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New Metropolitan Perspectives

Transition with Resilience for Evolutionary Development

Springer

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Preface

This book conveys attention to the theme of transition toward resilience and sustainability and its evolutionary perspective that emphasizes the complexity and uncertainty in which governments and society are called to take action in response to the ongoing severe and pressing challenges and find shared visions and pathways for an alternative future.

Therefore, the book aims to bring together scholars from a wide range of disciplines to creatively engage with the current debate on how the recovery and resilience plans will shape the future of cities and regions in Europe. It primarily targets the academic and policymaker communities involved in managing the complexity of the transition processes that regions and cities are called to address in facing the pressing and severe current challenges they are exposed to.

The book reflects the results of the ongoing research activities of the Transition with Resilience for Evolutionary Economic Development (TREnD) project, funded by the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska Curie Actions—RISE 2018. The TREnD project sheds light on new approaches to facilitating the regional and urban transition to sustainability while reinforcing resilience to the shocks induced by transition dynamics. Specifically, the project investigates how "resilience-building" strategies can strengthen regional capabilities to activate, deploy, and manage transition processes toward sustainability. TREnD research activities are oriented toward the identification and comprehension of the factors which is able to enable or hinder transition strategies from the governance perspective, the assessment of the context-specific characteristics which is able to activate resilience-building processes, and the unveiled of the unleashed local potentials that external shocks—cities and regions are exposed to—can reveal in favor of reshaping development trajectories.

In this framework, the focus of the book appears timely and relevant. Inequalities and disparities related to the current globalization dynamics, the pressing need to face climate change through mitigation and adaptation processes, the severe consequences of the Covid-19 pandemic, and the recent geopolitical events impose the revision of last decades' development patterns. In a few words, the transition toward a more sustainable future is no longer an option. Addressing the energetic transition by protecting natural ecosystems and ensuring sustainability, boosting digitalization processes toward the knowledge society, and ensuring social inclusion and equity are just a few of the main issues to address. The European Commission, national, regional, and local governments, civil society, and the private sector are called to an unprecedented effort to define a better future for the Union. Therefore, transition, resilience, and sustainability are the keywords to descend for responding to the transforming socio-ecological and socio-technical dynamics at the core of evolutionary development. Harnessing globalization, addressing industrial change, embracing innovation and digitalization, managing migration in the long run, and fighting climate change define the global challenges across distinctive features and conditions of places which is able to respond according to local needs. Policy packages need to be integrated and coordinated, delivered at a national,

regional, and local level while adapting to different territories' needs. In this direction, the role of regions and cities appears crucial in formulating adequate responses to pressing and severe challenges.

The recent Covid-19 pandemic has struck territories and communities, exacerbating cross-generational gaps already present in the pre-Covid era and bringing to light the increase of economic and social disparities, which have grown since 2008 with the last economic downturn, generating a geography of discontent that paved the ground for the increase of populism and nationalism in late 2018.

In Europe, the response to such a "perfect storm" conveyed in a new policy framework oriented at the just, green, and digital transition to increase the resilience and sustainability of the Union. The reforms of the investment plans launched with the unprecedented initiative of the NextGenerationEU and implemented with the Recovery and Resilience Facility including the Cohesion Policy (ESI funds) require effective multilevel governance in which multiple governments, national, regional, and city councils are autonomous but interdependent in the complementarity of planning strategic solutions based on mutual learning and negotiation. At the same time, data-driven resilience and transition frameworks back the strategies to accelerate the adoption of essential community resilience and climate adaptation plans. In light of a new scenario of urban/territorial development, which strongly emerged from the pandemic but needs to be planned to facilitate the transition toward sustainability, the traditional approach to managing local phenomena can no longer guide political choices in response to the speed of change. In this direction, the book drives the reader to a better theoretical and practical comprehension of resilience and transition, and the need to develop proper and adequate metrics through data analytics tools, arguing for a holistic approach around the territorial and social cohesion pillars in combining urban-regional science with research-innovation dynamics, and bringing into focus an array of controversial issues that the concentration of innovation, produced by knowledge complexity, may generate in peripheral areas.

The transition concept and its management are gaining relevance in the scientific and policymakers' arena. However, translating transition concepts and principles into practice is difficult. Transition is a long-term process open to unpredictable events that can affect its path but not change the final objective.

In this book, we argued that in light of the complexity and uncertainty of these times, designing, planning, and managing the transition are critical for increasing the resilience ability of territories and reaching the overarching objective of sustainability.

