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The limits of growth: A case study of three mega-projects in Istanbul

Evinc Dogan [a,*], Aleksandra Stupar [b]

[a] University of Belgrade, 73 Bulevar kralja Aleksandra, Belgrade, Serbia
[b] University of Belgrade-Faculty of Architecture, 73/2 Bulevar kralja Aleksandra, Belgrade, Serbia

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ABSTRACT

This article attempts to identify and analyse the dynamics and mechanisms of urban transformation in Istanbul using the case study of three mega-projects currently underway - the Third Bridge (officially named Yavuz Sultan Selim Bridge), the Third Airport, and Kanal Istanbul. Connected via the Northern Marmara Motorway, these independent projects could also be perceived as parts of a big mega-project - shaping a new city in the north of Istanbul. Triggered by goals defined by the national development document "Vision 2023", and supported by the intensified construction industry, rapid urban growth multiplies a number of challenges and discrepancies between the official vision of progress and professional estimations of its possible outcomes. Consequently, the article gives an insight into the contextual background of the selected projects and the mechanisms of their implementation, whilst focusing on three fields of estimated impacts (urban structure, environment/ecology and community). The mega projects are identified as strategic instruments and agents of change in achieving the anticipated vision of growth, whilst the low level of their general sustainability represents one of the main concerns and drawbacks in both public and professional acceptance of them.

1. Introduction

Istanbul's strategic position, also defined by its geographical features, has played a significant role in its global recognition and attractiveness. As an emerging global city and financial center, Istanbul gets the lion's share from the capital invested on urban mega-projects (UMPs). Turkey's "Vision 2023" defines a set of goals to be reached by the centennial of the Republic of Turkey, stressing the importance of public infrastructure investments in further economic growth, and urban and global development (World Profile Group, 2013: 3). Amongst the numerous projects, three large-scale urban regeneration proposals associated with 2023 objectives are distinct - the construction of the third bridge over the Bosphorus, a new waterway connecting the Black Sea to the Sea of Marmara ("Kanal İstanbul") and the third airport (Gül, Dee, & Cunuk, 2014). Having in mind the importance, spatio-economic character and scale of these proposals, the article focuses on their roles as strategic instruments and agents of change in achieving the anticipated vision of economic growth, as well as the questionable sustainability of the selected (and interlinked) projects. In order to define the influence of both the global and local background of the problems, the following research questions have been formulated:

- What are the characteristics of the urban planning environment and what are the roles of participating actors and institutions?
- What are the regulatory mechanisms facilitating environmentally friendly urban growth and to what extent are they taken into account by policymakers and implementers of the projects?
- What is the relationship between mega-projects and urban dynamics with respect to the production of space, economic growth and social processes?

The article is based on a qualitative approach to the selected case studies through analysis of primary and secondary sources (government plans and official documents, expert opinions, NGO reports, newspapers and social media). The applied descriptive method delineates the real-life context in which the selected mega-projects are supposed to be implemented, whilst exploratory case study research is used to anticipate possible outcomes of the project implementation and the estimated impacts on urban structure, environment/ecology and community.

The article starts with providing a brief theoretical background of the role of mega-projects in urban development (from the perspective of the global/local dichotomy and centralization/decentralization debate). Whilst offering an insight into local contexts, the pace of transformation is discussed in relation to economic growth and the anticipated changes. Simultaneously, the level and quality of interaction between official development visions, dominant planning mechanisms and the actors involved are examined. The article then

* Corresponding author.
E-mail addresses: evinc.dogan@gmail.com (E. Dogan), stupar@afrodita.rcub.bg.ac.rs (A. Stupar).

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proceeds to focus on the selected case studies - three interlinked UMPs. The conflicts between planning and implementation are addressed through the confronted realms of action, while possible impacts at the spatial, environmental, and social level are identified and interpreted in accordance with the analysis results.

2. Mega projects: a tool for urban development and/or city branding?

The term 'Mega-projects' is used to refer to large-scale projects that involve costly schemes of development and transformation of land uses (Douglass, 2002; Fainstein, 2008; Flyvbjerg, 2014). Examples include hub airports, high-speed train nodes, and convention centers or huge sports venues. According to Sklair (2005), mega-projects act as a prime strategy for the transformation of urban space, whilst their spatial and functional similarity reflects the homogenizing effect of global forces and the mechanisms imposed by the international property market and private-sector involvement (Presas, 2005; Fainstein, 2001). Mega-projects require mega budgets, in which the economic capital is transformed into "symbolic capital" (Bourdieu, 1986), as a signifier of power and wealth at both on international and national levels.

In the contemporary globalized world, inter-city competition for promoting mega-projects gains pace under the pressure of financial capital, while cities face construction booms. Globalization and the increasing inter-dependency between cities and their economies have instigated a number of new processes - power and responsibilities have been shifted from the national to subnational level, the importance of global communications and transnational corporations has increased decentralization, whilst hypermobility and competitiveness have become vital for future development (Martins, 2004; Short, 2006; Sassen, 2007).

