

Eric Vaz
Teresa de Noronha

Sustainable Development in Southern Europe

Spatial Analysis of Regional Challenges

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Eric Vaz
Department of Geography
and Environmental Studies
Ryerson University
Toronto, ON, Canada

Teresa de Noronha
Faculty of Economics
University of Algarve
Faro, Portugal

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Preface

This last decade has witnessed the intensification of major conflicts in several different regions of the world. Among these, migrations from Africa and political instabilities from the Middle East generated a series of tensions in the Mediterranean area. From a geopolitical point of view, southern Europe is one of the most useful pieces of the global puzzle to maintain stability and security within and across Europe and the rest of the world. This argument is itself, enough to justify an extensive reflection about the importance of this region and its countries. Nevertheless, the scholarly focus on southern Europe has been sparse. Europe's history, tradition, political contexts, and social and economic development as well as the legacy of Greece, Italy, Spain, and Portugal, four countries with a total non-neglectable population of more than 128 million inhabitants.

The illustrative image brought by the Portuguese Nobel laureate in Literature, José Saramago, raises in his novel *The Stone Raft* an interesting question: What if the Iberian Peninsula would drift apart from the rest of Europe? A large shaft would divide a floating island from the continent, while the raft, shaped from the Iberian Peninsula, would drift to the unknown, en route of a collision to unpredictable places. This scenario shares an interesting starting point for sustainable development in southern Europe. Nowadays, the European Union has had large importance in planning and intensifying the decision-making processes for economic growth and development for future generations of its member states. However, just like in Saramago's stone raft, a raft is becoming increasingly formed between the north and the south. This is mainly due to the economic recession Europe has witnessed, and while central European countries such as Germany and northern Europe seem to be catching onto firm soil, southern Europe seems to be drifting in the uncertainty of its future.

The large impact of the economic recession on sustainable development is also felt strongly at the spatial level: while infrastructures built during the 1990s are still existent in many places in southern Europe, many have become over the last decade doomed to inevitable debris for future generations. Within the economic recession,

the available policy support and investment in research and development have also become strongly conditioned, leading to apathy from decision-makers without financial possibilities to investment and maintenance. The European Environmental Agency has released a concerning report, stating that urban sprawl is an increasing phenomenon (EEA 2006a), resulting from a lack of planning and the inability of decision-makers to cope with the current crisis. With over 75% of the world population located in coastal zones, the conflict between urban expansion and future coastal risk brings almost surreal consequences to the future of Europe as we know (Vaz 2014). This will be especially felt in southern Europe, where the coastal activity is one of the most important economic sectors of activity, opening an additional fragility to its economic, social, and ecological systems.

The landscapes of southern European cities, once rich in wetland systems and of unique biodiversity and natural, have become on the verge of an imminent and unprecedented decline. Furthermore, coastal cities, which are rendered to urban sprawl, have majorly damaged natural heritage, archaeological landscapes (Vaz 2020), and quality of primary sectors, also facing a novel challenge besides the economic recession: climate change. However, little work has been done to assess the complexity of this threefold paradigm of economic decrease, urban change, and climate change, combined with the impacts of future cities, urban sprawl, and natural heritage. Climate change in southern Europe is affecting directly coastal erosion and will have unprecedented consequences on the city nexus as well as the loss of most historical heritage existent in Portugal (Vaz et al. 2012), Spain, Italy, and Greece. Meanwhile, the synergy between the coast, tourism, urban expansion (Vaz et al. 2011), and regional environmental change (Vaz et al. 2013) is a concerning issue in southern Europe with direct impact predictable on the diversified habitats for wildlife, ecosystems, and potential for economic growth and sustainable development. Within a changing landscape, the economic growth and the opportunities that are still available should carefully be assessed to examine the current state of coastal environments in southern Europe, as to understand the current risk and the potential still available for sustainable development in most southern Europe. Another major problem arising from the last decades of intensive investment in such countries is an emerging corruption at an institutional level, in particular in what concerns banking and building the sectors. The context readdresses the responsibility of bankruptcy and bad management to public responsibility while emerging fortunes are created offshore.