It is interesting to notice how—despite the relevance of the transition concept in the last decade—the understanding of "where" transition occurs and its spatial configuration has been neglected. The spatial configuration of transition dynamics, the understanding of their triggering mechanisms, as well as the management of their complexity are critical elements that should characterize planning processes for the facilitation of the envisaged transition, which has to be green and digital but grounded on a more important pillar: social justice.

Despite the multilevel policy efforts—from the EU to the local level—the last two decades have shown how social and economic vulnerabilities, as well as territorial imbalances, persist. In the early 2000s, the European Commission set the ambitious goal for

the transition to a knowledge-based economy and society placing knowledge and innovation dynamics at the core of the development pattern to pursue. In this direction, the pre-Covid EU policy efforts in the programming period 2014–2020 focused on knowledge and innovation dynamics as central elements in leveraging public policy to reduce the gap between advanced and less advanced regions. Such an effort materialized in the Smart Specialization Strategies (S3) to discover the entrepreneurial potential of places supposed to activate territorial dynamics and stimulate local innovative potentials based on context innovation areas determined by regional actors. One of the main concerns raised during its implementation was related to the effectiveness of this policy setting in reducing disparities between advanced and less advanced regions. Many scholars and policymakers agreed on the ability of innovation to concentrate and cluster in specific localities and on the difficulty of rebalancing the complexity of knowledge and innovation dynamics in favor of less advanced regions and cities.

In order to address the challenges of the post-Covid recovery with the aim to reduce socio-economic and territorial disparities, the EU budget for the programming period 2021–2027 has been topped with additional funds contained in the NextGenerationEU financial package, a temporary instrument to facilitate the recovery while fostering the transition toward a sustainable future for the Union. The pillar of the NextGenEU is the Recovery and Resilience facility, whose main aim is to address the vulnerabilities emphasized by the pandemic effects, prepare the Union for the opportunities of green and digital transition, and reach the overarching objective of effective sustainability. Accordingly, each Member State has developed a National Recovery and Resilience strategy with the clear objective of addressing inequalities and disparities and exploiting local potentials for facilitating the transition. In this framework, addressing territorial imbalances among more and less advanced regions and between urban and rural areas is critical as it questions the strategy's effectiveness in reducing socio-economic differences. Each Member State presents territorial imbalances (north–south, urban–rural), which cannot be simply solved by channeling financial resources in most distressed areas. Given the persistent vulnerabilities and the lack of institutional ability to manage these resources, the gap with advanced regions will widen, increasing territorial imbalances. Furthermore, the recent geopolitical events, which also show the potential side effects of transition, can contribute to the revision of these national strategies distracting resources for distressed areas toward sectoral and thematic national contingencies. The risk of not addressing persistent vulnerabilities and increasing disparities is real. These overall context conditions open the floor for outlining a set of crucial elements for the definition, design, and management transition toward sustainability. The central question which to find an answer is how to facilitate the transition toward sustainability by favoring at the same time the resilience of economies—and territories—and ensuring equity and inclusiveness.

For this purpose, the book is grounded on the relevance of the planning dimension. It pays attention to the perspectives, approaches, experiences, and practices that can provide the ground for a fruitful debate around transition and resilience. It looks at regions and cities' efforts in planning transformative processes by casting light on the ongoing experiences in boosting multilevel governance and bottom-up processes for supporting local transformative dynamics that can increase territories' resilience. Moreover, it

emphasizes the role of new technologies and data-driven approaches to facilitate such processes.

The recent development of new technologies and the rising relevance gained by data-driven approaches are turning points in the knowledge of social, economic, and environmental phenomena. The increasing relevance of computational science (artificial intelligence, machine learning, big data) also pervades the planning dimension. The availability of data and the increasing development of tools and techniques for their analysis is providing—and could provide—valuable support to inform decision-makers in the planning of the transition toward resilience and sustainability. Data-driven planning processes can offer flexibility, adaptability, and facilitate transformative development in defining sustainable development paths for cities and regions by detecting the co-evolution of the socio-ecological and socio-technical demand. Therefore, knowledge, research, and innovation dynamics coupled with innovative approaches in planning and governance are crucial for developing suitable solutions for resilience and sustainability. Furthermore, a better comprehension of these dynamics for ensuring equity and inclusiveness is the main challenge for facilitating the envisaged just, green, and digital transition toward resilience and sustainability. Data-driven planning processes can detect the transition dynamics and facilitate the deployment of their positive effects, but also provide the instruments for managing contemporary complexity. The continuous interaction between humans and technological devices shapes and modifies socio-technological dynamics provides the ground for exploiting data oriented at a better comprehension of social phenomena and addresses current issues. In this direction, pathways are emerging regarding research-based, policy-oriented actions and citizens' daily life that already exploit new technologies and instruments for the transition toward resilience and sustainability.

