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PLANNING FOR THE UNKNOWABLE: IMPACTS OF TRANSPORT INFRASTRUCTURE AND EVIDENCE-BASED SPATIAL DEVELOPMENT POLICIES

Pitsiava MAGDALINI, *Professor, Aristotle University of Thessaloniki*

Kafkalas GRIGORIS, *Emeritus Professor, Aristotle University of Thessaloniki*

Contact: mpitsiav@civil.auth.gr

Abstract

At the core of the planning process lies the quest for rationality and legitimacy of the plan. The paper addresses this issue by proposing an evidence-based approach for the assessment of the impact of transport infrastructure change in relation to spatial development policy priorities. The first section explores the relationship between spatial development and transport infrastructure and the construction of a seven-step theoretical model. The second section identifies the main spatial development policy priorities for the European Union territory. Finally, the third section provides the outline of a territorial impact assessment framework enabling the use of territorial impact indicators as an evidence-based bridge between policy priorities and the steps of the model. The specific value added of this approach lies in its comprehensive and integrative character and the combination of scientifically rational and politically legitimate parameters for the assessment of the impact of transport infrastructure and the (re)formulation of spatial development policies.

Keywords

spatial planning, development policy, impact of transport infrastructure

Introduction: scope and orientation of the approach

Spatial plans refer by default to a future horizon that could be affected by unpredictable events such as physical disasters, political shifts, socio-economic crises or technological change. In this sense, spatial development planning deals with problems that include dynamic parameters and value judgements which challenge the rationality and legitimacy of planning and which could be characterised as 'wicked' (Rittel & Webber, 1973). Such problems generate risks that depending on their scale may lead to controversial and unexpected outcomes of the kind that Hall (1982) identified as 'Great Planning Disasters'. Thus, planning should adapt to the need to accommodate the unexpected and to contain failures and inexpediencies.

In most relatively recent statements about the role of spatial planning there are strong ideological elements concerning the orientation of planning towards a supposedly better, smarter, healthier, competitive, resilient, and sustainable relationship with natural and built environment. If we put aside any ideological and moral claims, spatial planning aims to the reshaping of spatial patterns according to comprehensive and integrated territorial strategies concerning the future arrangement of population, networks and activities. In order to complete this mission, spatial planning needs on the one hand strong social and political consent that provide the necessary legitimacy of its goals and on the other hand reliable criteria of rationality that verify its competence to achieve them. The lack of legitimacy makes spatial planning irrelevant and undesired. The lack of rationality raises doubts for the efficiency of spatial plans. Hence the continuous quest for legitimacy and rationality becomes the burden that accompanies the evolution of all the different genres of spatial planning. (Kafkalas, 2016).

The formal rational planning paradigm known as SAP: Survey-Analysis-Plan, first introduced by Geddes (1915) has remained dominant for decades. However, the difficulties to implement these apparently simple steps led to an oversimplification that undermined its credibility. By the end of the 1960s its place was taken by the systems view of planning as presented by Mcloughlin (1969) and Chadwick (1971) according to which the analysis should identify the elements and the internal relationships of a spatial system while the plan aims to maintain its supposed equilibrium. In its more pragmatic version spatial planning limits the analysis to a small number of critical elements and qualifies the ambition of plans to achieve equilibrium. More recently, technological

developments allowing the collection and processing of massive amounts of data in real time, enable the pursuit of evidence based decision making that currently defines the state of the art of planning (Batty 2011). The new trends require ex-ante, ongoing and ex post evaluation of impacts corresponding to the inception, implementation and operation phase of spatial plans. However, despite this apparent consensus on methodology the question of how to proceed from the analysis to proposals remains as hard as ever and there is no clear and/or agreed way of how to bridge the gap from the collection and analysis of data to the formulation of proposals.

According to Davoudi (2012) planning follows either an instrumental path as a way to implement policies or an enlightenment path that includes the formulation of policies. The paper attempts in the following three sections to combine the instrumental and the enlightenment paths of planning through the elaboration of an approach, under the symbolic name of IRIS[1]. First, the relationship between spatial development and transport infrastructure leads to the adoption of a seven-step theoretical model. Second, the key spatial development policy priorities for the European territory are identified. Third, a territorial impact assessment framework enabling the use of empirical evidence as a bridge between vision and reality is outlined. Finally, the conclusions argue that the value added of the IRIS approach lies on providing information that strengthens the ability of spatial plans to adapt in more rational and legitimate ways to the unknowable futures.

