

TeMA

Journal of
Land Use, Mobility and Environment

Cities need to modify and/or adapt their urban form, the distribution and location of services and learn how to handle the increasing complexity to face the most pressing challenges of this century. The scientific community is working in order to minimise negative effects on the environment, social and economic issues and people's health. The three issues of the 14th volume will collect articles concerning the topics addressed in 2020 and also the effects on the urban areas related to the spread Covid-19 pandemic.

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THE CITY CHALLENGES AND EXTERNAL AGENTS.
METHODS, TOOLS AND BEST PRACTICES

THE CITY CHALLENGES AND EXTERNAL AGENTS. METHODS, TOOLS AND BEST PRACTICES

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The cover image is Rue de Rivoli - an emblematic street of Paris connecting Bastille to Concorde – that since May 2020 has been reserved for bicycles and pedestrians, Paris, France, Saturday, Nov. 6, 2021.

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REVIEW NOTES – Town Planning International Rules and Legislation

Resilience as an urban strategy: a comparison of resources and interventions in the European Recovery Plans for the green transition

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Abstract

Starting from the relationship between urban planning and mobility management, TeMA has gradually expanded the view of the covered topics, always following a rigorous scientific in-depth analysis. This section of the Journal, Review Notes, is a continuous update about emerging topics concerning relationships among urban planning, mobility, and environment, thanks to a collection of short scientific papers written by young researchers. The Review Notes are made up of five parts. Each section examines a specific aspect of the broader information storage within the main interests of the TeMA Journal. In particular: the Town Planning International Rules and Legislation. Section aims at presenting the latest updates in the territorial and urban legislative sphere. The ecological transition is one of the most important missions within the recovery and resilience plans that aim towards an increasingly sustainable city model. The reference scientific literature highlights the importance of studying the relationships between energy policy and the physical-functional organization of urban systems. In this direction, the content of this review aims to define the framework of the interventions and resources in the resilience and recovery plans of two European states of Spain and Ireland. We review their ecological and green revolution/transition reforms in a comparative study with Italy and Germany. The aim is also to define the role and impacts of these reforms in future urban strategies.

Keywords

Urban sustainability; Recovery plans; Green energy transition; Covid-19.

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1. The economic framework in Covid-19

The pandemic still seems not to leave us and has generated a deep furrow globally (Ania & Joseph, 2021). The World Bank estimates that the Covid-19 has given rise to one of the worst economic recessions since 1870, dramatically increasing poverty levels. Countries such as Spain have suffered a decline in gross domestic product (GDP) over 10% and Italy with 8.8%. The whole employment geography has been distorted, involving unprecedented working conditions and the resulting crisis in many sectors. In the first phase of the pandemic, the economic recovery was very fragile. The International Monetary Fund attests that in the first phase of confinement, there was a suspension of 45% and more than 70% of companies, which recorded a significant reduction in their turnover compared to the previous year. Particularly affected by the current crisis are small and medium-sized enterprises, which represent the lifeblood of the economic and territorial fabric and risk being wiped out by this "storm". In the latest reports issued by the European Commission, economic forecasts seem to be giving positive signals. The EU economy recovered its level of pre-pandemic production in the third quarter of 2021, from recovery to expansion. According to the projections, the EU economy will continue to expand, reaching 5%, 4.3%, and 2.5%, respectively, in 2021, 2022, and 2023. These prospects depend on the evolution of the pandemic and the pace at which supply adapts to the rapid reversal of demand after the reopening of the economy. According to this year's forecasts, employment in the EU will grow by 0.8% this year, by 1% in 2022 and by 0.6% in 2023. Employment is expected to exceed the pre-crisis level in the coming year and grow in 2023. In addition, unemployment in the EU fell from 7.1% this year to 6.7% and 6.5% in 2022 and 2023, respectively. The resumption of national economies is also due to the timely adoption of effective and coordinated measures that have partially limited the impact of this crisis. In particular, the enactment of the current recovery and resilience plans is an instrument both to relaunch the economy and provide opportunities for our European countries to improve the quality of life of citizens.