The push toward an open-data society, in which civic digital ecosystems at the local and national level can activate open-based research and innovation processes, oriented at the improvement of people's life by reshaping the citizens–institutions relationship. It is not a surprise that new approaches linked with computational sciences are shaping the emergence of the so-called urban science and developing approaches such as urban informatics that have clear direct and indirect implications for planning and governance processes. Such implications, directly and indirectly, affect how public authorities design and plan the future transition. The availability of real-time data and the speed of data processing due to technological improvements allow the generation of constantly updated pictures of phenomena (from pollution levels using satellite data to mobile phones for improving public transportation options) at the macro- and microlevels. Data can be used to improve the decision-makers' processes and constantly monitor and eventually adapt the implementation of plans and initiatives. Also, they can contribute to new forms of civic engagement and participation and improve the ability of public authorities to deliver timely and efficient public services. Most importantly, data and data analytics are valuable sources of information to better understand how to address climate change's side effects and reduce vulnerabilities and risks.

During the last decade, many higher education institutions and research institutes and centers have focused their activities on the relevance of data to address local issues. Such processes have generated civic data/digital ecosystems nurtured by three main veins. The

first is the multidisciplinary contamination of research activities in computational science. The advancement of new technologies in the definition of artificial intelligence and machine learning processes is opening new windows of opportunity for developing better solutions to current issues through the potential deriving from the contamination with other disciplines: biology, chemistry, medicine, and last but not least, planning. As a result, multidisciplinary and interdisciplinary educational programs focused on the potential implications of computational science are being developed in many countries. Furthermore, the re-definition of societal relationships, intended as the complex dynamics among public, private, and civil society actors, is evolving into new forms. New public–private partnerships are arising worldwide for the development of approaches which is able to find solutions to contemporary problems and define new opportunities for a better future.

Following this rationale, the book is structured around three specific thematic areas emphasizing the role of planning for managing the complexity of the challenges to face. The first focuses on the envisaged transition toward resilience and sustainability, which outlines the increasing relevance of complexity related to the ongoing socio-ecological-technical transformative processes. Therefore, attention is posed to the new EU perspective for the transition that merges innovation policies and territorial perspectives. The EU Strategic Agenda for 2019–2024 is grounded on four main priorities: protecting citizens and freedom, developing a strong and vibrant economic base, building a climate-neutral, green, fair, and social Europe, and promoting European interests and values on the global stage. Such priorities are the drivers for the Commission's guidelines focused on the just, green, and digital transition of the Union toward resilience and sustainability. However, the current challenges imposed by the globalized dynamics call for multilevel efforts in sustaining the recovery and reacting to the continuous shocks that may hamper the development of suitable solutions toward such ambitious goals. These aspects are investigated through the contributions focused on transition, its governance, economics and innovation policies, European digital technology, and the sustainability dimension for a renovated Smart Specialization Strategies (S3) approach under the lens of the territorial perspective. Such a policy shift formulated in response to the recent pandemic lends relevance to the role of regions and cities in implementing tailored actions to boost the transition toward resilience and sustainability.

Considering that transition is based on transformative processes that will deploy their effect in the mid- and long term, the planning dimension becomes crucial for defining suitable development pathways to reach the ambitious—but necessary—goals of increasing resilience and achieving sustainability. This aspect is at the core of the second thematic area that focuses on complex processes in cities, which catalyze the immediate deployment of mitigation and adaptation actions. For a long time, cities have attempted to address their vulnerabilities in a rapidly changing context shaped by socio-ecological and socio-technological transformations, too dynamic to be absorbed timely by institutional processes. Although most of the side effects related to global dynamics come to the fore in cities, it is in cities that experimentation and innovative solutions are deployed to face the complexity of such challenges. Therefore, this book section houses contributions that outline the importance of planning in boosting resilience and

sustainability-oriented processes in cities. These contributions focus on the urban dimension of transition regarding cities' ability to deploy adequate and timely responses from the policy-planning perspective. This part of the book explores approaches, cases, and experiences that emphasize the role of cities in planning the transition by adapting their planning tools.

