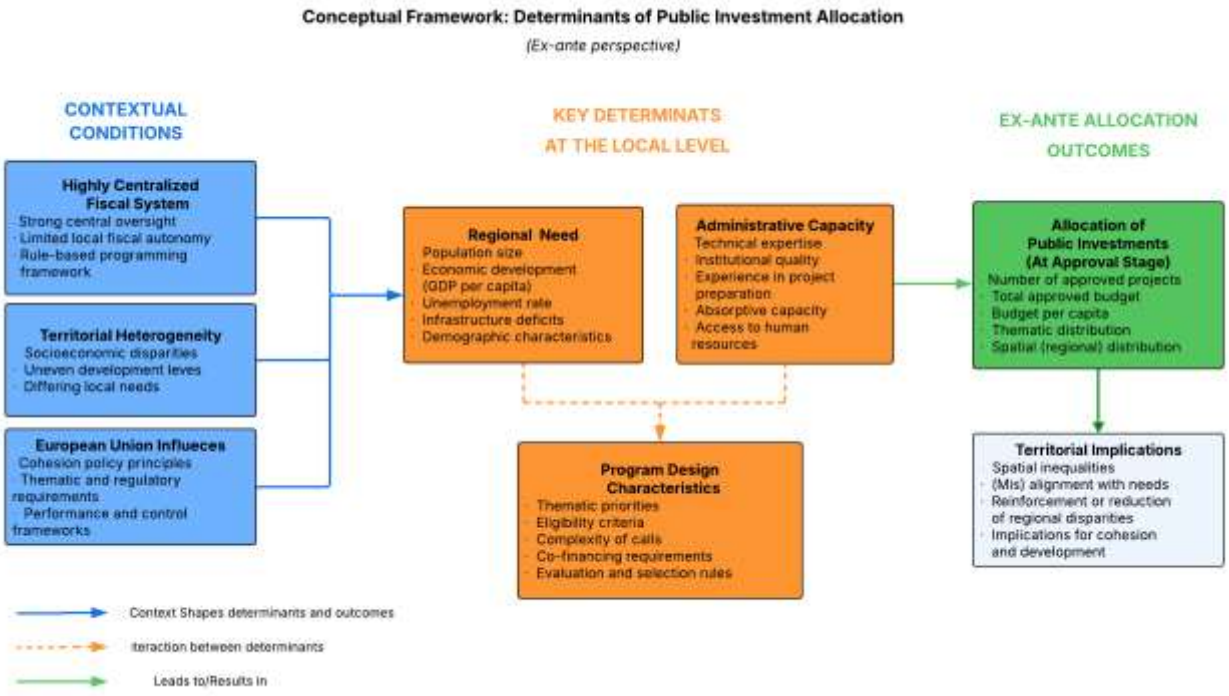


Figure 1. Framework of the determinants of ex-ante public investment allocation in a demand-driven system

*3.4 Empirical Hypotheses*

These hypotheses reflect a potential tension between redistributive policy objectives and capacity-driven selection mechanisms. Our hypotheses based on the above theoretical framework are:

**H1: Allocation based on need**

Allocation is expected to be positively related to indicators of need, such as population, low GDP per capita and high unemployment.

**H2: Allocation based on administrative capacity**

Resource allocation is expected to be positively associated with indicators of regions administrative or technical capacity, such as the ability to develop and submit project proposals.

**H3: Relative importance of administrative capacity**

Administrative capacity is expected to be an important factor in determining resource allocation, especially for demand-driven programs, but not ruling out the possibility of need

indicators also playing a role.

*3.5 The Special Development Program "Antonis Tritsis"*

In Greece, the Special Development Programme named in honour of Antonis Tritsis was established in 2020 as a national universal investment instrument, targeting first and second level local government in a landscape of extensive fiscal consolidation, limited local investment capacity and increased infrastructure demand (OECD, 2018, 2019). The programme aimed to address longstandingin frastructure gaps and at the same time to enhance an administrative capacity at the local levels and to facilitate a balanced development in the regions (European Commission, 2017; Barca, 2009).

Institutionally, the programme is implemented within a highly centralised fiscal system where the local governments have little financial autonomy and transfers from the central government are predominant (Rodr ǵuez-Pose & Ezcurra, 2010; OECD, 2018). These limitations are countered by the programme by using an innovative financing architecture and development loans are centrally serviced by the national Public Investment Programme, which largely incorporates the Deposits and Loans Fund and the European Investment Bank. As a design, it is effective in eliminating direct borrowing requirements of beneficiary local authorities and provides them with a chance to participate regardless of local fiscal ability (Bachtler et al., 2013).

Although this financing model simplifies the financial requirements, access to programme funding nevertheless remains conditional upon administrative and technical capacity

On this matter, the programme structured a, call-based allocation mechanism, where the funding is distributed based on thematic calls with eligibility requirements, maximum budgets, and technical recommendations (OECD, 2019). As a result, the distributive results are determined not only by the territorial considerations but also by the administrative readiness and maturation abilities of various jurisdictions in relation to projects (Rodr ǵuez-Pose, 2013; Rodr ǵuez-Pose & Garcilazo, 2015).

The programme comprises six main priority axes, i.e. civil protection, urban environment and public space, digital convergence, environmental protection, social cohesion and the encouragement of education, culture, tourism and sports. These axes are operationalised in a set of thematic calls vindicating definite policy terrain, and such areas as water supply, wastewater management, waste treatment, rural road construction, urban regeneration, smart city applications, and energy-related interventions. Such a thematic architecture is a manifestation of an amalgamation of more ancient infrastructure investment goals with more modern policy agendas concerned with sustainability and digitalisation (Nestico et al., 2020; Pardo-Bosch et al., 2019).

The eligible beneficiaries are municipalities, municipal enterprise, regional authority, and inter-municipal association. Despite the national character of the programme and its formal openness to all regions, its call-based nature means that the programme imcludes participants whose successful involvement also heavily depends on the capacity to respond to technical, procedural, and administrative demands on the side of beneficiaries. Consequently, the

programme provides a particularly empirical context, in which the role of the administrative capacity can be analysed in its interaction with the mechanism of demand-based allocation in the process of determining the spatial distribution of approved projects and funding (Bachtler et al., 2013; OECD, 2018; Makryvelios & Papadogonas, 2026e).