The importance of the local background cannot be overlooked, because political ambitions and the state's policy orientation towards the creation of a "global city" can play a significant role in the launching of mega projects. The case of Istanbul is a good example of this practice, which can be seen in other cities, such as Seoul, whose project for Dongdaemun Design Plaza and Park, characterized by the shift from local development plan to "territorialized urban megaproject", was initiated by an election pledge and national aspirations towards global recognition of the city (Hwang, 2014).

According to Park (2011), land development and construction projects are favored by expanding market economies, which commodify space and environment, whilst simultaneously being fueled by highly politicized territorial interests determined by spatial selectivity. Considering this trend, it is important to underline Molotch's (1976) theory of the "urban growth machine", which defines pluralistic interests in relation to a city, putting forward the coalitions of actors and organizations that share an interest in local growth and its effects on land values. Governments act as agents of (re)development, either by generating "social returns" such as social housing, or by building "public and private partnerships", especially in the case of rising cost pressures on public funds and the opportunity for exploiting the rent gap to attract investors (Hutton, 2016: 176). Harvey (1989) claims that UMPs are used in entrepreneurial urban policy mechanisms, in order to create a stimulating business environment in which the exchange value of the land exceeds its use value.

Another phenomenon closely linked to the proliferation of mega-projects is city branding, in which development strategies focus on providing higher visibility and recognition for cities in the global arena. Applbaum (2004) recognizes branding as one of the crucial symbolization strategies in which sign value highly contributes to the prestige of megaprojects, and this feature is explained by Baudrillard (1981: 113) as a "conversion of economic exchange value into sign exchange value", within the production-consumption relationship.

In addition to megaprojects, mega-events serve as marketing tools to showcase the image of the city branded by landmark architecture and large infrastructure projects. For example, in the case of Istanbul, global discourse is reflected in Istanbul's persistent but unsuccessful bids to host Olympic Games (2000, 2004, 2008, 2012, 2020). Whilst an intense campaign was launched to promote the city, Perouse (2014) points out that such a mega-event is not only a marketing tool, but also "a pretext to further accelerate redevelopment plans". Developing the transport infrastructure was one of the most critical concerns for the 2020 Games, as the International Olympic Committee (IOC) identified transport as one of the toughest challenges for Istanbul (Bisson, 2013). In this context, the report of the 2020 Evaluation Commission highlights "Vision 2023", in which "the 2020 Games is part of the national government's transformative 2023 Master Plan for Turkey" (IOC, 2013: 9).

2.1. Istanbul: the pace of change

From the 1920s to today, it is possible to detect a specific relationship between political changes and the process of urban (re)shaping. During the decade followed by the foundation of the Republic in 1923, Ankara was chosen as the capital of the new nation state. According to Akpınar (2014), urbanism was used by the authorities as an effective instrument of sustained economic development, especially on the level of spatial organization and urban infrastructure. Modernization, along with Westernization, represented a process closely related to the preferred integration with Europe.

Istanbul started to get attention from the government in the 1930s and this period was marked by the Prost's master plan. Mega-events and international expositions were used as triggers for urban transformation and development, and the importance of Olympic Games was already acknowledged (Bilsel & Zelef, 2011).

The period between 1950 and 1960, known as the "Menderes Construction Period" after the Prime Minister Adnan Menderes, was characterized by radical interventions resulting in the demolition of inner-city neighborhoods and the opening of large corridors in the historic peninsula (Günay, Koramaz, & Özüekren, 2014). Following industrialization, the influx of working-class populations increased, whilst the need for human labor in farming decreased. Consequently, migration from rural to urban areas intensified, as well as the housing demand (Enlil, 2011). The outcome of this process was *gecekondu* settlements (squats), in which the local government signed over property rights to squatters instead of investing in social housing. According to Tanulku (2015), this stimulated further urban sprawl, unregulated by official planning documents and tools.

The new Constitution of 1961, which followed the military intervention, defined housing as the responsibility of the state, as well as a citizen's right (Günay et al., 2014). The foundation of the State Planning Organization (SPO) in 1960 frames the role of governmental politics in promoting planning and shaping economic growth with the task of preparing national, sectoral and regional development plans and identifying sub-regions for priority investment. However, Enlil (2011) claims that there is a strong link between the state and the holding companies, which influenced growth in the mixed economic system and the import-substitution oriented rapid industrialization, both envisioned by National Development Plans and Investment Programs.

As a consequence of rapid industrialization and population increase, growth of the city through the peripheries introduced the need to link urban areas through transportation systems. However, the construction of the E-5 motorway and the first bridge over the Bosphorus (in the 1970s) triggered urban sprawl instead of providing a sustainable solution, and Istanbul became an "overgrown industrial city" by the 1980s (Güvenç, 1993: 75). The further uncontrollable growth of Istanbul was prompted by the winds of neoliberalism stimulating the free-market economy and favoring

the financial and service sectors in order to integrate with global markets. At the same time, industrial production was largely replaced by tourism and leisure, attracting foreign capital. The share of manufacturing in the economy decreased and industrial spaces became vacant, while there was a significant increase in foreign direct investment (FDI) (Enlil, 2011).