One of the recent examples of policy frameworks for managing the complexity of urban transition processes is offered by the Driving Urban Transition program, developed thanks to a joint European research-based initiative. Built over a multidilemma approach, the DUT framework aims to manage the complexity of the urban transition processes by emphasizing the importance of district-based multisectoral initiatives to facilitate cross-system transformative processes through innovative technical solutions. For this purpose, the DUT framework identifies three main pillars for achieving low-carbon cities: the positive energy district, the circular economy, and the "15 min city". These three pillars are strongly correlated to each other, as the overall objective of a carbon neutral city can only be achieved through an integrated and multisectoral approach. This new vision can be deployed in cities where the transition toward resilience and sustainability is supported by planning processes that boost adaptation and transformative development.

The third thematic area explored in this book is related to the green and digital transition by glimpsing at approaches, experiences, and cases that outline possible pathways for a bottom-up development of innovative solutions in cities and inner areas. The development of new technologies is pervading vertically and horizontally the ability to find solutions to local challenges and issues. It affects how local communities auto-adapt and self-organize in response to the side effects of global dynamics. It helps in the implementation of innovative solutions for making cities more sustainable. Moreover, it boosts social innovation practices for local communities' empowerment and sustainable exploitation and valorization of local resources. The contributions guested in this section of the book outline a clear orientation for taking advantage of new technologies and digital solutions, suggesting possible bottom-up approaches to face the challenges of transition. Such an effort should prioritize the exploitation of knowledge and innovation dynamics placing urban innovation ecosystems as central elements in driving the transition toward resilience and sustainability. They are characterized by nonlinear development, adaptation and self-organization processes, and transformative dynamics, all properties that, if supported by public policies, can effectively drive the envisaged transition. From one side, they can channel knowledge and innovation dynamics into developing new technologies and solutions to face the challenges of the green and digital transition. From the other side, the support provided by public policies—both in terms of innovation and economic-oriented measures and in regional, city, and urban planning—can ensure the concrete materialization of the transition by exploiting this potential to address local challenges and ensuring social equity and inclusiveness in the effective transition toward sustainability.

The contributions of this book point out that the complexity of the current challenges is not only remarking on our vulnerabilities but also the limits and controversial effects—for the environment and humanity—of the development paradigm pursued in the last decades, that is no longer sustainable and must be rapidly corrected or reversed. A renovated relationship between nature and humans is needed, in the awareness that we

do not have a planet B, and therefore without the preservation, restoration, sustainable exploitation, and regeneration of natural resources, as well as the complete decarbonization of our economies/societies, the opportunities—but more important the rights—of current and future generations will be seriously compromised. These elements provide a renovated centrality to planning processes for dealing with the complexity of these times and designing a better future for people. This new perspective paves the ground for the development of data-driven planning processes able to ensure a sustainable transition in all its three main pillars: social, by addressing the widening disparities and inequalities; economic, by promoting circularity as the main development paradigm for sustainable economic growth; and environmental, by reducing the pressure on natural ecosystems and mitigating the side effects of climate changes.

The contributions collected for this book have been presented at the sixth International Symposium "New Metropolitan Perspective Post COVID Dynamics: Green and Digital Transition, between Metropolitan and Return to Villages Perspectives", scheduled from May 25 to 27, 2022, in Reggio Calabria, Italy, in the specific focus sessions "TREnD", as part of the research activities conducted within the "TREnD" research project. The sessions saw the participation of high-quality international academics and experts from an international network of higher academic institutions by guesting significant contributions to stimulate a fruitful debate on global challenges among academics and policymakers. The themes discussed in these sessions followed the critical elements of the debate on a shift in policy design and implementation to drive transition-oriented structural changes in regions and cities. In this direction, this book offers the chance to navigate the complexity of transition and resilience by outlining possible policy agenda priorities, new approaches, cases, and experiences that enrich the flourishing academic and policymakers debate on the green and digital transition.

The design and organization of the specific sessions is the result of the synergetic activity of the TREnD and ZES (opportunity Zones for innovation EcosystemS governance) projects, which have received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreements No. 823952 (TREND) and No. 846144 (ZES), and the Smart Open Urban-rural iNnovation Data (SOUND) project that has received funding from the Italian Minister of University and Research (MIUR) under the PRIN—Progetti di Ricerca di Rilevante Interesse Nazionale Bando 2017 grant No. 2017JMHK4F.

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