2. Transition to a green energy city model

Overall, the related reforms as envisaged in the recovery and resilience plans pursue two objectives. The first is to continue to maintain urban competitiveness within EU territories in a series of financing useful to restart urban business systems. The second is to give a boost to forms of organization of urban systems that aim towards ecological transition and sustainable mobility infrastructure. The set of reforms envisaged within the ecological transition show that it is necessary to intervene on all the components of a physical, functional and environmental urban system and to focus on how to structure the relationships between them (Gargiulo & Papa, 2021). "Ecological transition" means a set of actions aimed at the sustainability of the economy to facilitate the transition from a system based on polluting energy sources to a virtuous model based on green sources. Therefore, the ecological transition implies the ability of urban systems to "pass" towards production and consumption systems pre-existing to systems able to grow economic capital without destroying natural, social, and human capital (Bridge & Gailing, 2020). There is a need for a radical transformation of the production system towards a sustainable model that makes energy production, industrial production and, in general, people's behaviour and lifestyles less harmful to the environment. The growing importance of a geographical perspective on energy transition within countries' public policies and strategies is welcome compared to the challenges that cities face today, such as the climate crisis, reducing energy consumption and improving pedestrian and cycling accessibility to urban places and services (Zecca et al., 2020). The key points of the energy transition are: (i) renewable energy sources; (ii) sustainable agriculture and circular economy; (iii) zero-emission green mobility; (iv) environmental and biodiversity protection. Consequently, energy policy is invariably designed and applied within a real minefield of stakeholders, interests, conflicts, and alliances. It requires a long-term planning perspective and a holistic look at political, social, economic, and technological challenges and scenarios. It is generally accepted that in the sustainability global challenge, cities are the front-runners, with their strong role to be the core of the sustainable energy transition: role

recognised by the high presence of energy efficiency themes on the European Urban Agenda. The attention to the urban and territorial aspects of energy emerges, at the international level, close to the first energy crisis in the early 1970s and it considers, from the beginning, the integration of energy variables in the urban planning as a crucial theme. The systemic and critical framework draws scientific literature that highlights the importance of analysing the relations between energy policy and physical-functional organization of urban systems (Gargiulo & Russo, 2017). State of the art literature adopted illustrates the importance of including green energy strategies starting from spatial planning to increase the resilience of our territories. This theoretical awareness does not yet find an equivalent practical application in daily life's government and urban management by highlighting a gap. However, a holistic or integrated approach involving energy efficiency/savings in urban planning is not complete. The scientific community in recent years has developed a variety of strategies, approaches, and methodologies outlining a completely fragmented picture. Some studies have focused mainly on land use in relation to energy consumption (Navamuel et al., 2018; Hanif, 2018; Trepci et al., 2020). In particular, the study *The Costs of Sprawl* analyses the relationship between urban sprawl phenomena and related energy costs (along with other parameters such as environment, management). It analyses different models and configurations of population density to define the least burden of compact settlements. The density/energy consumption ratio has become a wide field of study. Other studies, however, have focused on the quality of the built environment through better integration between environmental conditions and the use of new technologies. Alongside this line, consideration of the economic value of energy decreases, and the energy component becomes important in the field of design (Mauree et al., 2018). In this research, a series of studies have been undertaken aimed at the energetic parameterization of urban blocks regarding solar gain (Raydan & Steemers, 2013). This approach paved the way for studies that focused only on buildings without considering other types of consumption (transport, services, production). However, it should be noted that the added value associated with energy consumption and behaviour changes, depending on the shape of the city. In this regard, it is important to highlight the studies of Oke, 1981 on the island of urban heat, showing how solar gain can produce discomfort in the city (especially in warm and temperate climates) and thus increase energy consumption. In summary, the scientific framework of reference shows that at the international level, the energy consumption of a territory depends on the settlement model and, vice versa, the energy shapes model the physical and functional organization of the settlement, the behaviour of citizens, and the process of social inclusion. Furthermore, energy-related planning is not yet integrated with spatial planning and is seen as a sectoral issue. The current trend to separate the theme of energy from spatial territorial increases the number of energy strategies, policies, and actions, making them non-integrated, with less impact on the city and less efficient results in the long run. This lack of integration reduces the ability to develop cities and societies with zero carbon emissions due to the complexity of managing bi-directional relationships. Therefore, the role of recovery and resilience plans, born in front of a pandemic scenario, can act as a hinge between the scientific community and territorial planning both at the national and local level aiming with public and private long and short-term investments able to exploit green energy efficiently. Sustainable and resilient development is needed to avoid inequalities and to allow everyone to benefit from the benefits of a cleaner and more inclusive economy. In this respect, the content of this review aims to define the framework of the interventions and resources in the resilience and recovery plans of two European states Spain -Ireland on the green revolution and ecological transition by comparing them with the other two recovery and resilience plans examined in the previous review (Gaglione & Ayiine-Etigo, 2021). In addition, the review aims to define the role and impacts of these reforms in future urban strategies and in the integration of planning tools addressing the challenges facing the city every day, such as climate change, land-use optimisation, urban regeneration, and respect for the principles of environmental sustainability.