With an approved budgetexceeding 3.5 billion and being operative in all of the NUTS-2 regions, the “Antonis Tritsis” Programme is exceptionally pertinent when it comes to ex ante evaluation. By considering allocation performance at the approval phase, before implementation into a project, this programme enables the analysis of early distributive patterns systematically and identifies the possible territorial imbalances rooted in the design and governance structures thereof (Ministry of Interior, 2025a; 2025b; 2025c). The institutional design of the programme is particularly relevant for the present analysis, as it combines centralised funding with a demand-driven application process. This creates a setting in which differences in participation, proposal readiness, and administrative engagement may influence approval-stage outcomes

## 4. Methodology

### *4.1 Research Design*

This study adopt a quantitative, ex ante descriptive and exploratory research design to investigate the spatial allocation of approved projects and resources under the "Antonis Tritsis" Programme. The analysis focuses exclusively on the project approval stage rather than on the ex post economic or social impacts of the projects (Dimitriou et al., 2016).

The study is exploratory and does not attempt to explain the causal mechanism of allocation, but rather to identify empirical associations between the allocation of resources and regional characteristics. Thus, the results are considered as suggestive of associations, rather than causal links. The analysis is not designed to test causal relationships, but to identify patterns of association consistent with the proposed hypotheses.

### *4.2 Data and Variables*

The analysis is conducted using administrative data referring to all the approved projects of the “Antonis Tritsis” Programme from 2020 to 2025. The data originate from the information systems of the Special Management and Implementation Service of the Ministry of the Interior and the Loans Directorate of the Deposits and Loans Fund and include information about the projects at the level of the project such as the type of beneficiaries, categories of projects, budget approved and geographical location (Ministry of Interior, 2025a-c; Makryvelios & Papadogonas, 2026a; 2026b).

The analysis is conducted at regional level (NUTS-2), as the data are available at this level, given regional differences in population and economic activity. The time frame of the analysis is cross-sectional, referring to the situation at the time the project was approved. The main variables fall in two groups: (a) indicators of regional need (population, GDP per capita, unemployment rate), and (b) indicators of administrative and technical capacity (number of projects, number of beneficiaries, number of different calls for proposals, average size of

projects). The administrative capacity indicators act as proxies of the regions' capacity to plan, submit and implement projects, but do not represent direct indicators of institutional quality.

Moreover, secondary data sources - the Hellenic Statistical Authority (ELSTAT) and Eurostat - are used to calculate regional indicators (NUTS-2 level), such as population, GDP per capita, and the regional unemployment rate. These allow for the calculation of indicators of funding per capita, indicators of correspondence between funding and regional need, as well as the examination of the relationship between funding and regional characteristics.

The data used in the study are publicly accessible (Makryvelios & Papadogonas, 2026d), allowing for transparency and verification of the analysis.

*4.3 Supply-and-demand Alignment Indicators*

To assess the extent to which the allocation of public investment reflects regional needs, alignment indices, which compare each region's share of funding, with its corresponding share of key socioeconomic indicators.

**The funding share of region (i) is defined as**:

Fi = Fundingi / Total Funding The population share is defined as:

Pi = Populationi / Total Population

The population alignment index is given by: **Aipop = Fi / Pi**

Index values greater than one (Aipop > 1) indicate that the region is overrepresented in funding relative to its population, while values less than one (Aipop < 1) indicate underrepresentation.

**Similarly, the share of Gross Domestic Product is defined as**:

**GDPsharei = GDPi / total GDP**

and the corresponding alignment index:

**AiGDP = Fi / GDPsharei**

For unemployment, the corresponding share is defined as:

**Ui = Unemploymenti / total Unemployment**

and the alignment index:

**Aiunemp = Fi / Ui**

These indices allow for the assessment of the deviation of resource allocation from a theoretical needs-based allocation, reflecting the degree of over- or under-representation of each region.

*4.4 Administrative Capacity Indices*

Administrative capacity is assessed using a composite index that reflects the regions' ability to plan, submit, and manage investment projects. Given the difficulty of directly measuring

institutional quality, proxy indicators based on observable characteristics of program participation are used (Makryvelios & Papadogonas, 2026c). The indicator comprises four dimensions: (a) the number of approved projects, (b) the number of unique beneficiaries, (c) the variety of calls for proposals, and, (d) the average project size.

To ensure the comparability of the variables, normalization is applied using a z-score:

**Zik = (Xik − meank) / sdk**, where Xik is the value of variable k for region i, meank is the mean, and sdk, is the standard deviation. The composite administrative capacity indexis calculated as: **Capacityi = (1 / K) Σ Zik, where K is the number of variables**. The use of equal weights, reflects the exploratory nature of the analysis. The index is an approximate measure, and is used for comparative evaluation, between regions.

Table 1. Definition of variables and indicators

| | Variable | Description | Measurement |
|---|---|---|---|
| **Panel A: Need-based variables** | Population | Total Population of the region (NUTS-2) | Number of inhabitants |
| | GDP per capita | Regional GDP per capita | Euros per capita |
| | Unemployment rate | Regional unemployment rate | Percentage (%) |
| **Panel B: Capacity-related variables** | Projects | Number of approved projects | Count |
| | Unique beneficiaries | Number of distinct beneficiaries per region | Count |
| | Call diversity | Number of different programme calls in which the region participates | Count |
| | Average project size | Average funding per project | Total Funding / Projects |
| **Panel C: Derived indicators** | Total funding | Total approved funding per region | Euros (€) |
| | Funding share ($F_i$) | Share of total funding allocated to each region | Fundingi / Total Funding |
| | Population share ($P_i$) | Share of total population per region | Pi = Populationi /Total Population |
| | GDP share | Share of total GDP per region | GDPsharei = GDPi / Total GDP |
| | Unemployment share | Share of total unemployment per region | Ui = Unemployment i / Total Unemployment |
| | Alignment index (population) | Alignment between funding and population | Aipop = Fi / Pi |
| | Alignment index (GDP) | Alignment between funding and GDP | AiGDP = Fi / GDPsharei |
| | Alignment index (unemployment) | Alignment between funding and unemployment | Aiunemp = Fi / Ui |
| | Capacity index | Composite administrative capacity indicator | Capacityi = Average of standardized variables |

**Notes:** Panel A is a set of structural indicators of need. Panel B contains indicators of capacity. Panel C includes indicators derived to evaluate the fit of funding with regional needs. The capacity index is a simple average of standardized (z-scored) variables**.**

*4.5 Limitations*

The study has some limitationsdespite the strengths of the analysis. First, the data do not consider rejected or withdrawn proposals, and therefore do not allow a complete analysis of the selection of projects. Second, the cross-sectional nature of the data prevents an analysis of the dynamic change in the distribution, and of the effects of the projects. Third, administrative capacity is not directly measured, but proxied by some variables related to participation and project characteristics Additionally, some of these variables are related to allocation, and there may be some degree of overlap between the explanatory and dependent variables. These caveats suggest the need for more research, especially with regard to longitudinal data and direct measures of administrative capacity.