During the 1980s, a second wave of migration brought newcomers to abandoned historic buildings in central areas. This trend introduced concerns about heritage conservation, along with the regeneration of the waterfront and abandoned industrial areas under threat of "bulldozer renewal" (Günay et al., 2014: 224). The expansion of Tarlabaşı Boulevard and the clearance of historic inner-city housing was one of these radical examples, conducted with the idea of eliminating pollution whilst increasing the land value of the area and promoting a new image of Istanbul as a global city (Bezmez, 2008). The urban skyline changed dramatically with high-rise office towers, luxury apartments, international five star hotel chains and shopping malls. Meanwhile, the Central Business District (CBD) developing in the north (Büyükdere - Maslak axis), led to the construction of a second bridge over the Bosphorus in 1988. The changing urban landscape coupled with Istanbul's strategic position as an important hub connecting cross-regional networks contributed to the global repositioning of Istanbul as a World city (Keyder & Öncü, 1993).

The beginning of the 21st century brought the rise of the Justice and Development Party (*Adalet ve Kalkınma Partisi* - AKP) as the ruling party from 2002 to the present. AKP's more than a decade-long rule has restructured political, social and economic processes. According to Acemoglu and Ucer (2016) economic growth was achieved through subsequent macro developments following the financial crisis in 2001; GDP per capita (per annum) grew at a rate of almost 6% during 2002–2006 (the fastest growth since the 1960s), whereas the period between 2007 and 2012 was affected by the global financial crisis in late 2008. Since 2012, growth has slowed down and the World Bank (2016) has identified several factors - investor sentiments, emerging markets, currency and financial market volatility, election-related uncertainties, geopolitical developments and weakened confidence. The climate of uncertainty due to the political delicacy (the elections in 2015) and geopolitical conflicts restrain international investors especially, whilst Turkey's performance shows a trend of decline in "almost all factors driving global competitiveness" (World Economic Forum, 2015: 30).

In this scenario, the construction sector represents a by-product of economic growth (Erkal, 2015), which means the construction sector follows economic growth rather than contributing to it (Erol & Unal, 2015). Yet, the cause-effect relationship between construction investment and economic growth may vary depending on interest rates and urban legislations. Consequently, Erol and Unal (2015) refer to the period 2010–2014, when low interest rates and amendments in urban legislation boosted the construction sector and positively reflected on economic growth.

2.2. The reality of urban planning

Until the 2000s, planning in Turkey was centralized but Istanbul, with its global potential and aspirations, became a target of spatial selectivity connected to highly politicized territorial interests in attracting flows of capital and people. Urban planning framework in Turkey is based on the Land Development Planning and Control Law (No. 3194), which was enacted in 1985. Accordingly, the planning process goes through three levels of documentation - regional (prepared by State Planning Organization - SPO, defining socio-economic trends, development potential and action-oriented strategies), environmental order plans (related to settlements and land-use directing the low-ranking plans) and land development plans (master and implementation plans).

The acceleration of the EU accession process encouraged the transition of the planning system into an open, integrated and decentralized one. Nevertheless, overlapping functions of central and local governments, insufficient integration and coordination, as well as the lack of participatory and consultative mechanisms, resulted in a confusing planning environment and made decentralization problematic (Uzun, 2010). In this framework, the reality of urban planning has become a combination of the centralization of policymaking powers and decentralization of policy implementation, i.e. "controlled decentralization" (Bayırbağ, 2013: 1141).

The decentralization and recentralization of urban planning powers follows a cyclical path, as the local property markets respond to global dynamics of neoliberal urbanization (Taşan-Kok, 2007). New housing finance mechanisms, as well as some legislative interventions, facilitate the construction-oriented economy and represent key instruments towards recentralization. Housing constitutes nearly 80% of Turkey's construction industry (Ertem & Yılmaz, 2014), in which TOKI (Housing Development Administration of Turkey) and the Mass Housing Fund seem to dominate the market. The Housing Development Administration of Turkey (TOKI), operating under the Prime Ministry since 2001, became one of the major players with extraordinary powers, such as the right to confiscate public land. The legal regulations and arrangements in public management that are intended to enlarge TOKI's field of duty and activity include the transfer of responsibilities and all activities previously conducted by *T. Emlak Bankası* (Turkey Real Estate and Credit Bank), Housing Undersecretariat, Immigrant Houses Coordination Office Ahıska Turks Settlement Coordination Office, National Land Office, Ministry of Public Works and Settlements (now Ministry of Environment and Urbanism)-Department of Dwelling Affairs and the Prime Ministry Project Implementation Unit (TOKI, 2015). Consequently, TOKI is behind almost all large infrastructure and housing projects (e.g. construction works for the 2020 Olympics), whilst urban regeneration and new zoning measures legitimize this body to change the physical appearance of the central districts on the basis of the "protection of heritage, absence of earthquake preparedness, environment, and the creation of green zones" (Keyder, 2008: 5). Penpecioğlu (2013) especially emphasizes the role of amendments to "Laws no. 5582 and 6302" in attracting foreign investors and "Decree laws no. 644 and 648" and "Law no. 6306", which increased the powers of the Ministry of Environment and Urbanism in the redevelopment of protected sites and urban regeneration in high disaster-risk areas.