Plan de recuperación, transformación y resiliencia, Spain



The structural reforms envisaged within the National Recovery and Resilience Plan of Spain constitute an opportunity for the Spanish economy, which for decades has led to significant imbalances that have indirectly hindered the ability to grow in a sustainable perspective over time. The strategic axes on which the Plan is based are: (i) the green transition; (ii) digital transformation; (iii) social and economic resilience. With respect to these three axes, Spain has allocated about 70% of its resources to projects which are functional to the green and digital transition. Most of the resources will be used in public investment at the same time in line with the Sustainable Development Goals of the UN Agenda 2030 and the specific recommendations

of the EU institutions. The Spanish Government has expressly indicated in its text that the current uncertainty surrounding the COVID-19 pandemic and the actual recovery path of the economy has suggested that no assumptions should be made beyond 2023. It is deficient in terms of the degree of detail, particularly regarding the concrete modalities and timing of the use of funds during the period considered. At the present time, therefore, the total amount that Spain will be able to benefit from, consists exclusively of grants and is concentrated in the three-year period 2021-23, amounts to EUR 70 billion. The Government does not exclude the use of an additional 70 billion in the form of loans in the following three years, but this possibility is now to be considered hypothetical (the decision is postponed to the next years). The Plan's architecture is structured on 4 main pillars: green transition, digital transformation, social and territorial cohesion, gender equality. In turn, 10 missions and 30 implementation policies have been defined for each of the four pillars. In particular, the Plan highlights two important matrices. The first as each of the thirty implementing policies contribute to the missions in which the Plan is articulated. The second, instead, highlights the contribution of each policy compared to the thirty components of the Plan by defining three thresholds that are: equal to or above 40%; within 40 and 10%; less than 10%. The policies that affect urban systems and that can give direct and indirect benefits to the city are those concerning sustainable mobility in urban and metropolitan areas, renewable energy, and urban regeneration. As regards mobility, a plan for sustainable, safe, and connected urban and metropolitan mobility is planned. The main objective is to decarbonize urban mobility and improve air quality and city life. The project should make it possible to exploit the economic, social, and industrial opportunities associated with this type of transformation. The realization of the investment passes through a modernization of the existing infrastructures and an optimization of the urban and metropolitan transport. The improvement of infrastructure for mobility should contribute positively to both the development of territories and social cohesion. Regarding renewable energy, the National Plan of Energy and Climate (PNIEC) (2021-2030) will be implemented to provide guidelines and strategies for a green city model. In the current context it is essential to accelerate the actions provided for in the Plan. This would ensure, the production model, promotion of decarbonisation, energy efficiency, implementation and integration of renewable energy, development of energy storage, circular economy, nature-based solutions and improve the resilience of all economic sectors. This Plan provides for a significant increase in the use of renewable energy, which, in 2030, should account for 74% of the total resources available and reach 42% of end-users. Finally, provide an urban regeneration plan through recovery and redevelopment programmes of the real estate at the urban scale. Consequently, that would ensure quality and safety of living both from a social and environmental point of view also improving Within the individual neighbourhood's pedestrian and cycling trips to reach places and urban services.

National Recovery and Resilience Plan, Ireland

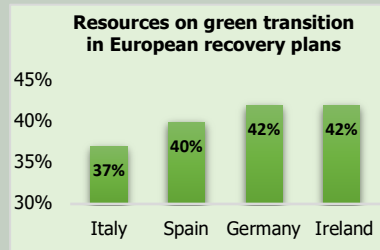


Reforms and investment in the Plan will help Ireland to become more sustainable, resilient, and better prepared for the challenges of their territorial contexts. During the design of the Plan, the Irish authorities consulted the social partners and national and regional stakeholders, while continuing a close dialogue with the Commission prior to the formal submission of the Plan. In detail, the Plan as Spain moves on three main components, namely, the green transition where 42% of investments are expected, the digital transition 32% and finally the social and economic resilience 26%. A total of EUR 989 million will be provided in grants. In turn, the Plan consists of 16 investment measures and 9 reforms in the three components listed above. As far as the green transition is concerned, climate and environmental policies aim to achieve the climate and energy targets for 2030, which will be a major challenge despite the adopted climate action plan. Secondly, Ireland's contribution to the EU's energy efficiency target remains unambitious. Finally, Ireland needs to significantly accelerate the roll-out of renewables, especially onshore and offshore wind, to reach the target of 70% renewable electricity by 2030. Investments concerning the green transition on forms of mobility in electrification and the upgrade of Cork Suburban Rail located in the county of the province of Munster in Ireland where it aims to encourage the transition from private cars to transport railway.