## 5. Results

*5.1 Descriptive and Spatial Characteristics of the Programme*

5.1.1 Overview of the Project Portfolio

An analysis of the approved projects, under the “Antonis Tritsis” Program, for the 2020–2025 period, highlights its scale and significance, as a key funding tool for local government in Greece. In total, 1,454 projects were approved, with a total budget of approximately 3.76 billion, confirming the program’s central role, in infrastructure financing (Ministry of Interior, 2025a; 2025b; 2025c). Table 2 provides an overview of the approved project portfolio by the type of beneficiary.

Table 2. Approved projects and budgets by beneficiary type

| **Beneficiary type** | **Number of Projects** | **Share of Projects (%)** | **Approved Budget (€)** | **Share of budget (%)** |
|---|---|---|---|---|
| Municipalities | 1,105 | 76.00 | 2,516,159,121.74 | 66.92 |
| D.E.Y.A. | 308 | 21.18 | 965,421,612.44 | 25.67 |
| Region | 31 | 2.13 | 225,891,486.55 | 6.00 |
| Association | 10 | 0.69 | 53,156,908.93 | 1.41 |
| Total | **1,454** | **100.0** | **3,760,629,129.66** | **100.0** |

Municipalities account for the majority of approved projects (76.0%), accounting for arround two-thirds of the total approved budget (66.9%). The municipal water and sewerage enterprises (DEYAs) constitute an important part of the project and funding as these ultimately involve capital investments in water and wastewater. A relative low percentage of approved projects and budgets is represented by regional authorities and inter-municipal associations.

This distribution reflects the institutional design of the programme, the main focus of which

is the municipal-level intervention, but leaving specialised entities, to carry out more technically complex infrastructure projects.

5.1.2 Spatial Distribution of Approved Projects

The geographical distribution of approved projects shows significant variations in regions of Greece. Table 3 and Figure 2 reveal that the largest proportions of approved projects belong to metropolitan regions, specifically Attica and Central Macedonia. Taken together, these locations comprise around one-third of the project portfolio.

Table 3. Number of approved projects by NUTS-2 region

| Region | NUTS 2 | Number of Projects | Share (%) |
|---|---|---|---|
| Attica | EL30 | 233 | 16.0 |
| Central Macedonia | EL12 | 182 | 12.5 |
| Peloponnese | EL25 | 133 | 9.1 |
| Thessaly | EL14 | 132 | 9.1 |
| Crete | EL43 | 124 | 8.5 |
| South Aegean | EL42 | 124 | 8.5 |
| Ionian Islands | EL22 | 124 | 8.5 |
| Sterea Ellada | EL24 | 98 | 6.7 |
| Eastern Macedonia and Thrace | EL11 | 83 | 5.7 |
| Epirus | EL21 | 81 | 5.6 |
| Western Macedonia | EL13 | 51 | 3.5 |
| North Aegean | EL41 | 46 | 3.2 |
| Western Greece | EL23 | 43 | 3.0 |
| **Total** | | **1.454** | **100** |

On the other hand, Western Greece, North Aegean, and Western Macedonia record much lower figures of approved projects. Although population size plays a role in these disparities, the unequal distribution suggests that factors beyond population size may influence participation at the approval stage.

Although all NUTS-2 regions are represented in the programme, their variation in project density shows that there is differentiated participation in different territories. This trend gives the empirical basis for assessing of whether early allocation results conform to region-specific and institutional situations.


Figure 2. Percentage of each Region's participation in the number of projects

5.1.3 Budget Allocation and Spatial Concentration of Resources

Significant spatial variation is observed in approved budgets across regions. In an absolute terms, metropolitan regions are account for the greater portions of total approved funding as reported in Table 4 and illustrated in Figure 3. Attica region contributes 21.6% of the overall approved budget, and then comes Central Macedonia with 12.7%. A second category of regions, such as the Peloponnese, Thessaly, Crete, and the Ionian Islands, is registered with

intermediate shares of the total funding and regions such as North Aegean, Western Greece and Western Macedonia, have much lower shares of total funding. The geographical concentration of approved budgets indicates differences in the number of projects and also difference in mean project size. From an ex ante perspective, these patterns point to uneven distribution of financial resources across territories.

Table 4. Approved budget by NUTS-2 region

| **Region** | | **Budget (€)** | **Percentage (%)** |
|---|---|---|---|
| Attica | EL30 | 811,135,132.42 | 21.58 |
| Central Macedonia | EL12 | 476,711,647.42 | 12.68 |
| Peloponnese | EL25 | 328,404,365.84 | 8.73 |
| Thessaly | EL14 | 323,022,881.85 | 8.59 |
| Crete | EL43 | 288,080,267.56 | 7.66 |
| Southern Aegean | EL42 | 242,623,283.43 | 6.46 |
| Ionian Islands | EL22 | 303,257,196.79 | 8.07 |
| Central Greece | EL24 | 262,234,803.83 | 6.97 |
| Eastern Macedonia and Thrace | EL11 | 231,110,883.24 | 6.15 |
| Epirus | EL21 | 171,209,969.29 | 4.55 |
| Western Macedonia | EL13 | 127,021,076.67 | 3.38 |
| Northern Aegean | EL41 | 90,816,691.61 | 2.42 |
| Western Greece | EL23 | 104,000,929.71 | 2.77 |
| **Total** | | **3.759.629.129,66** | **100,00** |