Istanbul is divided into 39 local districts operating under the Istanbul Metropolitan Municipality (IMM), all having their own governing structures. This allowed urban governance at the local level to gain a certain level of autonomy through the reconstruction of urban entrepreneurship and urban coalitions (Keyder, 2008).

In 2004 the Law on Metropolitan Municipalities (no. 5216) was issued with the aim of enlarging the area of authorization of Metropolitan Municipalities, such as the preparation of upper-scale plans. Furthermore, in 2005 The Istanbul Metropolitan Planning and Urban Design Centre (IMP) was formed as an advisory body of IMM, entitled to prepare strategic development plans focusing on ecological, social, economic, and physical components (Kaptan, n.d.).

In 2006, an Environmental Order Plan was prepared for Istanbul, but, due to criticisms, IMM decided to improve it and include input from district municipalities, academics, civil engineers and NGOs. Consequently, the revised 2009 Plan emphasizes the issues of quality of life, global positioning and competitiveness. Problems of urban growth and the pressure of construction in historical areas are addressed, suggesting a linear development along the East-West axis, which would control expansion towards the north. The "protection of ecological balance and fostering of sustainable and disaster resistant development" was stressed through safeguarding forestlands and water basins in the north (IMM, 2011b), whilst none of the mega-projects discussed in this paper were included (Gülersoy & Gökmen, 2014).

3. Case study: third bridge, third airport, Kanal Istanbul

3.1. The scale of aspirations and realms of action

The scale of mega-projects is one of the indicative features of global city competition, with the idea of achieving status and distinction. Therefore, it is not surprising that Istanbul's mega projects follow the same logic. The third bridge, with 8 motorway and 2 railway lanes on the same level, will be the widest suspension bridge in the world (59 m) and the longest spanning bridge (1408 m) with the tallest tower, higher than 322 m (ICA, 2013). It was announced on 29 May 2012, marking the anniversary of Istanbul's conquest by the Ottomans.

The third airport, also announced in 2012 by the Minister of Transportation, is planned to be the biggest airport in the World, covering 76.500.000 m^2 (CAPA, 2016). Situated in the North-West of Istanbul, with an annual passenger capacity of 150 million (DHMI, 2013), it will respond to the growing needs of the city, which can no longer be fulfilled by the two existing airports - Ataturk, with 37 million annual passengers, and Sabiha Gökçen, with 13 million (Turkish Forum Archive, 2010). Furthermore, this project is planned to be extended by an airport city (CSB, 2014) with a central innovation district, hotels, retail and commercial office space, logistic centers, an expo and convention center, public space, and metro and high-speed rail connections to Istanbul and beyond (CAPA, 2016).

Kanal Istanbul, announced during the 2011 election campaign, could be perceived not merely as a large transport and infrastructure project, but as a part of a geopolitical strategy bypassing the Bosphorus Strait. This waterway (50 km long, 150 m wide and 25 m deep) would allow the passage of vessels up to 300.000 dwt (Kundak & Baypınar, 2011), creating a gateway connecting Asia and Europe. At the same time, it would mitigate the risk of accidents in the Bosphorus by redirecting ships with hazardous materials to the new route, whilst charging a higher fee (Benmayor, 2013). However, this leads to a serious legal concern related to the straits on international grounds. The Montreux Convention, signed by Turkey in 1936, allows commercial ships to pass through the Bosphorus without charging any fee during the time of peace (ORSAM, 2013). The question is on what grounds the straits could be closed and fees charged for diverting ships.

In line with the government's "Vision 2023", the global city discourse is highlighted in all these projects, tracing the path for a new urban hub with an airport, seaport, tourism facilities, residential and recreational areas, congress and convention centers, and cultural and business facilities. The expectations are high - to increase GDP per capita to USD 25.000 and local tourist numbers from 2 million to 20 million per year (Kundak & Baypınar, 2011). However, attracting flows of international tourists remains an imperative related to the aim of higher global recognition and competitiveness. Furthermore, the waterway project, bisecting Thrace and creating an island in the middle of the sea, is more than a canal - it could be seen as an important feature of a new city with growing global aspirations.

Mega-projects involve risks especially in financial terms, whilst national funds can be insufficient to meet high costs. Therefore, the question of how mega-projects are financed brings public-private partnerships (PPPs) into focus. This also explains the acceleration of privatization through legal regulations and financial/tax incentives to encourage private investment including foreign investment. Yet it should be noted that high dependence on foreign funding is not desirable for national economies. In the case of Turkey, the Japanese International Cooperation Agency (JICA), the World Bank, the European Bank for Reconstruction and Development (EBRD) and the Islamic Development Bank are the major sources of foreign investment fueling its construction sector (Kundak & Baypınar, 2011).