Our book is part of a long-term research project discussing the above issues, but not tackling from the start the multitude of issues deserving scientific attention and discussion. With this publication, the authors are trying to promote a critical analysis from their area of expertise while calling the attention for an emerging problem, also addressed from a spatial perception. For example, inhabitants in the region are facing the loss of rural land to urban contexts without progress, which brings very profound and severe consequences for the regional progress of these countries. Southern Europe: Major Trends and New Prospects refers to the changes in urban and rural southern Europe, mostly addressing an analysis of innovation in its cities,

urbanization, and regions, to reinforce the need for a continuous reflection and involvement.

Relying on an integrated approach to assemble spatial data and extending innovation as well as sustainability to the debate of landscape and urban and rural interaction (Vaz et al. 2010), it becomes nowadays of great importance to measure as well as visualize and inform on current and future changes at the regional level. The combination of these different silos leads to the importance to assess the carrying capacity as well as the landscape and rural performance of southern Europe urban regions, cities, and rural hinterlands.

A combination of spatial analysis and advanced statistical and economic models allows assessing the challenges of the regional future of southern Europe. This depicts a clear dimension of sustainable development that must be considered in generic terms to be integrated into modern decision-making and abridge new trends for a more efficient and prosperous future. The richness, heritage, and potential at the regional level of southern Europe are tremendous (Vaz et al. 2014). By integrating and developing methodologies that pose integrated methods to protect our natural landscapes and spatial regions allows for advances in the scientific fields of social sciences and defines an important dimension for sustainable cities, regions, or nations. Furthermore, at spatial level comprehending and using methodologies to evaluate from an environmental assessment the risk of the landscape is not only an asset for the empirical changes in a context of climate change, but rather, the lessons learned in southern Europe are ones of understanding also future risk at global level, in an attempt to learn from the past and protect fragile ecosystems and biodiversity from unmanned urban growth and obsolete planning.

In this volume, three paradigms are initially labeled, corresponding to different book parts: Cities; Innovation and Landscape; Analytical Tools and Nature; Regions; and Urban Challenges. All of these aspects are fundamental in comprehending the complexity of sustainable development in southern Europe. While the first section deals with the often unmanned directions taken by a lack of strategies for innovation of governmental cities dealing with urban and rural planning, the second section expands on the analytical tools to understand the production capabilities of local governance and the impact they can have on cities and their performance. Finally, the third section puts this in perspective and approaches an integrative holistic view of the consequences of urban sprawl and the diversity of preservation of the environment as well as a landscape within the framework of regions (Vaz and Nijkamp 2015). These dimensions are intrinsically conceptual; the core objective is the assessment of the spatial analysis of the impacts of these dimensions, regarding three research clusters which form what might be considered a choice for future sustainable development in southern Europe and new paths to reconcile economic growth, nature, and landscapes within regions (Vaz 2016). The integration of spatial information and quantitative methods for regional analysis within a decision-making context is of utmost importance for southern Europe, where in recent decades and in particular current policies Europe have proposed

significantly changes from a regional and a national perspective, regarding socio-economic drivers and existing policies. Southern Europe is witnessing processes of profound sociological and economic changes in which regional sciences may be of paramount interest in integrating visions of a more sustainable urban, city, and ecological future.

This book stays an open project. Our goal of altering the political power and efficiently addressing the regional governance structures is, in conscience, quite ambitious and will only be fulfilled if developed at a much bigger scale. Thus the role of this book is to inspire scholars for positive change. It is an effort of cities and regions that allows deriving the power of synergies that may robust Southern Europe in the future. It is through the hope of enthusiasm that this book poses a hypothetical view for the structural development of southern European countries that carry such a rich heritage since antiquity.

Public policy has a major role to play in southern Europe. The region calls for a permanent observatory, able to monitor and accompany its dynamics and concerns and also to find replies to several questions that have been raised by the authors during their research such as (1) Why the significant gapping trend from the rest of European countries despite the strong commitment from the European Union to reduce regional development asymmetries and modernize the governance systems of these countries? (2) What explains the persistent, low innovative entrepreneurial issue, so close to technological innovation even when regional universities do their best to profile among the best in Europe and the world? (3) Why the persistence in keeping up with corrupt political systems debiting the countries and jeopardizing the best opportunities to progress?

A set of eight chapters address these issues. The first chapter, entitled “Diversity and Country Performance,” aims to launch in readers the idea of the state of the art of southern Europe’s productive systems. Providing a formal presentation from the social-economic point of view, we analyze some productivity indicators that, over time, allow a perception of structural change, even at the level of emerging locational choices. These are of particular importance for southern Europe as countries have undergone profound changes due to the rapid integration into the European Union. Bringing to the whole region a fast exposure to open markets, followed by global markets, the urgent need to innovate both in terms of processes and products became evident, enabling a substantial impact on the need to welcome new production systems.