1 The relationship of spatial development and transport infrastructure

Economic geography and location theory deal with the analysis of the spatial patterns of production including the entire chain of the decision-making process from the initial decision to invest to the choice of particular production sites. In this context, the role of accessibility becomes crucial due to the fact that households and enterprises are searching for locations with improved access in order to capture the resulting comparative advantages. Households are looking for locations with good

[1] According to the myth IRIS is a divine messenger and a personification of the rainbow that links the world of gods with that of the humans. She also carries an ewer of water from Styx, the river of the underworld, that reveals all, either gods or humans, who perjure themselves.

access to the places of work and the variety of amenities, while enterprises are more sensitive to locations providing access to the sources of raw material (inputs) and the markets (outputs).

The resulting spatial patterns could be described as the combined and cumulative outcome of the continuously changing balance between agglomeration (or centripetal) and dispersal (or centrifugal) forces that are guiding the location of economic activities (Krugman, 1999:144-145, Fujita et al., 2001:9). The relevant individual decisions are being taken by economic agents in response to real (or perceived as such) opportunities for profitable production. Each individual investment generates a spatial pattern of flows of inputs and outputs or of backward and forward linkages with suppliers and markets. The resulting spatial development patterns could be viewed as the historical footprint of successive layers of investment (Massey, 1979:50-51).

Transport infrastructure networks are closely linked to the processes of regional convergence/divergence (Krugman, 1991:23-25). Transport axes determine to a large extent the location of enterprises and households, and hence the pattern of land use in an area. For example, the improvement of transport infrastructure and greater accessibility to urban regions encourage sprawl and the creation of widespread suburbs. However, different forms of accessibility influence enterprises and households in different ways that require empirical investigation (McQuaid et al, 1996).

Investment in transport infrastructure is generally considered a vital policy for the economic growth of cities and regions. This, in its most simplified form implies that regions with better access to the locations of input materials and markets are more productive and competitive than more remote and isolated regions (Giuliano, 2004). In particular, EU transport policy has always placed increased mobility at the core of its interest, a trend reflecting the importance of movements in a Single Market. This is evident in the introduction of Trans-European Networks (Articles 154-156 of the Maastricht Treaty, 1992) as a key element of the Internal Market and the reinforcement of Economic and Social Cohesion. Due to their significance and the scale of the necessary investments TENs could be placed at the core of European spatial development interventions (De Ceuster, 2005, Buunk et al., 1999).

However, it remains an open question what are the most appropriate types of investment in transport infrastructure and which types of regions get the highest benefits. For example, there are arguments that Trans-European Networks, intended to promote territorial cohesion and parity of access over the European territory, have increased spatial unevenness via their impact upon accessibility and thus upon the economic prospects of regions (Vickerman et al, 1999). Similarly, there are arguments (Martin & Rogers, 1995) that by improving infrastructure in the poor countries and regions relative to the rich, European structural funding may even increase industrial concentration and induce regional divergence. As spatial development theorists 'know', there is no winning mix of policies that could guarantee the stabilization of comparative advantages. Other factors such as location-specific features could play a more important role in the economic performance of regions and the determination of their relative position in the international hierarchy (ESPON, 2015).

The relationship between transport infrastructure and spatial structure is extremely complex as there are many factors involved. First, the institutional capacity of a region plays a decisive role on how direct and indirect effects occur and to which direction. Second, the involved public agencies and social partners exercise significant influence on how and whether or not a potential impact will occur. Third, the response of spatial patterns to changes in accessibility takes a rather long time to emerge. All the above are examples of factors that make it very difficult to assign specific territorial impacts to specific changes in transport. The critical items for the investigation of the territorial impacts of the transport system can be incorporated into the constituting elements of theoretical models expressing the interrelationship between land-use and transport change.