The government's role in this scheme - acting as developer or selecting developers amongst bidders, defining planning guidelines or regulating the level of centralization/decentralization - may vary depending on the context. For example, the contract to build the Odayeri-Paşaköy section of Northern Marmara Motorway including 1,3 km long third bridge construction (worth TRY 4,5bn), was awarded to a Turkish-Italian joint venture ICA (IC İçtaş-Astaldi). The tender for the construction of the third airport for the operation rights for 25 years was won by a joint venture of Turkish companies - Cengiz-Kolin-Limak-Mapa-Kalyon Consortium (as in Fig. 1). The price bid which amounts to €22,152bn is held via the Build-Operate-Transfer (BOT) model (Cengiz Holding, n.d.). Three private banks (Finansbank, Garanti Bank and Deniz Bank) and three state-run banks (Ziraat Bank, Halkbank and Vakıf Bank) agreed to provide €4,5bn needed to complete the first stage of the project (CAPA, 2016). The state-owned banks committed a 70% share of the loan package, which means putting the majority of the burden on Turkish taxpayers (Zalewski, 2015). In the case of the Kanal Istanbul project government authorities refuse to give detailed information about the definite cost in order to avoid "negative issues" at the pre-tender stage (IMM, 2011a). However, Public Private Partnership (PPP) and Build-Operate-Transfer are the government's most preferred tools in financing such large-scale infrastructure projects.

The route and location of the projects represent another important issue, although they are still subjected to alterations. Currently they are not in compliance with urban plans and environmental regulations, but their implementation is legitimized through the regulatory revisions of planning documents. For example, the revised EOP was approved in 2009, but it was amended the following year, indicating that additional transportation systems and routes, which were not originally included in the plan, will be assessed during the preparation of sub

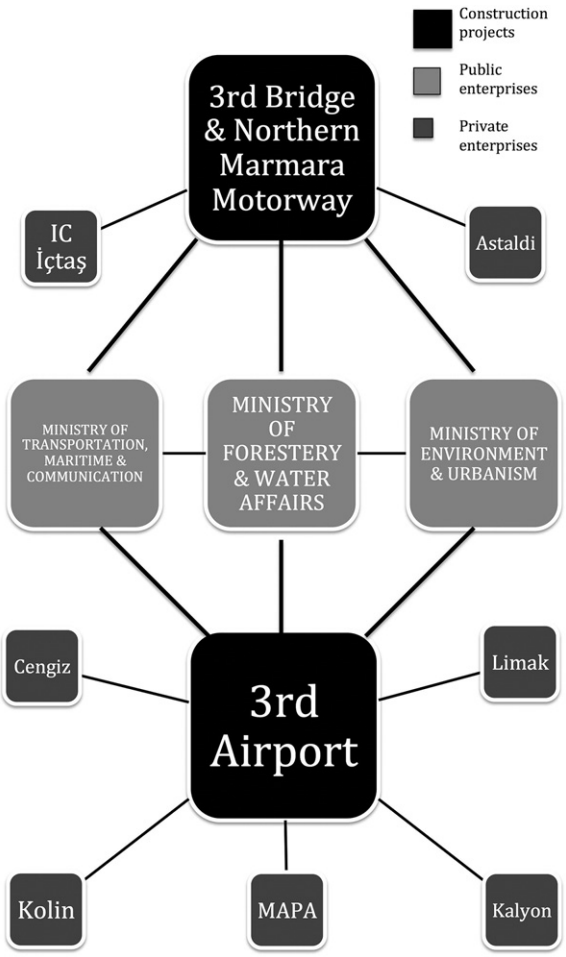

Fig. 1. Map of the networks between the key actors of the 3rd Bridge and 3rd Airport Projects (Source: adapted from Graph Commons – Networks of Dispossession, 2016. Translation by the author).