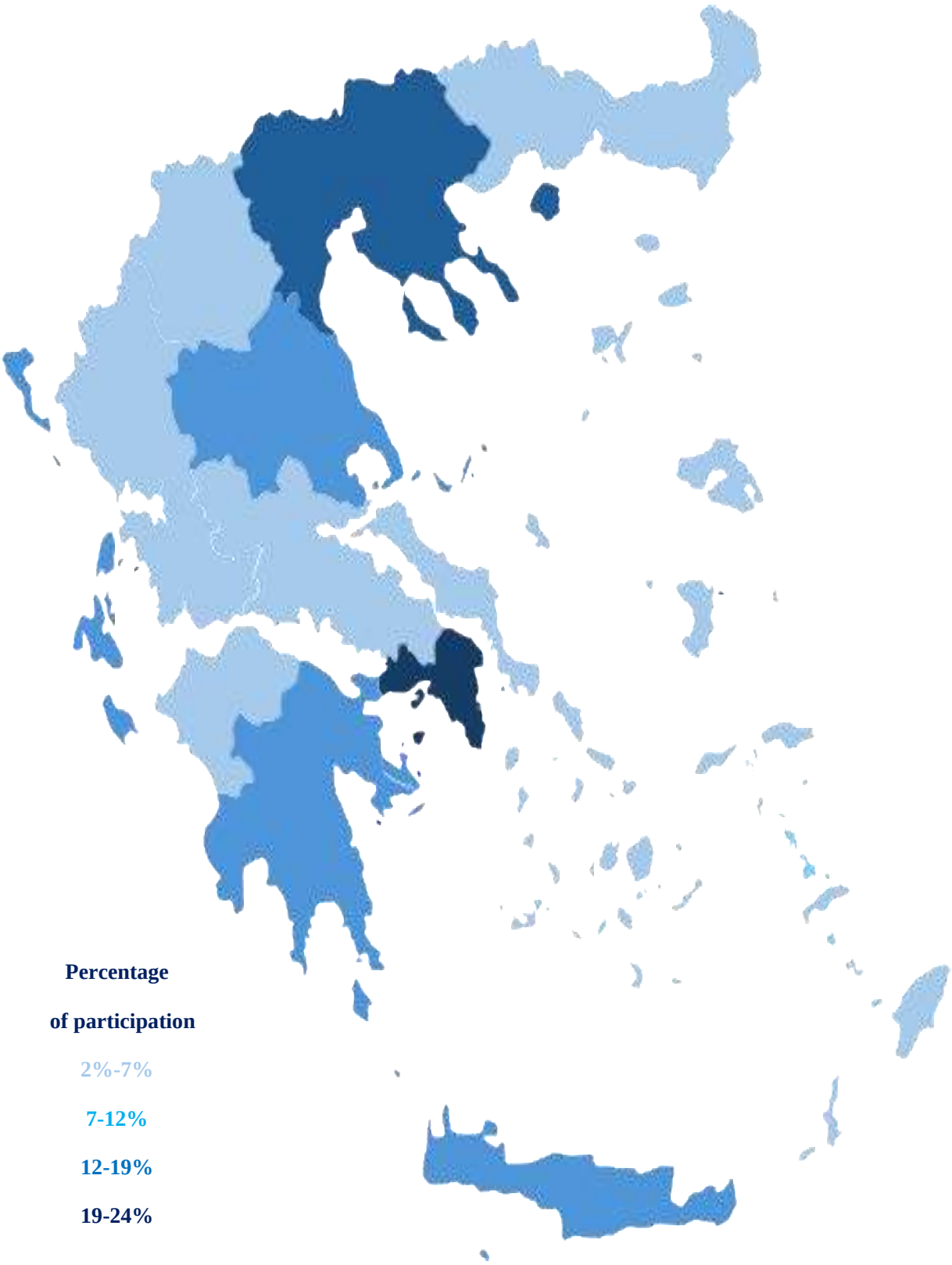


Figure 3. Percentage share of each Region in the total budget

### 5.1.4 Funding Intensity Per Capita

In the case of approved funding analysed in per-capita terms, the spatial distribution of funding presents a different picture as compared to that of absolute terms. Table 5 indicates that island and thinly-populated areas have a greater funding intensity per person, even though they have lower allocations of overall approved budgets. Average approved funding amounts t EUR358.66 per capita nationally, with a minimum of EUR212.67 in Attica and maximum of EUR 740.11 in Southern Aegean. Above-average levels of per-capita funding are also registered in the regions like the Peloponnese, the Ionian Islands, Epirus and Western Macedonia.

These discrepancies demonstrate that population-adjusted indicators of people can offer a complementary view of the allocation of territory. Although per-capita indicators moderate gaps between absolute values, they do not eliminate inter-regional variations in project participation and project funding concentration.

Table 5. Approved funding per capita by NUTS-2 region

| **Region** | **NUTS 2** | **Approved Budget (€)** | **Population** | **€ per capita** |
|---|---|---|---|---|
| Attica | EL30 | 811,135,132.42 | 3,814,064 | 212.67 |
| Central Macedonia | EL12 | 476,711,647.42 | 1,795,669 | 265.48 |
| Peloponnese | EL25 | 328,404,365.84 | 539,535 | 608.68 |
| Thessaly | EL14 | 323,022,881.85 | 688,255 | 469.34 |
| Crete | EL43 | 288,080,267.56 | 624,408 | 461.37 |
| SouthernAegean | EL42 | 242,623,283.43 | 327,820 | 740.11 |
| Ionian Islands | EL22 | 303,257,196.79 | 508,254 | 596.66 |
| Central Greece | EL24 | 262,234,803.83 | 648,220 | 404.55 |
| Eastern Macedonia and Thrace | EL11 | 231,110,883.24 | 562,201 | 411.08 |
| Epirus | EL21 | 171,209,969.29 | 319,991 | 535.05 |
| Western Macedonia | EL13 | 127,021,076.67 | 254,595 | 498.91 |
| Northern Aegean | EL41 | 90,816,691.61 | 194,943 | 465.86 |
| Western Greece | EL23 | 104,000,929.71 | 204,532 | 508.48 |
| **Total** | | **3,759,629,129.66** | **10,482,487** | **358.66** |

### 5.1.5 Thematic Distribution of Approved Interventions

The thematic content of the approved projects indicates indicates a strong emphasis on basic infrastructure provision. Table 6, shows that more than 40% of all approved projects involve interventions relating to water supply (AT01) and rural road construction (AT05).