There is a great variety of integrated land-use transport models which contain a series of inter-linked equations for predicting key variables related with economic activity, transport change and land-use patterns (NERA, 1999). In general land-use transport models are typically developed in order to simulate and evaluate land-use and transport system changes and their interactions, incorporating different rates of change. Thus, according to Geurs & Van Wee (2004) these models should fulfil the following criteria: (i) the spatial location of activities should be based on a behavioural representation of the different spatial processes and actors involved; (ii) travel demand patterns should reflect a consistent outcome of the interplay between all the major behavioural

responses to changes in costs and characteristics of transport supply, and (iii) should consistently link the full set of (long-term) land-use and (short-term) travel behavioural responses.

A seven-step (cyclical) base model that fulfils the above criteria is provided in Figure 1. This is an adapted version of a conceptual model on the relation between transport infrastructure and the spatial pattern of economic activities proposed by Bruinsma et al (1997) with a basic difference that transport cost is not separate but is incorporated in Step 2 into accessibility that expresses the generalized cost of travel.

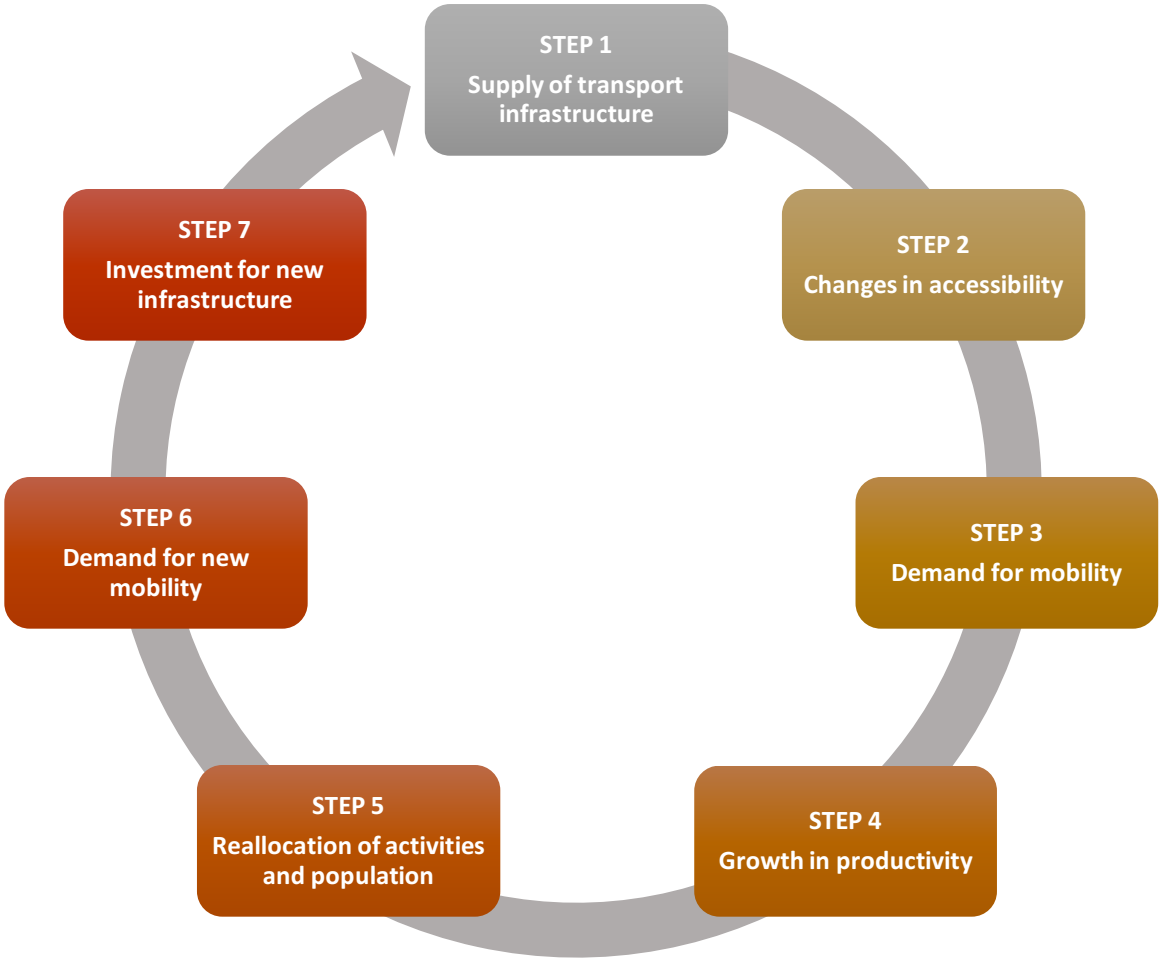

Figure 1: A seven step (cyclical) model of spatial development and transport infrastructure