The second chapter, “Regional Opportunities in Southern Europe,” draws attention to a phenomenon emerging from the observation of the initial discussion: the fact that much of southern Europe belongs to the rural world, whose foundations always sway in structural change environments. Herewith we refer to the pillars of rurality, which we consider being a scenario of modernity based on new governance systems. The title of the chapter relates to opportunities. Such opportunities emerge from the two scenarios of change we have provided and probably the only valid ones for the survival of Southern Europe. It is a space so rich in a historical and cultural legacy representing our occidental civilization’s launching.

The third chapter represents the methodological continuity of the second one, “Landscape and Heritage in Southern Europe,” demonstrating our argument from the previous section. The integration of geo-visualization and spatial modelling is proposed as a fundamental tool to monitor southern Europe’s sustainability.

After an evolutionary approach of the territorial space, the authors introduce a consistent socioeconomic assessment in Chap. 4, “Analytical Tools from a Socio-economic Point of View.” Illustrating from an empirical standpoint, they also offer a comparative analysis of different production systems in southern Europe.

The empirical analysis serves as a point of conciliation between the argument that the strategies for the development models of Southern Europe should never be planned without being based on a clear and pragmatic evolutionary analysis of the focused territories’ productive systems.

The arguments of the fifth and sixth chapters entitled “Behavioral Patterns of Innovation in Lagging Regions of Southern Europe” and “Modelling Regional Innovation Patterns: The Case Study of Portugal” reinforce the set of arguments. In the first case, the evidence is provided that each territorial space can model specific patterns of different business behaviors. The sixth chapter explores that the regional dynamics of these spaces are different, although aggregable in clusters that facilitate intervention and collaboration at the networking and governance systems level.

After a detailed analysis at the level of the territories, the seventh chapter completes the specific study of the territorial area using novel geocomputational methods at the level of urbanization of agricultural areas, pointing to new emerging rurality in southern Europe, a very important concern in the context of rapid urban change in the region.

Chapter 8 closes the book with the ongoing importance of agricultural land and the richness as well as the diversity of rural land use and small towns in southern Europe. By exploring these vectors further, this chapter brings the importance of using geocomputational methods in the context of understanding the consequences of the dynamics of land use change and the possible impacts of agricultural land for the future of southern Europe.

Chapter 9 launches the comparative analysis of current land use patterns concerning the re-designation of agricultural land for urban use, permitting us to relate the results of urban variation per municipality with a variation of losses in RAN. In this sense, insights are offered on the importance of local dynamics beyond the regional-sphere of spatial-decision support systems and regional growth, converging policies, and governance that tend to have cyclical regional trends in southern Europe.

In its entirety, this book is motivated by the profound resilience of southern Europe, brought by a historical, cultural, and environmental heterogeneity that grants it a place to succeed in the future. The integration of landscape, innovation, and the impacts on land use and regional change create a functional dialogue of a

story of resilience and hope where southern Europe has a unique potential to manage its growth, despite the present and future adversities.

Toronto, ON, Canada
Faro, Portugal

Eric Vaz
Teresa de Noronha

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Contents

1	Diversity and Country Performance	1
1.1	Productivity, Structural Change, and Locational Choices	1
1.2	Innovation and Cities: From Old to New	10
1.3	Production Systems in Southern Europe	15
1.4	Conclusions	19
	References	21
2	Regional Opportunities in Southern Europe	23
2.1	A New Scenario for the Rural World	23
2.2	Governance Systems	32
	References	34
3	Landscape and Heritage in Southern Europe	37
3.1	Landscape, Land Use, and Regional Change	37
3.2	The Importance of Heritage Landscapes	40
3.3	Southern Europe: The Heritage Dimension	41
3.4	Archaeology as Part of the Regional Landscape	46
3.5	Spatial Solutions for Sustainable Development: A Systemic Vision	47
3.5.1	The Coherent Landscape	49
3.5.2	The Dominant Landscape	50
3.5.3	The Vertical Landscape	51
3.6	Geovisualization: The Role of Mentoring Regional Science in the Future	51
3.7	Conclusions	53
	References	54
4	Analytical Tools from a Socioeconomic Point of View	57
4.1	Framework for Dynamic Analyses	57
4.1.1	The Concept of Local	58
4.1.2	The Concept of Local/Regional/Territorial Production Systems	59

