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Mega Projects Evaluation Criteria: Case Studies from Kuwait Industrial Project

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Abstract— Mega Urban Regeneration Projects (MURPs) have become key features of regeneration in many cities. Like many large projects, MURPs, because of their complexity and scale, often face the difficulties of being over-budget or late. This research aims to develop and validate a new framework to evaluate mega urban regeneration projects. Four objectives were formulated to address those problems. Firstly, to explore the nexus between MURP, urban transformation, and globalization. Secondly, to identify the characteristics of sustainable mega urban regeneration projects. Thirdly, to investigate existing sustainable urban regeneration frameworks. Fourthly, develop a framework to evaluate Mega Urban Regeneration Projects and, finally, validate the framework.

Keywords: *Mega Projects, Industrial, Policy, Project*

1. INTRODUCTION

In the coming decades, cities confront substantial growth with internal and external challenges [1]. Disastrous incidents like war, tsunamis, or volcanic eruptions are dramatic examples of external threats. One response is to build a new garden or other cities. Alongside external distress, cities change endogenously. Poor management and diminished infrastructure can leave an unstructured sprawl and pollution—unstructured urbanization results in poor health, air pollution, traffic congestion, and crime. The failure to tackle spatial and market externals are not sustainable.

Additionally, today's rapid urbanization of the 21st century resulted in the regeneration and expansion of cities. The UN estimates that by 2030, the world will have 41 megacities (cities with 10 million inhabitants or more), and above half of the world's population will be urbanized. It is worth noting that this population rush has been one of the responses to the opportunities that cities offer - such as the opportunities created by the wealth and economic developments. This rush has created the phenomenon of 'megacities' in the cities, which has affected the cities more than ten times the size of the past's largest cities. It has brought problems and challenges alongside the potential they offer. The advocates of new urban policy seek to address these issues via Mega Urban Regeneration Project s (MURPs) and similar emblematic developments [2].

Whist many cities have always been trading hubs, links between urban centers and the global financial system have been strengthened by worldwide trade. They are rapidly assuming a key position in economic changes. The extension of the business, capital flow, and a wave of new technologies are among the critical components in the new global system's evolution. Indeed, economic development and improvement among nations worldwide are highly dependent on the globalist transformation taking place within their urban communities. Olds (1995) considers MURPs as part of the broader trend towards globalization.

Notably, globalization itself was driven by Foreign Direct Investment (FDI) and Multi-National Corporations (MNCs) as they sought to treat the whole world as a single complex marketplace. MURPs became a vital part of the changes this process brought about, as urban policy by national and local governments sought to use such megaprojects as a tool for regenerating their cities. Sometimes known as Flagship Projects, MURPs played a part

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in urban transformation whose other strands included urban branding, city imaging, and city marketing [3].

MURPs require a long development cycle and are prone to risks such as cost over-run due to their complex nature and scale. The associated costs of such projects make them particularly risky - hence they can be challenging to finance. As Flyvbjerg (2003) and Altshuler and Luberoff (2003) indicate, megaprojects are often notorious for failing to keep within budget and time schedules. Almost nine out of ten Megaprojects face cost escalations with an increase of 28% on average [4]. The risks associated with implementing such projects also include the potential bankruptcy of different partners, especially private firms, political instability in less stable countries, and financial crisis at global and national levels (Bruijn & Leijten, 2007). Metropolitan cities such as Kuwait have attracted many speculative and more-informed inward investments to finance their intensification. Sustainable MURPs can 'redress the regional economic imbalance,' and 'their remit extends beyond technical considerations of time, cost and delivery' [5]. Nevertheless, the very complexity of MURPs means that they often run overtime or over budget. Almost by definition, they have concentrated spatially on three (3) a particular urban district, which often tends to be in a capital city.

2. URBAN REGENERATION POLICY IN KUWAIT

The origins of urban policy in Kuwait date back to the 1930s when the government began to take direct action to deal with the problems generated by mass unemployment. In Kuwait, the urban and regional policy was developed as a series of trials proposed by governments following their ideological approach on the procedure, which a subsequent government might then reverse. Early policy (1940s-1970s) aimed to create geographically mobile investment in areas with an employment deficit. From the late 1970s, there was a particular focus on the inner cities, which were beset by social and economic problems. When Thatcher was in office, the market and property investors led the urban policy, which led to a focus on relatively small geographic areas with initiatives to support disadvantaged residents [6].