Table 6. Distribution of approved projects by thematic call

| Thematic call | Number of projects | Percentage (%) |
|---|---|---|
| AT01 – Water supply | 323 | 22,22 |
| AT02 – Wastewater | 142 | 9,77 |
| AT03 – Renewable energy sources | 53 | 3,65 |
| AT04 – Waste management | 47 | 3,23 |
| AT05 – Rural road construction | 273 | 18,78 |
| AT06 – Urban regeneration | 102 | 7,02 |
| AT07 – Building infrastructure | 50 | 3,44 |
| AT08 – Smart cities | 66 | 4,54 |
| AT09 – Studies | 55 | 3.78 |
| AT10 – Open spaces | 91 | 6,26 |
| AT11 – Pre-earthquake control | 53 | 3,65 |
| AT12 – Electromobility | 77 | 5,30 |
| AT14 – Greece 1821 | 71 | 4,88 |
| Other calls | 51 | 3,51 |
| **Total** | **1.454** | **100,00** |

Further shares are assigned to wastewater management and urban regeneration and the upgrading of open public spaces, meaning that the policy is much broader and does not just focus on technical infrastructure. In comparison, this is a smaller share is allocated in projects pertaining to digital transformation, renewable energy, and electromobility. The observed thematic distribution is consistent with the structure of the programme's calls and funding priorities and offers valuable information to understand how patterns of spatial allocation are completed, since various calls imply different technical and administrative needs.

This thematic dimension complements the spatial analysis by highlighting how allocation patterns vary not only across territories but also across policy sectors.

5.1.6 Regional Inequality Indicators

To assess territorial imbalances in approved funding, a set of inequality indicators is employed. The Regional Funding Inequality Index ($RFI_i$) compares each region's funding share with a theoretical benchmark of equal distribution. Under this benchmark, each NUTS-2 region would receive 7.69% of total approved funding.

Table 7. Regional Funding Inequality Index (RFIi)

| Region | Funding share (%) | RFIi |
|---|---|---|
| Attica | 21,58 | 2,81 |
| Central Macedonia | 12,68 | 1,65 |
| Peloponnese | 8,73 | 1,14 |
| Thessaly | 8,59 | 1,12 |
| Ionian Islands | 8,07 | 1,05 |
| Crete | 7,66 | 1,00 |
| Central Greece | 6,97 | 0,91 |
| Eastern Macedonia & Thrace | 6,15 | 0,80 |
| South Aegean | 6,46 | 0,84 |

| | | |
|---|---|---|
| Epirus | 4,55 | 0,59 |
| Western Macedonia | 3,38 | 0,44 |
| Western Greece | 2,77 | 0,36 |
| Northern Aegean | 2,42 | 0,31 |

**Notes:** The Regional Funding Inequality Index ($RFI_i$), is defined as the ratio of each region's share of total funding, to an equal-share benchmark. Under equal distribution, each NUTS-2 region, would receive 1/N of total funding, (where N is the number of regions). Values greater than one, indicate over-representation, relative to the equal-share benchmark, while values below one, indicate under-representation.

Table 7 shows that the highest $RFI_i$ value is recorded in Attica (2.81), then in Central Macedonia (1.65), which means that there is extensive overrepresentation compared to the equal-share benchmark. Markedly underrepresented on the contrary are other regions, including the North Aegean (0.31), Western Greece (0.36) and Western Macedonia (0.44).

Complementary indicators are running in the same direction. Gini coefficient (0.312) shows the existence of moderately high levels of inequality in the approved funding between the regions, whereas the index of range points to the substantial disparities between the wealthiest and the poorest funded regions. Taken together, these indicators confirm systematic imbalances in the equal distribution of territories at the stage of approval.

*5.2 Alignment Between Resource Allocation and Regional Need*

An analysis of the alignment indicators, reveals significant discrepancies between resource allocation and indicators of regional need. Specifically, there is no systematic correlation, between funding and key variables, such as population, GDP, or, unemployment. This suggests that allocation mechanisms may not be explicitly aligned with redistributive criteria, but instead reflect underlying institutional or procedural dynamics.

Table 8. Funding allocation and alignment indices by region

| Region | Funding per capita (€) | Alignment (Population) | Alignment (GDP) | Alignment (Unemployment) |
|---|---|---|---|---|
| Attica | 212.667 | 0.593 | 0.442 | 0.565 |
| Central Macedonia | 265.478 | 0.740 | 0.602 | 0.702 |
| Peloponnese | 608.679 | 1.697 | 2.039 | 1.973 |
| Thessaly | 469.343 | 1.310 | 1.455 | 1.274 |
| Ionian Islands | 692.941 | 4.134 | 4.929 | 4.624 |
| Crete | 461.372 | 1.286 | 1.354 | 1.232 |
| Central Greece | 515.873 | 1.439 | 1.522 | 1.418 |
| Eastern Macedonia & Thrace | 411.082 | 1.146 | 1.283 | 1.152 |
| South Aegean | 740.110 | 2.064 | 2.147 | 1.620 |
| Epirus | 535.054 | 1.492 | 2.156 | 1.459 |
| Western Macedonia | 498.909 | 1.393 | 1.688 | 1.326 |
| Western Greece | 404.547 | 0.447 | 0.568 | 0.458 |
| Northern Aegean | 465.859 | 1.301 | 2.110 | 1.380 |

**Notes:** Funding per capita is expressed in euros per inhabitant. Alignment indices are defined as the ratio of each region's funding share, to its corresponding share of population, GDP, and unemployment. Values greater than one, indicate over-representation, while values below one, indicate under-representation. The capacity index is constructed, as the arithmetic mean of standardized (z-score) variables.

Some areas (the Ionian Islands, the South Aegean, and the Peloponnese) are greatly overrepresented in comparison with their structural features and others (such as large urban centres) (Attica and Central Macedonia), are relatively underrepresented. This pattern suggests tha resource allocation is not based on a clear redistributive or proportional process. On the whole, the findings can be regarded as limited empirical support of the hypothesis of needs-based allocation (H1), indicating the presence of gaps between the policy goals and actual allocation patterns.

*5.3 Administrative Capacity and Allocation Patterns*

This section examines the role of administrative and technical capacity, as a factor shaping resource allocation. Administrative capacity is measured, using a composite index, (Capacity Index), which is based on the number of projects, the number of beneficiaries, the diversity of calls for proposals, and the average project size.

Table 9. Administrative capacity index by region

| Region | Capacity Index |
|---|---|
| Attica | 0.836 |
| Central Macedonia | 0.415 |
| Peloponnese | 0.369 |
| Thessaly | -0.051 |
| Ionian Islands | -0.336 |
| Crete | -0.172 |
| Central Greece | 0.413 |
| Eastern Macedonia & Thrace | 0.052 |
| South Aegean | -0.415 |
| Epirus | 0.111 |
| Western Macedonia | -0.409 |
| Western Greece | 0.303 |
| Northern Aegean | -1.116 |

**Notes:** The capacity index is made as the arithmetic mean of the standardized (z-score) variables, such as the number of projects, number of distinct beneficiaries, call diversity, and average size of project. The higher the values, the more administrative and technical capacity.