4.1.3	The Concept of Industrial Models and Production Systems	60
4.2	The Need for Applied Methods to Build Strategic Decisions of Development	61
	References	68
5	Behavioral Patterns of Innovation in Lagging Regions of Southern Europe	71
5.1	Introduction	71
5.2	New Shapes of Business Organization	73
5.3	Implications at the Organizational Level of Industrial Space	74
5.3.1	Cluster 1: The Lagging Periphery	75
5.3.2	Cluster 2: The Growing Regions	76
5.3.3	Cluster 3: The Spearheading Regions	76
5.4	Modeling Patterns of Entrepreneurial Behavior and Innovation Dynamics	77
5.5	Useful Conclusions for Southern Europe	85
	References	87
6	Modelling Regional Innovation Patterns: The Case Study of Portugal	89
6.1	Regional Economic Dynamics	89
6.2	Spatial Aggregation and Geometrical Clusters	91
6.3	Spatial Connectivity	94
6.4	Graph Theory: An Abstract Approach to Urban Areas	98
6.5	Further Modelling Results	100
	References	101
7	Southern European Coastal Environments: An Assessment of Portugal	103
7.1	Introduction	104
7.1.1	Land Use and Urbanization	104
7.1.2	The Economic Context	106
7.2	Study Area	108
7.2.1	Data	109
7.2.2	Methodology	110
7.3	Methodology	112
7.3.1	Integrating Percolation	112
7.3.2	Percolation Probability Model	115
7.3.3	Coastal Erosion Impacts	117
7.4	Conclusions	117
7.4.1	The New Rurality in Southern Europe	117
7.4.2	Southern Europe’s Coastal Spillovers	119
7.4.3	Reinventing the Rural South: Matching Urbanization with Climate Change	119
	References	123

- 8 Spatial Association of Agricultural Land Loss in Southern Europe** 123
 - 8.1 Southern Europe: A Region in Unprecedented Transition 123
 - 8.2 Data and Methods 125
 - 8.2.1 Data 125
 - 8.2.2 Defining Agricultural Hotspots 126
 - 8.2.3 Spatiotemporal Agricultural Land Use Change 128
 - 8.3 Discussion 128
 - 8.3.1 Agricultural Land Use Change 128
 - 8.3.2 Local Spatial Autocorrelation in Southern Europe 130
 - 8.4 Discussion 131
 - 8.5 Conclusions 132
 - References 134

- 9 Southern Europe: The New Regional World** 137
 - 9.1 Introduction 137
 - 9.2 A Study Case: The Algarve 139
 - 9.3 Data and Methodology 142
 - 9.4 Conclusions 146
 - 9.4.1 Urban Growth and Agricultural Land Loss 146
 - 9.4.2 The Reserva Agrícola Nacional in the Future 148

About the Authors

Eric Vaz is tenured Professor and Director of the Laboratory for Geocomputation, Department of Geography and Environmental Studies, Ryerson University. Until 2020, he served as the President of the Canadian Regional Science Association. He also sits in several editorial boards for a multiple set of key journals in the fields of regional science, development, and anthropogenic activity. With over 70 scientific contributions in his field, he was distinguished in 2012 with the nomination of “Rising Star” by the Regional Science Association International. In 2015, he received the award of the Dean’s SRC Award for the Faculty of Arts at Ryerson University. Professor Vaz focuses on using spatial analysis methods, and complex system modelling approaches as well as Geographic Information Systems and Science to understand regional dynamics and integrate a better understanding of policy and the anthropocene.

Department of Geography and Environmental Studies, Ryerson University, Toronto, ON, Canada

Teresa de Noronha is Full Professor of Economics at the Faculty of Economics, University of Algarve, Portugal. She was for many years the President of the Research Centre for Spatial and Organizational Dynamics (CIEO) and Director of the PhD Program in Innovation and Land Use Management. In her international academic career, she has been Guest Professor at the Université Paris I, University of Gent, University of Bologna, and University of Toronto. Her recent research points to the frontiers of innovation and local development. She analyzes different behaviors of economic agents in a context of spatial dynamics, in particular in peripheral areas, to better promote local development. She also writes about the importance of knowledge management in the development process also in small and medium size towns. To date, she has edited and authored numerous books and book chapters related to regional and innovation economics, management in small businesses, and local development and has produced hundreds of scientific and technical papers related to such topics.