Transport infrastructure first and foremost affects accessibility and hence increase the economic potential of regions producing a series of territorial impacts upon economic growth, the state of the environment and land use patterns (NERA, 1999, Vickerman et al., 1999). This process is systematised according to the adopted model as follows: the supply of transport infrastructure (step 1) reduces the cost of transport and leads to improvement in accessibility (step 2) that increases the demand for movements (step 3) and improves the productivity in the areas of its influence (step 4) triggering the reallocation of households and activities (step 5) and the generation of demand for new movements (step 6) which create pressures for the supply of new transport infrastructure (step 7).

2 Identification of key policy priorities

The elaboration of an evidence-based framework for the assessment of the territorial impacts of transport infrastructure upon spatial development, presupposes the identification of the relevant policy objectives and priorities. The adoption and formulation of policies is a dynamic process that has both territory-specific and time-specific components. In this paper, spatial development and transport policy priorities refer to the territory of the European Union during its last programming period 2007-2013 as they are stated in a series of official documents: the European Spatial Development Perspective (CEC, 1999), the Territorial Agenda of the European Union (CEC, 2007), the Green Paper on Territorial Cohesion (CEC, 2008), and the White Paper of European Transport Policy for 2010 (CEC, 2001). During the current programming period 2013-2020, the above policy priorities have been updated in a series of new documents: EUROPE 2020: A strategy for smart, sustainable and inclusive growth (EC, 2010), Territorial Agenda of the European Union 2020: Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions (EC, 2011) and the White Paper Roadmap to a Single European Transport Area (EC, 2011). Though not studied in detail, the new documents have been also taken into account in order to verify that the proposed theoretical approach in addition to its theoretical coherence maintains a significant degree of its empirical relevance.

According to the Maastricht Treaty for the European Union (signed in 1992) the various European policies should all contribute to the social and economic cohesion of the Union. This refers to the structural policy aiming at the balanced development of the European territory and closing the gap

with the less developed areas. Furthermore, the Maastricht Treaty emphasized the importance of environmental consideration, including measures for spatial planning, land uses and management of water resources. It also introduced the concept of Trans-European Networks, established the Committee of Regions and created the Cohesion Fund to assist the four cohesion countries (Greece, Spain, Portugal and Ireland) to cope with their environmental and transport infrastructure problems. Five years later, in 1997, the Treaty of Amsterdam introduced the concept of territorial cohesion in relation to the services of general economic interest to underline the importance of a comprehensive approach to the promotion of cohesion over the entire European territory (Andrikopoulou and Kafkalas, 2004).

Taken together the above evolutionary trends indicate an increase in significance of the territorial dimension in the European Union institutional framework. This trend is indeed reflected in the above-mentioned EU policy documents. Examination of these documents identifies the major policy objectives in relation to both the spatial aspects of European development and the priorities of the European transport policy.

The specific contribution of the ESDP is defined in relation to the central objectives of the EU's spatial development policies and the declaration that 'the three fundamental goals of European policy are achieved equally in all the regions of the EU: economic and social cohesion; conservation and management of natural resources and the cultural heritage; and more balanced competitiveness of the European territory'. Through these objectives the spatial aspects of development are connected to the concept of sustainable and balanced development. The ESDP elaborates more specific spatial development objectives or priorities: polycentric and balanced spatial development, parity of access to new infrastructure, and prudent management and protection of natural and cultural resources (CEC, 1999). The intention of the ESDP is to provide a common reference for the orientation of decision-making in ways that take into account the territorial impact of the implementation of relevant European policies by all responsible and/or otherwise involved actors and agencies. In particular it is considered that 'the ESDP is a suitable policy framework for the sectoral policies of the Community and the Member States that have territorial impacts, as well as for regional and local authorities, aimed as it is at achieving a balanced and sustainable development of the European territory'.