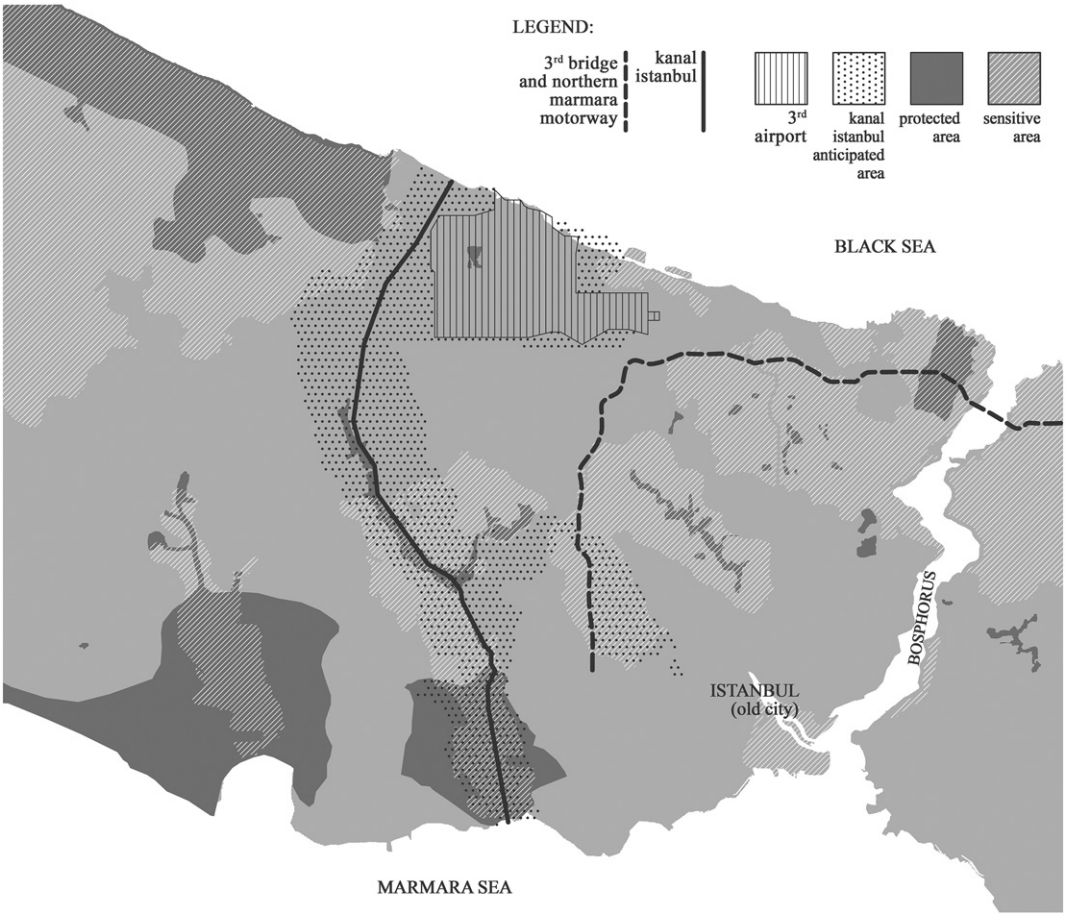

Fig. 2. Mega projects vs. sensitive and protected areas (according to AECOM Turkey, 2013; ENVIRON, 2015; Istanbul SMD, 2016).

plans (AECOM Turkey, 2013: 5–2). At the same time, Environmental Impact Assessment (EIA) approval is a legal obligation in Turkey, which especially applies to mega-projects due to the specifics of nature, location, sensitivity and scale.

The first choice of location for the third bridge was between two bridges passing over the historic district of Arnavutköy. However, the project was suspended and the revision was demanded in 1999. A new construction site, announced in 2013, was on the north end of Bosphorus (as in Fig. 2). Shortly after the construction work started and all the trees were chopped, it was realized that the route was miscalculated. Still, this mistake diverted the route from private land towards public forest areas (which can be expropriated by TOKI), potentially decreasing the construction costs. Another problem is related to the environmental implications of the project, threatening the Belgrade Conversation Forest and the Bosphorus Key Biodiversity Area (AECOM Turkey, 2013).

Environmental issues are also identified in the project for the Third Airport. The first EIA report was prepared in 2013, by AK-TEL Engineering Co., on behalf of the Ministry of Transport, Maritime and Communications (MTMC). Although it received a positive decision from the Ministry of Environment and Urbanism (ENVIRON, 2015), the construction was halted by Istanbul's Fourth Administrative Court, due to claims on the project's negative environmental impact. A new EIA report was put into effect in 2014, emphasizing the necessity for a new airport (CSB, 2014). Consequently, ENVIRON was commissioned by IGA[1] (Istanbul Grand Airport) for the preparation of the Environmental and Social Impact Assessment (ESIA) in order to support funding applications to international financial institutions.

AECOM (Architecture, Engineering, Consulting, Operations and Maintenance), an American company with headquarters in Los Angeles, conducted ESIA for the construction of Third Bridge and Northern Marmara Motorway, based on “volunteering” principles (ICA, 2013). Yet AECOM came onto scene once again, this time with Pininfarina, as part of a collaboration that won the design competition for the Air Traffic Control (ATC) tower and technical building at the Third Airport (AECOM, 2015). Their success is significant, knowing that other entries included designs by Zaha Hadid, Massimiliano Fuksas, Moshe Safdie, Grimshaw-Nordic and RMJM.

The complexity and grand scale of these mega projects certainly affects their completion, with some authors (e.g. Ekmekçi, 2013) highlighting their implementation as problematic. However, MTMC announced August 2016 as the completion date for the Third Bridge, whilst the Third Airport is scheduled for 2018. The preparations for the Kanal Istanbul project are still in progress but the omnibus bill, which defines it asa ‘water way’, was accepted by the General Assembly of Turkish Parliament in April 2016 (Gökçe, 2016). This can be perceived as the first step towards forming its legal basis. The use of public properties in the construction area is regulated in favor of public welfare, whereas the pasture areas will be lifted ex officio by MTMC on the grounds of amendments made to pasture law (no. 4342). Until now, no specific technical detail about the project has been shared publicly. Therefore, the data used for the following discussion on estimated impacts are compiled from scholarly works, expert opinions, NGO reports and media.