An administrative capacity analysis indicates that areas with higher institutional and organizational capacity e.g., Attica and central Macedonia have higher levels of program participation which in turn suggests that they have higher institutional and organizational capacity. But, administrative capacity is not directly proportional to funding. This non-linear

relationship indicates that capacity operates as a facilitating but not sufficient condition for access to funding. Specifically, we find instances of regions with comparatively low administrative capacity, such as the Ionian Islands and the South Aegean, which are highly funded, suggesting that there are other factors, like the nature of program design or thematic priorities, at work. These results partially support the hypothesis of allocation based on capacity (H2) but not the predominance of administrative capacity as the only determining factor (H3).

*5.4 Regional Typology of Allocation Patterns*

Regions are grouped in order to examine allocation patterns more closely, based onper-capita funding and the administrative capacity index. The classification is based using the sample mean values of funding per capita as well as the capacity index.

Table 10. Regional typology

| Category | Regions |
|---|---|
| High funding – High capacity | Peloponnese, Central Greece |
| High funding – Low capacity | South Aegean, Ionian Islands, Epirus, Western Macedonia, Crete, Thessaly, North Aegean, Eastern Macedonia & Thrace |
| Low funding – High capacity | Attica, Central Macedonia |
| Low funding – Low capacity | Western Greece |

**Notes:** The capacity index is built as the arithmetic mean of standardized (z-score) variables, such as the number of projects, the number of unique beneficiaries, the diversity of calls and average project size. Higher values indicate greateradministrative and technical capability.

The administrative capacity analysis reveals that those regions that have a higher institutional and organizational capacity (Attica and Central Macedonia) have higher levels of participation in the program, which is also indicative of their institutional and organizational capacity. But the correlation that exists between administrative capacity and funding is not linear. Specifically, instances of areas with comparatively low administrative capability could be seen in the Ionian islands and the South Aegean, which have large amounts of funding, which indicates that the allocation is also conditioned by other factors, including the nature of program designs or thematic priorities. These results lend some validity to the hypothesis of capacity -based allocation (H2) some but also do not confirm the hypothesis of administrative capacity as the sole determining factor (H3).

*5.5 Expected Physical Outputs of the Programme*

The expected physical outputs of the programme related to the approved projects provide an additional perspective on the scale and sectoral focus of the approved interventions, as well as further information regarding the nature of the program's spatial distribution

patterns.Across the programme, the approved interventions are concentrated in basic infrastructure sectors especially water supply, wastewater management, rural roads and flood protection. These outputs indicate long-term infrastructure demands and a relative technical standard of the project, which can be more easily prepared and implemented by municipalities (Crecente et al., 2002; Zhang et al., 2021). As demonstrated in Table 7, these categories acoount for the majority of approved projects and budgets in all of the regions, meaning there is a heavy focus on traditional infrastructure delivery.

The more intricate outputs in respect of digital transformation, renewable energy and electromobility account for only alimited share of approved projects.

Table 11. Summary of expected physical outputs by infrastructure domain

| Infrastructure domain | Selected key outputs |
|---|---|
| Water resources | 10,456 km water supply networks; 1,157 km sewerage networks, 57.7 million m³/year water savings, 229,880 p.e. additional wastewater treatment capacity |
| Building infrastructure | 1.25 million m²of restored, maintained or new buildings, 84 public buildings |
| Energy | 72.6 MW installed renewable capacity, 98 million kWh/year primary energy savings |
| Urban regeneration | 8.6 million m² regenerated areas; 616 electric vehicles; 512 charging stations |
| Rural roads | 4,128 km rural road network, 357,016 agricultural properties served |
| Solid waste management | 105,664 tons/year additional recycling capacity, 812 recycling corners |

This fact indicates that thematic ambition interacts with institutional capacity and strengthens spatial differentiation between the policy domains. Notably, the anticipated physical deliverables should be interpreted as indicative signaks of programme orientation and allocation priorities but not as evidence of realised impacts, which could be evaluated at subsequent phases of implementation. While these figures refer to expected outputs rather than realised impacts, they provide an indication of the programme's potential contribution to local infrastructure and service capacity.

## 6. Discussion

The present study analysed the spatial allocation of public investments at the approval stage through the case of the "Antonis Tritsis" Programme, which is an example of a demand-driven funding scheme in a highly centralised fiscal system. This approach makes it possible to examiney access to funding before the start of a project, a topic that remains underexplored in the international literature (Crescenzi & Giua, 2020).

### *6.1 Spatial Allocation and Territorial Inequality*

Thefindings reveal substantial spatial inequalities in the allocation of the approved funds. The

results demonstrate that the allocation is not systematically associated with key socioeconomic indicators such as population, GDP or the level of unemployment. This suggests that the distribution does not follow a given redistributive pattern, nor a simple proportional rule.

While the level of funding per-capita indicators reduce inequality, they do not eliminate substantial inequalities in both participation and the level of funding. Inequalities are already evident at the approval stage, which suggests that the allocation process is a crucial stage in the allocation process (Rodr ǵuez-Pose et al., 2012). This finding suggests that spatial inequalities may be partly embedded in the allocation mechanism itself, rather than emerging solely during implementation.

This is in line with the international evidence that suggests the allocation of public investment may perpetuate inequalities in the absence of a clear consideration of territorial convergence criteria (Crescenzi & Giua, 2020; Psycharis, 2008; Rodr ǵuez-Pose et al., 2016).

*6.2 Administrative Capacity as a Mediating Mechanism*

The results highlight the important, although not exclusive,role of administrative capacity. There is greater participation and allocation in regions with higher administrative or technical capacity, consistent with the literature suggesting that institutional capacity is associated with the uptake of public investments.

However, this relationship is neither absolute nor linear. The existence of highly funded regions with relatively low administrative capacity implies that other factors, such as program structure and characteristics of the call for proposals, are also important in determining funding allocation.

This conclusion lends support to the view that administrative capacity plays an important role as a mediator, but is not the only factor in the allocation of resources. Hence, the allocation of resources cannot be regarded as purely capacity-related,but reflects a more complex allocation dynamic.