The next step in the evolution of the European spatial planning theoretical and policy domain is the formulation of a European Territorial Agenda adopted by the EU ministers of spatial planning in Leipzig (CEC, 2007). This effort is based upon the operational contribution of the territorial dimension to the Lisbon and Gothenburg strategies. The potential influence on spatial development by the various sectoral European policies (especially those with direct spatial dimension including Common Agricultural Policy, transport policy, structural policy, competition policy, and environmental policy) is a matter of concern. According to the ESDP this impact is expressed through diverse items such as: land uses, productive systems, spatial patterns, income levels, regional transfers and allocation of public funds. It should also be mentioned that the ESDP sets for itself the task to promote the complementarity and positive synergy of the different European policies over the European territory. This is not an easy task and as it has been documented already in the first report on the Social and Economic Cohesion, the diverse sectoral objectives of the various policies tend to produce conflicting results in the various countries and regions of the EU (CEC, 2002).

The policy objectives set by the European Transport Policy are particularly important for the assessment of the territorial impact of transport infrastructure. These objectives are clearly defined in the aforementioned White Paper on Transport Policy for 2010. Transport policy is among the first Community policies that were introduced with the founding Treaty of Rome (article 74). Transport was considered as the necessary condition for the free movement of persons and goods, as two of the four basic freedoms that were established with the creation of the Common Market, the other two referring to the free movement of capital and services. Though the Treaty of Rome envisaged a common transport policy, transport policy remained in fact only a Community policy, i.e. a policy for the harmonization and completion of national policies. There was little progress in transport policy until 1985 when the White Book on the Single Market promoted its re-orientation along a series of basic principles including the liberalization of the international road transport of goods, establishment of safety rules and speed limits and designing an integrated trans-European transport network to which later was added a better balance between road and other modes of transport. Following the Maastricht Treaty establishing the European Union and the 1992 White Book on transport, the opening-up of the transport market was adopted as the main guiding principle.

Furthermore, the Treaty establishing the European Union provided the legal basis for the TENs. Under the terms of Chapter XV of the Treaty (Articles 154, 155 and 156), the European Union must aim to promote the development of Trans -European Networks as a key element for the creation of the Internal Market and the reinforcement of Economic and Social Cohesion. This development includes the interconnection and interoperability of national networks as well as access to such networks. In 1996 fourteen priority projects were identified – considered as 'missing links' or 'congestion points' – for which partial financial support was planned. In 2001 six new projects and two extensions were added in view of the European enlargement and taking into account the Pan-European corridors and the TINA network, while in 2004 revised guidelines and financial regulation adopted, with a list of 30 priority projects (including the original 14) (Official Journal of the European Union, 2004: Annex III).

The 'White Paper of European Transport Policy for 2010: a time to decide' (CEC, 2001) summarizes the evolution of transport policy. The intention of this document is not to add new priorities but to encourage the implementation of the adopted principles and policies in order to achieve a better balance between transport modes and especially between road and rail networks and to contribute in the improvement of the congestion and environmental problems. The mid-term review of the White Paper emphasises the contribution of the TENs and the Motorways of the Seas (MoS) in the strengthening of intermodality and the territorial cohesion of the EU (De Ceuster, 2005).

On the basis of the above strategic documents the following policy objectives are identified:

Objective 1: Parity of access in the produced new infrastructure. The improvement of accessibility of the various regions is the main pursuit of new transport infrastructure. However, the new infrastructure, especially in intra-regional level and depending on land use and land relief may provide differential improvement in the various locations. Thus, a pattern of unevenness in relation to their access to the new infrastructure is produced. Nevertheless, at inter-regional level a more balanced system of transport is more possible especially because new infrastructure prioritizes the connection of regional centres. In this sense, new transport infrastructure may contribute to the cohesion of a wider territory. The above impacts should be examined in relation to the overcoming of isolation of the most remote places within each region.

Objective 2: Balanced system of settlements and organization of rural space. Transport systems are directly connected with the organization of the network of settlements. Transport networks influence the organization of settlements enabling the thickening of inter-urban relationships by decreasing the relative distance and improving communication and accessibility. This is especially true for the connection between the main urban centres of an important road corridor. Rural space and smaller settlements are also benefited to the extent that the main nodes and roads are interlinked through a reliable web of secondary axes.