In Ireland, only 2.75% of the network is electrified, which is very low compared to the rest of Europe. The Plan foresees targeted investments in the commuter railway around the city of Cork, providing significant capacity increases, including the construction of a through platform at Kent Station, the doubling of the line between Glounthaune and Midleton, and the new signal, given future electrification. Regarding renewable energy, energy efficiency reforms in residential and public buildings are planned, helping households, companies, and the public sector invest in energy efficiency and green

technological solutions to reduce carbon emissions. Finally, the rehabilitation of wetlands to change the use of soil from peat extraction to carbon sequestration. The Irish Plan also includes climate change reforms. For example, Ireland will reform the climate governance framework and enshrine climate neutrality in the law by 2050. Secondly, Ireland will also implement carbon tax legislation.

A comparison of the European Recovery Plans



The comparative analysis of the four plans allows one to observe the priorities introduced by the two States described in this review and those described in the previous review (Gaglione & Ayiine-Etigo, 2021). All EU plans have met the minimum expenditure parameters of 37% for the climate and 20% for digitisation. Their weights of actions and interventions are different, both in absolute value and as a percentage of the total resources available. The plans also have quite different structures, making it difficult to compare them given the different needs and territorial characteristics. Italy requested the most of 122,60 billion in loans and 68,88 billion in grants for the amount for six years, respectively. Spain applied for 69.51 billion in grants; Germany 25.61 billion, and Ireland 0.99 billion. Compared to a city's physical, environmental, and built-up urban features, the plans move over common areas and with different methods and tools. First, with Italy, an entire package of 59.47 billion foreseen for the green transition has given greater priority to renewable energy, hydrogen, network, and sustainable mobility providing for funding of 23,78 billion and the energy efficiency and upgrading of buildings with an amount of 15.36 billion compared to the circular economy and sustainable agriculture of 5.27 billion and protection of land and water resources of 15.06 billion. Within each macro-category, such as renewable energy, hydrogen, network and sustainable mobility, the priorities are addressed to a territory's physical characteristics. For example, 8,58 billion has been voted to develop a more sustainable local transport combined with the increase in the share of energy produced from renewable energy sources of 5.90 billion and followed immediately after by the upgrading and digitization network infrastructure of 4.11 billion. 13.95 billion is invested in energy efficiency, redevelopment of buildings, and seismic efficiency. Finally, on the protection of land and water resources, only 1.69 billion is provided to protect green areas and soil. Secondly, Germany's green reforms are divided into three main components. The largest resources were used in the Climate-friendly mobility component with an amount equal to 6,6 million, using half of the resources envisaged in the ecological transition equal to 22%. It is preferred to promote the purchase of alternative traction buses for rail transport and committed to replacing the fleet of heavy commercial vehicles with an amount of 2.5 million. This is followed by the relative component Decarbonisation using renewable hydrogen with a sum of 3,2 million equal to 11% aimed at creating integrated energy systems based on renewable energy sources and oriented towards climate objectives. Finally, the third component on Climate-friendly renovation and construction with an amount of 2.6 equal to 9%. In this sector, investments were made mainly in the energy efficiency of buildings with an amount of 2.5 million euros. Ireland has given the highest priority to improving mobility towards more sustainable reforms with 164 million. It has pledged to reduce carbon emissions by 108 million. While unlike other countries has made a more significant contribution to supporting research projects and innovation to develop solutions in the climate sector of 72 million followed immediately after the improvement of the energy efficiency of buildings 60 million. Finally, Spain, like other countries, has given priority to promoting an emergency plan for sustainable mobility in urban and metropolitan areas with an amount of 6.54 million and at the same time an urban regeneration plan of 6.82 million. Spain further invested an amount of 3.16 million in a National Energy and Climate Plan (PNIEC) (2021-2030). To conclude, the comparison of the different recovery plans highlighted the implementation of sectoral measures on the different components of an urban system in common areas related to sustainable mobility, renewable energy, and the energy efficiency of buildings. Only Spain has introduced measures to realize instruments with the Plans. Spain has defined the system of rules and organization of the examined territorial context like the PNIEC. The role of these reforms in the recovery plans must act as a hinge and coordination of research policies at the European, national, regional levels to address current and new urban strategies. In addition, the review argues that the recent reforms planned for transitions should aim to combine the theme of Energy in Spatial Planning at different scales, from national to local. Similarly, the recovery plans emphasize place and resources synthesis. In all scientific research will, in the ensuing years, define the wealth of knowledge and methods for the great challenges that cities are called to respond. For example, climate change, energy efficiency, soil protection as well as an update of existing planning tools, such as the national climate change adaptation plan, to increase the resilience of the territory by adapting and renewing, respecting their functions and the identity of their places.

Author Contributions

The work, although the result of a common reflection, was divided as follows: David Ania Ayiine-Etigo, paragraphs 1 and review box of "National Recovery and Resilience Plan, Ireland"; Federica Gaglione paragraphs 2, review box of "Plan de recuperación, transformación y resiliencia, Spain" and a comparison of the European Recovery Plans.

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