*6.3 Programme Design and Thematic Orientation*

The findings suggest that the design of the program and thematic distribution of calls for proposals play an important role in the spatial distribution. The strong representation of basic infrastructure projects (such as water supply and rural road construction) is linked to low technical complexity and enables participation of a wider range of beneficiaries. By contrast, more technologically advanced sectors such as the digital transition and energy innovation, show low participation rates, which indicates that thematic specialisation interacts with administrative capacity and affects the access to resources (Nestico et al., 2020; Pardo-Bosch et al., 2019; Sousa et al., 2021; Kandakoglu et al., 2019). This finding supports the place-based policy approach (Barca, 2009) which holds that the effectiveness of interventions depends on the fit between thematic goals and local capacities. This result suggests that the thematicpriorities embedded in calls for proposals are not neutral , but rather can facilitate or restrict access for different classes of beneficiaries, and indirectly impacts on the territorial

allocation of resources.

*6.4 Implications for Territorial Cohesion and Policy Design*

This study highlights the challenges of demand-driven allocation systems in contexts with different levels of administrative capacity. While the program alleviates the financial resource constraints of beneficiaries, it does not explicitly address the institutional constraints. As a result, the allocation of resources may not align with territorial cohesion goals, not because of a deliberate policy decision, but because of the way resources are allocated. This result challenges the assumption of neutrality of the spatial effects of demand-driven systems.

In this sense, the findings suggest the importance of complementing the allocation procedure with additional policy instruments such as: (a) building the capacity of less developed regions, (b) explicitly taking into account territorial equity criteria in the allocation procedure, and (c) tailoring calls for proposals to the varying capacities of beneficiaries.

The results of the study highlight that the ex ante allocation process is not neutral but is a key moment in which spatial inequalities can be introduced.

## 7. Conclusions

This study conducted an ex ante evaluation of the allocation of public investment in Greece, focusing on the "Antonis Tritsis" Programme, a demand-driven funding instrument. This study identified considerable spatial inequalities at the approval stage, and the lack of systematic correlation with need indicators.

Administrative capacity constitutes an importan, but not exclusive, determinant in allocation. In general, allocation appears to reflect a a hybrid shaped by the combination of need, capacity and program design (Rodr ǵuez-Pose et al., 2012; Rovolis & Spence, 2022b; Lambrinidis et al., 2005).

From a policy perspective, the study highlights that removing financial constraints alone is insufficient to achieve erritorial convergence. It needs to be complemented by other measures to improve capacity and include explicit criteria for territorial equality.

The research contributes to the international debate by pointing out the relevance of the ex ante stage of allocation as a key process shaping spatial outcomes, and by suggesting an empirical approach to the analysis of other national programs. Further research could extend this analysis by incorporating data on unsuccessful proposals, longitudinal data, and the outcomes of projects in order to better understand the interaction between allocation, implementation and development. The findings highlight that ex ante allocation is not merely a procedural step, but a critical stage in shaping territorial development outcomes.

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## Appendix

This Appendix provides detailed descriptive information on the approved projects and expected physical outputs of the Antonis Tritsis Programme. All data refer to approved projects at the project approval stage and are used exclusively to support the ex-ante analysis of spatial allocation patterns presented in the main text.

Table A1. Number of approved projects by NUTS-2 region and implementing authority

| NUTS2 | Region | Municipalities | DEYA | Regional authorities | Associations | Total Projects |
|---|---|---|---|---|---|---|
| EL51 | Eastern Macedonia and Thrace | 60 | 22 | 1 | 0 | 83 |
| EL52 | Central Macedonia | 122 | 57 | 3 | 0 | 182 |
| EL53 | Western Macedonia | 41 | 8 | 2 | 0 | 51 |
| EL54 | Epirus | 68 | 11 | 1 | 1 | 81 |
| EL61 | Thessaly | 77 | 51 | 4 | 0 | 132 |
| EL62 | Ionian Islands | 103 | 18 | 2 | 1 | 124 |
| EL63 | Western Greece | 8 | 32 | 3 | 0 | 43 |
| EL64 | Central Greece | 75 | 20 | 2 | 1 | 98 |
| EL65 | Peloponnese | 87 | 40 | 3 | 3 | 133 |
| EL30 | Attica | 224 | 2 | 3 | 4 | 233 |
| EL41 | North Aegean | 40 | 2 | 4 | 0 | 46 |
| EL42 | South Aegean | 104 | 19 | 1 | 0 | 124 |
| EL43 | Crete | 96 | 26 | 2 | 0 | 124 |

Table A2. Approved budgets (€) by NUTS-2 region and beneficiary type

| NUTS2 | Region | Municipalities (€) | DEYA (€) | Regional authorities (€) | Associations (€) |
|---|---|---|---|---|---|
| EL51 | Eastern Macedonia and Thrace | 142.723.229,00 € | 76.045.432,00 € | 12.342.222,00 € | 0.00 € |
| EL52 | Central Macedonia | 245.421.896,00 € | 194.621.049,00 € | 36.668.702,00 € | 0.00 € |
| EL53 | Western Macedonia | 88.503.308,00 € | 20.233.037,00 € | 18.284.731,00 € | 0.00 € |
| EL54 | Epirus | 133.726.171,00 € | 30.827.985,00 € | 4.339.611,00 € | 2.316.203,00 € |
| EL61 | Thessaly | 143.453.285,00 € | 150.729.866,00 € | 28.839.730,00 € | 0.00 € |
| EL62 | Ionian Islands | 215.808.159,00 € | 66.187.818,00 € | 18.011.220,00 € | 3.250.000,00 € |
| EL63 | Western Greece | 59.858.983,00 € | 31.922.228,00 € | 12.219.718,00 € | 0.00 € |
| EL64 | Central Greece | 135.554.845,00 € | 92.486.906,00 € | 27.960.053,00 € | 6.233.000,00 € |
| EL65 | Peloponnese | 152.665.487,00 € | 130.614.384,00 € | 18.267.035,00 € | 26.857.461,00 € |
| EL30 | Attica | 776.194.227,00 € | 8.297.075,00 € | 13.143.584,00 € | 13.500.245,00 € |
| EL41 | North Aegean | 68.424.991,00 € | 10.000.000,00 € | 12.391.700,00 € | 0.00 € |
| EL42 | South Aegean | 173.172.813,00 € | 68.830.471,00 € | 620.000,00 € | 0.00 € |
| EL43 | Crete | 180.651.727,00 € | 84.625.361,00 € | 22.803.180,00 € | 0.00 € |