Objective 3: Prudent management and protection of the natural and cultural resources. All kinds of transport create pressures to the natural and built environment (e.g. noise, air pollution, fragmentation of ecosystems, etc.). This is more acute in relation to the road axes and should be examined in relation to the reorientation of road traffic volumes, the diversion of traffic towards alternative transport means and networks. In relation to the cultural environment it is important to ensure the access of cultural resources without excessive environmental pressures and risks (i.e. of damage, degradation, congestion, etc.) in archaeological and other cultural sites.

Objective 4 Cohesion, consisting of: 4a) Income convergence: The securing of the freedom of movement for the basic productive factors within the Single Market is a priority of transport policy. Generally, the impact of transport policy upon regional economic convergence and social cohesion are controversial as it seems that though most regions gain in absolute terms their relative position may become worse. In this respect, it is crucial that all other policies act in a complementary manner in order to compensate any new imbalances induced by the operation of new road infrastructure. 4b) Increase of employment and combating social exclusion: The relation of transport policy to this objective is effected through the improvement of the mobility of the factors of production and hence better matching between demand and supply in the labour market. This adaptation is not automatic and does not depend simply upon the capacity to move. It is also necessary to improve the synergy with other policies and especially vocational training policy at the respective spatial levels.

3 Territorial impact assessment framework

After the formulation of the theoretical model and the identification of the main policy priorities a critical task is to assess and possibly quantify the relationships between transport infrastructure and spatial development. Towards this aim it becomes necessary to use clusters of indicators which could operate as a mediating device linking the steps of the theoretical model and the key policy objectives. In many projects, which focus on the territorial impact of transport system different indicators have been considered (Andrikopoulou & Kafkalas, 2000, Egnatia Odos Observatory, 2005, Pitsiava, 2007, Fourkas, 2006, Kafkalas & Pitsiava, 2010, ESPON, 2005, ESPON, 2009, ESPON, 2012). These efforts have been taken into account in the framework of the present approach in order to describe the kind of indicators that seem appropriate in order to bridge the gap between the theoretical model and the actual policy priorities.

Parity of access means that policies should aim to close the accessibility gap among the different areas. This could be pursued through the allocation of new investment for the construction of new or the improvement of existing transport infrastructure. The supply of new transport infrastructure changes transport costs by either reducing the time-distance between areas or influencing the choice of transport mode both leading to the generation of new and/or re-orientation of movements and location of activities. The territorial impacts could be measured on the one hand with transport supply indicators such as length and density of road/rail network per surface and population and on the other hand with transport demand indicators such as traffic volume (vehicle, passenger and freight). The accessibility levels, either daily accessibility or potential accessibility, could be assessed using indicators such as beneficiary population and travel time or the generalized cost of transport. The above impacts have been incorporated in the steps 1, 2, 3, 6 and 7 of the theoretical model.

In order to confront socio economic polarization and strengthen territorial cohesion it is necessary to promote **polycentricity and a balanced system of settlements** through integrated multimodal and intermodal transport networks (Pitsiava, 2007). Basic indicators corresponding to this policy objective are those related to both transport infrastructure supply and the socio-economic characteristics of the various areas (i.e. employment per sector, GDP per capita, unemployment rates etc.) which are incorporated in the steps 1, 5 and 7 of the theoretical model. In this respect,

composite transport infrastructure indicators are introduced. For example, the combination of road density per surface in relation to the number of inhabitants per unit of road network (reflecting the potential use level of transport infrastructure) evaluates the adequacy of infrastructure in relation to the potential needs of the population.

The objective for the prudent management and protection of the natural and cultural recourses reflects the concern for the **protection and improvement of the quality of environment**. Indicators used in relation to this concern should address environmental pressures that are generated by socio-economic conditions (reflected by indicators such as population density and land use patterns) and the operation of the transport system (expressed by indicators such as infrastructure density and traffic volumes) which are incorporated in the steps 1, 3, 5, 6 and 7 of the theoretical model. The territorial impact of these pressures with respect to the quality of environment could be measured with indicators such as land change inside the Natura 2000 network, land taken by urban or transport development, and population exposed to annoyance. Many of these indicators have already been tested and adopted by the European Environment Agency in its report on Indicators tracking transport and environment integration in the European Union (EEA, 2001).