[1] Cengiz-Mapa-Limak-Kolin-Kalyon Consortium founded a new company, with an equal share of 20%, under the name “IGA” in 2013.

3.2. Estimated impacts

The estimated impacts of mega-projects are summarized through the analysis of various documents and reports reflecting the views of different parties including: EIA and ESIA, The Study on Integrated Urban Transport Master Plan (2009–2023), expert opinions and reports by the Union of Chambers of Turkish Engineers and Architects (UCTEA), The Turkish Foundation for Combating Soil Erosion, for the Reforestation and Protection of Natural Habitats (TEMA Foundation), and the Northern Forests Defense (NFD). The effects will be considered on the levels of urban structure, environment/ecology and community.

3.2.1. Urban structure

The geographic features of Istanbul significantly contribute to its visual and structural uniqueness, although fast and intensive urbanization have radically changed its topography (Sudjic & Casiroli, 2009). Kanıpak (2009) argues that various master plans do not consider this distinctive landscape as an advantage, but rather as an obstruction that should be annulled. Consequently, the valleys have been treated either as obstacles to planning transportation systems, or as empty areas to be filled in order to match the needs of rapid urbanization, sometimes taking the form of illegal housing. Furthermore, the development of transportation system has also served as a trigger for urban expansion, characterized by the rise of population and intensification of urban activities around new traffic arteries and nodes. Similar problems might occur after the realization of the three mega projects, through the pull effect of investments in new urban areas.

Although proposed as solutions to growing transportation needs, all three projects will actually increase the intensity of traffic. The study on Integrated Urban Transport Master Plan (2009–2023) for the Istanbul Metropolitan Area, highlights the Marmaray railway crossing and the Euroasia road crossing as the main investments for the expansion of capacity (JICA, 2009). At the same time, it considers the project formulation of the third bridge problematic due to the land problem, as well as the adverse impact on the natural environment and landscape. Future urbanization is suggested to be expedited only on the south of the Trans-European Motorway (TEM) as the northern part of Istanbul largely consists of forests and water reservoirs to be conserved (JICA, 2009).

The construction of first two bridges over the Bosphorus was already opposed by transportation experts, who claimed that these bridges, as well as additional ones, cannot significantly improve Istanbul's transportation system, challenged by the rapidly increasing population and traffic (Taşdemir & Batuk, 2009; Kousis, Selwyn, & Clark, 2011). The authorities also underestimated the importance and effects of induced traffic, resulting from changes in land use and activity patterns after the construction of new roads (Gerçek, 2009). Meanwhile, the Union of Chambers of Turkish Engineers and Architects (UCTEA) stressed the importance of developing a metro network integrating railway systems in Istanbul as the most efficient mode of public transportation, which should be used as an alternative solution to the highway and bridge construction, along with encouraging the use of trains and ferries instead of private vehicles (Çalışkan, 2010).

In line with these suggestions, the artificial waterways are conceived as a remedy for access and transportation problems by decreasing the time and distance for water crossings (Çekmiş Görgülü & Hacıhasanoğlu, 2012). Nonetheless, Kanal Istanbul is designed as a parallel seaway to the Bosphorus Strait, suggesting a new restructuring of transport through integrated highway and railway transportation and construction of bridges on the canal, planned to connect the island to the mainland. Restructuring of the urban layout is also expected, since new settlements and subcentres will be created through the development of infrastructure, introducing a shift in urban density and growth (Çekmiş Görgülü & Hacıhasanoğlu, 2012).

3.2.2. Ecology/environment

The key issue with mega-projects is the danger of losing green areas to business development. The forests in the north contain rich flora and fauna, water basins and natural resources, representing protected areas. Consequently, UCTEA - Chamber of Urban Planners Istanbul Branch highlights the areas' importance for sustainable development (Çalışkan, 2010).

Deforestation is a serious concern when the scale of the projects is taken into consideration. 80% of the total project area of the third airport consists of forested land (Gürtler, 2016). Moreover, according to the ESIA report for the third bridge and connected motorways (AECOM Turkey, 2013), the main route passes through the northern border of the Belgrade Conversation Forest at the European side (see Fig. 2), whilst the majority of the route (nearly 35 km) passes through the Bosphorus Key Biodiversity Area (KBA). It consists of a wide range of habitats such as sand dunes along the coastline, rocks, maquis communities, pasture lands, forests and lakes, as well as several vulnerable habitats with rare plant species, identified as Important Plant Areas (IPA). According to estimations of the Northern Forests Defense (2015: 27), the effects cannot be limited to the area of construction, since the "mega projects will also pioneer the transformation of the region into new usage areas".