Faculty of Economics, University of Algarve, Faro, Portugal

Chapter 1

Diversity and Country Performance



Abstract This opening chapter offers a country-based analysis of socioeconomic drivers of innovation and territorial governance, bridging the significant trends in recent decades toward the optimal change of the organizational landscape. It is found that southern Europe, despite a tremendous potential of culture, landscape, history, and endogenous growth, is lagging. This leads to a thorough discussion of the south of Europe's production systems, and how they should locate themselves in line with sustainable development and regional innovation systems. It is found that urban sprawl has been a critical driver for the relocation of organizations in the south through cluster analysis. However, the exploration of new innovative systems must consider the strength and opportunity of regional sustainable development by reverting to traditional products as well as discuss the integration of sustainable drivers of agriculture and local development for efficient sustainability of southern Europe in the decades to come.

Keywords Sustainable development · Regional innovation · Spatial decision support systems · Geographical analysis · Cluster analysis · Agricultural development · Urban growth · Southern Europe

1.1 Productivity, Structural Change, and Locational Choices

The field of economic sciences has so far identified many different factors which are essential for the prosperity of humankind in society. Despite this, economics has often been accused of misconceptions and misguided behavior. This is fundamentally unfair considering that the primary goal of economics is to find best methods to manage scarcity, as well as human and capital resources offering benefits to the entirety of the system in the long run. Such a challenge, however, is not easy to undertake, especially due to the fact that economics, as a social science, is intrinsically ambiguous and subjective. Experimentation with humankind and its social abilities as well as ineptitudes may irreversibly damage society. Thus, as to avoid

hindrances and failures, economics must slowly progress and become very attentive to the interactions with all other sciences across the broad spectrum of scientific knowledge that use socioeconomic conclusions. The field of political and administrative sciences belongs to such a group of complementary fields. This book offers an integrated vision of southern Europe, a region which tends to have several socioeconomic, environmental, and urban-rural challenges. During the last decades, decision-makers have exercised multiple attempts to frame national governance systems in countries such as Greece, Portugal, Italy, and Spain often with unsuccessful results. By describing some of the most relevant features of socioeconomic activities in southern Europe, we aspire to emphasize its economic identity and long-term well-established social mechanisms. This shall offer a toolkit to modern administration status within the current challenges of southern Europe's status quo. Concerning economic activity, history has neglected organizing the economic actors so that each one fits a separate task but, together, all can produce the necessary goods for social welfare. In this process, not always are the interests of economic agents equal; conflicting visions require a robust regulative power with capacity and an administrative power to reinforce legislation throughout the hierarchical legal structure of regional governance.

Although economic activity appears to embody a social objective to produce essential goods and services, it interacts similarly to a living organism, composed of multiple functions, which provided an ecosystem of three domains – people, businesses, and the government – in which populations justify the existence of companies by consuming what is produced. Companies, regardless of what they produce, are responsible for making their strategic choices within different silos (profit, personal prestige, family stability, etc.), and most of the consumers' choices are driven by trends and prosperity within a capitalistic model. The state regulates, by acting better or worse and according to different political profiles, using democracy as a regulating mechanism across most of the developed world.

Within these complex interactions, the countries are presented with an enormous diversity regarding production structures, revenue distribution, or consumer patterns upon which many different governance systems must occur. Contrasts are present and asymmetries in development detected which are caused by various reasons, frequently of historic nature leading to path tendencies of future interactions. And thus, a regulatory and socioeconomic framework emerges, within the zeitgeist of needs and demands of the present that must inevitably shape the needs and demands of the future.

In such a setting, southern Europe becomes an interesting and diversified region. Despite its relatively small size, most of the arguments mentioned above occur in the complex interactions of a heterogeneous system of regulatory frameworks. For this region, history and natural resources have determined a path dependency that once represented knowledge, growth, and prosperity. In most of the southern European countries, today, however, progress tends towards financial dependency and consequent significant social struggling. A more in-depth analysis of this region is of utmost importance as to understand the tacit values of its assets and lessons learned, promoting the contextual awareness of its population while generating a robust