The pursuit of the policies for **social and economic cohesion** is the ultimate aim of all sectoral policies. The assessment of progress towards this aim could be made using territorial impact indicators measuring regional disparities as they are expressed by economic and social variables such as the GDP per capita, employment by sector of production and unemployment rates (step 4 of the model). As well as by indicators measuring changes in population and activity allocation as they are depicted by population density, land use patterns, land values and activity rates (step 5 of the model).

On the basis of the above considerations the construction of the IRIS territorial impact assessment framework is summarized in Table 1.

Steps/Objectives	Objective 1 Parity of access	Objective 2 Balanced development	Objective 3 Environmental protection	Objective 4 Cohesion
Step1 Supply of Transport Infrastructure	supply indicators (i.e. length and density of road/rail network per surface and population)	composite indicators reflecting the potential use level of transport infrastructure (i.e. road density per surface in relation to the number of inhabitants per unit of road network)	Indicators expressing the land changes and the settlements' fragmentation due to transport development (i.e. land taken by transport development)	
Step 2 Changes in accessibility	indicators expressing accessibility levels (i.e. beneficiary population, travel time or the generalized cost of transport)			
Step 3 Demand for mobility	demand indicators (i.e. traffic volume --vehicle, passenger and freight)		Indicators expressing the population exposed to potential annoyance (traffic noise/air pollution) due to new mobility patterns.	
Step 4 Growth of productivity				Indicators measuring economic variables (i.e. GDP per capita and activity rates, employment by sector of production and unemployment rates)
Step 5 Reallocation of activities		socio-economic characteristics of the various areas (i.e. employment per sector, GDP per capita, unemployment rates)	Indicators expressing the population exposed to potential annoyance due to changes in population and activity allocation	Indicators measuring changes in population and activity allocation (i.e. population density and land use patterns)
Step 6 New demand for mobility	As in step 3		As in step 3	
Step 7 New transport infrastructure	As in step 1	As in step 1	As in step 1	

Table 1:The IRIS territorial impact assessment framework

Conclusion: planning for the unknowable

Spatial planning is an improbable adventure into the future and its ambition to plan for the unknowable is the source of its burden (Kafkalas 2016). Many planning models tend to use conceptual abstractions in order to predict and/or shape the future on the basis of idealized spatial representations. In contrast, at the core of the proposed IRIS approach, is the need to design tools and methods for the continuous monitoring of territorial impacts in order to allow maximum flexibility in the shaping of spatial development plans and policies (Kafkalas and Pitsiava, 2010). This approach views spatial planning as part of the broader processes that reshape spatial patterns. In this sense, spatial planning enters a learning process together with a multitude of social actors that strive to achieve desired future outcomes.

In its wider definition, territorial impact assessment focuses on the impact of a proposed policy on all aspects of spatial development: economic, social, environmental and cultural. From the point of view of spatial development, territorial impact assessment is widely recognised as a key policy concern and an appraisal tool necessary to assess good planning practice (OECD, 2002, ESPON, 2012). In this context, the IRIS assessment framework should be considered as a tool for assessing the potential impact of strategies, plans, policies and projects. The more specific value added of the IRIS approach lies in its comprehensive and integrative character that links the steps of the theoretical model with the pursued policy objectives using clusters of indicators as mediating device. The application of the approach involves both quantitative and qualitative elements. The quantitative elements include the calculation of territorial impact indicators while the qualitative ones incorporate the assumptions concerning the correspondence between clusters of indicators, policy objectives and steps of the theoretical model.

The aim of the IRIS approach is to maintain a high degree of theoretical coherence, empirical relevance and practical effectiveness, which are necessary for the assessment and (re)formulation of policies involving the operation and planning of transport infrastructure. Depending on the selection of indicators, the IRIS approach allows to take into account changes of the structural characteristics of the various areas (i.e. population, labour market, economy, land uses, etc.) over different time periods. This means that depending on the specific nature and the technical and methodological requirements, the application of indicators provides the evidence base in order to

assess the effectiveness of strategic spatial development and transport infrastructure policies as well as to guide their possible reformulation. In this manner, the IRIS approach provides a method to combine the instrumental and the enlightenment paths of the planning process through the tracing of the multiple correspondence between the clusters of indicators, the steps of the theoretical model and the pursued policy objectives.

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