One of the direct effects of deforestation is associated with anthropogenic climate change. The heat island effect, caused by the destruction of forests for land-use and transportation, threatens the health of the urban environment. Balbo (2013) draws attention to the expected increase in regional air pollution when the natural carbon cycle is interrupted. Furthermore, the hub airports also contribute to air and noise pollution, which would be a serious drawback for the attractiveness and livability of the new airport city. In addition to the air traffic, the intensification of the land traffic will further increase emissions along the access roads, due to the wider road networks connected to the third bridge and tunnel portals (AECOM Turkey, 2013).

There are also problems connected to ecosystems. UCTEA warns that Istanbul will be deprived of water as the construction site of the third airport threatens ecologically protected and sensitive areas including water basins (CAPA, 2016). Additionally, the third airport is planned on the migration routes of birds, which is hazardous for the ecosystem. This not only violates the Bern Convention (1979), but also causes possible airplane crashes (Arslangündoğdu, 2014). The adopted resolution by the European Green Party (2014) draws attention to the irreversible environmental disaster, which would be instigated by opening Kanal Istanbul. Inversion of the hydrologic balance between the cold and fresh waters of the Black Sea and the warm and salty waters of the Mediterranean Sea, connected through the Marmara Sea, would affect marine and urban life, while Saydam (2013) claims that execution of the project would cause the entire area to smell of hydrogen sulfide.

3.2.3. Community

Although mega projects always have significant direct and indirect impacts on urban communities, the centralized nature of decisions and insufficient transparency of the implementation processes diminished the role of public participation. The lack of community engagement could also be explained by the low level of public awareness of the pitfalls of anticipated mega-projects. For example, the household survey in ESIA report of the Third Bridge (AECOM Turkey, 2013) revealed that 58% of the respondents were informed about the project by newspapers and media, 39% by friends or immediate surroundings, whereas only 0.9% were informed by government officials.

Currently, electronic media have a key role in disseminating the concerns. The Atlas of Environmental Justice (EJAtlas), a web-based project initiated by the Environmental Justice Organizations, Liabilities and Trade (EJOLT), is one of the initiatives documenting conflicts from

different areas, describing the actors and the forms of mobilization, as well as their impacts and outcomes (Temper, 2015).

In addition to documentation and the education of the public, the Istanbul Chamber of Architects and environmental NGOs applied to the court for a stay of execution for the mega-projects. Marschall and Aydogan (2015) mention that 75 lawsuits were filed against the various mega projects (including the Northern Marmara Motorway, the Third Bridge and the Third Airport) by the Chamber of Architects from 2007 to 2012. Nevertheless, the construction work was not halted despite the decision of the court in favor of cancellation. Moreover, in some cases the decisions for cancellation by local administrative courts were annulled by higher courts.

Another problem affecting the community is related to property rights. Since neoliberal urban policies prioritize urban growth and investments in order to comply with global flows, public interests are frequently overlooked (Baysal, n.d.). In the case of these mega-projects it is possible to identify two types of constraints – (1) the urgent expropriation to empty lands for construction and (2) destroying forestlands or farmlands belonging to the state treasury for the same purpose. Consequently, Northern Forests Defense (2015) underlines that mega-projects violate property rights through urgent expropriation. Centralized government and top-down mechanisms facilitate this process, whilst legal frameworks remain insufficient to secure the rights of citizens.

4. Conclusion

The scale of the three Istanbul mega projects that this paper has analyzed has been defined by national ambitions in relation to global competition, and supported by politicians, investors and those who gain from the constant construction work. Neoliberal logic has been visible in current urban strategies, whilst the announced mega-projects represent an important symbol of intensive spatial and economic development. According to the "Infrastructure Industry" report by the Investment Support and Promotion Agency of Turkey, the 2023 targets underline the significance of investments in the construction sector, especially in relation to transportation and energy, and residential and non-residential buildings (ISPAT, 2013: 17). At the same time, the evaluation report by the Institute of Strategic Thinking (SDE) posits mega-projects as triggers for the growth of the construction sector and investments (Ertem & Yılmaz, 2014). However, Kargı (2013) underlines the strong correlation between GDP and overall construction expenditure, which makes Turkey's construction sector highly dependent on economic stability; whilst Perouse (2014) claims that any possible devaluation of Turkish currency and/or growing financial difficulties would jeopardize the mega-projects.

In spite of all the current and potential economic, environmental and social drawbacks presented in this article, Istanbul continues expanding the limits of its growth (and sustainability), using mega projects as the dominant mode of production of urban space and infrastructure. The anticipated expansion towards the north should set up new hubs of global competitiveness, but the problems of jeopardized natural resources, property rights and expected migration influx could violate the existing urban fabric and deepen social frictions. Therefore, the neoliberal attractiveness of new projects could easily vanish in the near future, especially when faced with the latest globally promoted imperatives of environmental awareness and social cohesion already launched by many competing cities in the global hierarchy.

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