Table A3. Funding allocation, alignment, and administrative capacity

| NUTS2 | Region | Funding per capita (€) | Align (Population) | Align (GDP) | Align (Unemployment) | Beneficiaries | Call Diversity | Capacity Index |
|---|---|---|---|---|---|---|---|---|
| EL51 | Eastern Macedonia and Thrace | 411.08 | 1.15 | 1.28 | 1.15 | Moderate | 14 | Moderate |
| EL52 | Central Macedonia | 265.48 | 0.74 | 0.60 | 0.70 | high | 14 | high |
| EL53 | Western Macedonia | 498.91 | 1.39 | 1.69 | 1.33 | Low | 13 | Low |
| EL54 | Epirus | 535.05 | 1.49 | 2.16 | 1.46 | Moderate | 14 | Moderate |
| EL61 | Thessaly | 469.34 | 1.31 | 1.46 | 1.27 | Moderate | 13 | Moderate |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| EL62 | Ionian Islands | 692.94 | 4.13 | 4.93 | 4.62 | Low | 11 | Low |
| EL63 | Western Greece | 404.55 | 0.45 | 0.57 | 0.46 | Moderate | 14 | Moderate |
| EL64 | Central Greece | 515.87 | 1.44 | 1.52 | 1.42 | Moderate | 14 | Moderate |
| EL65 | Peloponnese | 608.68 | 1.70 | 2.04 | 1.97 | high | 12 | high |
| EL30 | Attica | 212.67 | 0.59 | 0.44 | 0.57 | Very high | 6 | high |
| EL41 | North Aegean | 465.86 | 1.30 | 2.11 | 1.38 | Low | 10 | Low |
| EL42 | South Aegean | 740.11 | 2.06 | 2.15 | 1.62 | high | 13 | high |
| EL43 | Crete | 461.37 | 1.29 | 1.35 | 1.23 | Moderate | 13 | Moderate |

**Notes:** Funding/capita is in euros/inhabitant. The indices of alignment contrast the ratio of the share of funding with the ratio of the share of population, GDP and unemployment. A positive figure above 1 signifies over-representation and a negative figure below 1 signifies under-representation. The number of beneficiaries and capacity index is provided in categories (Low, Moderate, High, Very High), depending on the way the data is distributed.

**Appendix A4–A9: Expected physical output indicators**

The following tables report expected physical outputs associated with approved projects, as recorded at the approval stage.

Table A4. Expected outputs related to water resources

| Indicator | Description | Unit | Value |
|---|---|---|---|
| WR01 | Area protected from flooding | km2 | 1.381 |
| WR02 | Drinking water savings from reduced leaks | $m^3$/year | 57.673.726 |
| WR03 | Length of sewerage networks | km | 1.157 |
| WR04 | Length of rainwater networks | km | 108 |
| WR05 | Length of water supply networks | km | 10.456 |
| WR06 | Volume of treated wastewater for reuse | $m^3$/year | 11.914.819 |
| WR07 | Priority III settlements complying with Directive 91/271/EEC | units | 50 |
| WR08 | Additional capacity for improved wastewater treatment | population equivalent | 229.880 |
| WR09 | Additional capacity for wastewater treatment plants | population equivalent | 148.931 |
| WR10 | Additional supply of improved quality drinking water | $m^3$/year | 14.661.723 |

| | | | |
|---|---|---|---|
| WR11 | Additional supply of drinking water | $m^3$/year | 6.558.659 |
| WR12 | Digital water meters | units | 672.198 |

Table A5. Expected outputs related to building infrastructure

| Indicator | Description | Unit | Value |
|---|---|---|---|
| BI01 | Pre-earthquake inspections of critical infrastructure | units | 2.362 |
| BI02 | Useful floor area under restoration or reuse | $m^2$ | 251.372 |
| BI03 | Useful floor area under repair or maintenance | $m^2$ | 842.954 |
| BI04 | Useful floor area of new buildings | $m^2$ | 156.685 |
| BI05 | Town halls | units | 20 |
| BI06 | Schools (except special schools) | units | 48 |
| BI07 | Special schools | units | 16 |

Table A6. Expected outputs related to energy projects

| Indicator | Description | Unit | Value |
|---|---|---|---|
| EN01 | Installed renewable energy capacity | kW | 72.579 |
| EN02 | Annual primary energy reduction for wastewater management | kWh/year | 13.923.467 |
| EN03 | Annual primary energy reduction for buildings | kWh/year | 5.000.631 |
| EN04 | Annual primary energy reduction for water supply | kWh /year | 79.073.306 |

Table A.7 Expected outputs related to urban regeneration

| Indicator | Description | Unit | Value |
|---|---|---|---|
| UR01 | Creation or redevelopment of outdoor spaces in urban areas | $m^2$ | 4.121.803 |
| UR02 | Area of intervention outside urban areas | $m^2$ | 4.507.184 |
| UR03 | Creation of parking spaces | units | 15.363 |
| UR04 | Electric vehicles | units | 616 |
| UR05 | Footpaths | km | 554 |
| UR06 | Cycle paths | km | 103 |
| UR07 | Electric vehicle charging stations | units | 512 |

Table A.8 Expected outputs related to rural road construction

| Indicator | Description | Unit | Value |
|---|---|---|---|
| RR01 | Agricultural properties served | count | 357.016 |
| RR02 | Length of rural road network | km | 4128 |
| RR03 | Studies | units | 208 |
| RR04 | Jobs created during construction | persons | 19.766 |
| RR05 | Population involved in COVID-19 protection actions | persons | 945.730 |
| RR06 | Beneficiaries from vulnerable groups | persons | 539.737 |
| RR07 | Beneficiary pupils and students | persons | 908.150 |

Table A.9 Expected outputs related to solid waste management

| Indicator Code | Indicator Name | Unit | Value |
|---|---|---|---|
| SW01 | Recycling corners | units | 812 |
| SW02 | Waste and sludge management vehicles | units | 55 |
| SW03 | Separately collected recyclables | tons/year | 157.561 |
| SW04 | Separately collected bio-waste | tons/year | 27.482 |
| SW05 | Additional recycling capacity | tons/year | 105.664 |
| SW06 | Waste transfer stations | units | 4 |
| SW07 | Landfill restoration sites | units | 10 |

All indicators reported in the Appendix refer to expected or planned physical outputs recorded at the project approval stage and do not represent realised economic, employment, or social impacts.