The urban policy of the 1990s and 2000s has focussed more closely on the demands of disadvantaged people, intending to create holistic economic and social regeneration mainly at the level of the neighborhood.' Alongside this, the government has tried to reduce regional inequality [6]. Atkinson and Moon (1994) outline the changes to Kuwait cities brought about by Margaret Thatcher's strategy of shifting power away from the state and the private sector. When New Labour came to power in 1997, Tony Blair's government set about addressing some of the problems of social inequality that Labour felt were caused by Thatcherism. There was a particular emphasis on "narrowing the gap" – reducing disparities between regions and different districts of specific cities. They had a specific focus on areas, and especially on "city regions" –

Roberts (2000) records how, since 1945, social reconstruction's responsibility has tended to change hands in line with the general social and political transformations that were taking place in broader society towards the current model of public-private partnership[7]. He also notes that the post-war reconstruction projects were the UK's earliest attempts at urban regeneration. There is a possibility that these new paths to economic development, based on considerations for growth and market flexibility, will in fact worsen inequality. Where incentives are provided to investors, there is a risk that this will create a scenario of winners and losers.

2.1 Mega Urban Regeneration Projects

During the last decade, the number of Megaprojects in Kuwait, European and American cities has risen dramatically. Throughout the 1990s, major cities have responded to the pressures of the global economy by initiating MURPs that vary in terms of their social outcomes and planning processes. This is based on the level of commitment of each city and their concern for social equity ([8]. In 2016, almost 55% of the world's population lived in towns or cities, and this is expected to rise to 60% by 2030, by which point around 33% of people are expected to live in cities with at least half a million inhabitants. Recognizing and understanding these trends is essential for ensuring sustainable regeneration [9].

While urbanization endorses economic and social development, at the same time, this progress has its consequences in cities by produce housing shortages and also environmental problems such as biodiversity declines, resource deficiencies and air pollution [10]. Change in land use has been proved to leave side effects on the environment, reduce natural resources, and affect people's living conditions. Rezgui (2010) noted that the 21st century had faced significant global ecological challenges by putting the natural and built environment at prospective risks. This includes global climate change, urban sprawl, depletion of natural resources, and increased human conflict.

Old (1995) concludes the increasing importance (and indeed primacy) of many cities in economic and cultural terms, showing that the financial Restructuring brought about by the deindustrialization of the late twentieth century had brought about moderate (and in some countries rapid) economic growth alongside technological change. All of this has contributed to a rise in demand for MURPs.

2.1.1. Mega-Urban Regeneration Projects Evaluation

The model of sustainability can be differently perceived depending on the observer's viewpoint; for example, depending on whether their disciplines have a focus on social issues, technology, energy or policy.

A city must have high interaction with its adjacent ecosystem; therefore, to achieve a sustainable urban city, it is imperative to burden on ecosystems at the same time as enhancing the quality of life (Alberti, 1996). Sustainability indicators are considered as a proven method for the establishment of sustainable urban development. These sustainability indicators offer a handy and flexible tool for evaluating sustainable cities and integrated urban development in line with Europe 2020 strategies [11]. BREEAM, LEED for Neighborhood Development, EU Sustainable Development Indicators, Green Star, and New Urban District are standard national rating systems applied in Kuwait, which will be briefly introduced.

2.1.2. Urban Regeneration in the USA

Redevelopment has been popular throughout the USA since the late 1970s and is seen as a vehicle to facilitate real estate investment in targeted areas (Reuschke, 2001). World War II had a significant impact on American cities' social and economic patterns, substantially affecting urban development. In the 1940s, many cities changed because of deindustrialization and an extensive suburbanization move began in American cities. This resulted in a decrease in the population of city centers. Middle-class whites migrated to suburban towns surrounding central cities. State freeway programs also encouraged a migration towards the suburbs, which in turn transformed the character of the inner cities (Reuschke, 2001).

The challenges mentioned have resulted in "new directions in urban management," which form the basis of public-private partnership activities. Koebel (1989) believes that the public sector must build a relationship with private developers, investors, and speculators, to generate capital and political commitment for major urban development projects.

Originally, urban renewal was considered a housing program but eventually became one of the most fundamental ways of organizing public-private co-operation in the creation of commercial and/or industrial projects in American cities.For example, in California, local governments were obliged to seek new ways of funding urban development. Consequently, many cities began to raise additional revenue by becoming active partners with private real estate developers. The partnership model was created initially by the Carter administration which announced a 'new urban policy' in 1978, followed by Reagan'sNew Federalism' which was characterized by substantial federal cut-backs in urban programs.

3. MODELS OF URBAN REGENERATION IN KUWAIT

Since the late 1970s, urban policy has become increasingly focused on regeneration. Recognizing that cities are complex and dynamic systems, planning policy aimed to encourage cities themselves to become agents of their own re-transformation. Dalla Longa (2011) outlines eight different transforming cities: Urban Renewal, Urban Redevelopment, Urban Regeneration, Urban Recovery, Urban Revitalization, Urban Framework, Urban Gentrification, and Urban Restructuring. Below we consider each in turn. Urban Renewal refers to rebuilding Kuwait's cities following the Second World War (Smith, 2002). Urban Redevelopment refers to creating a new urban elite with its decision-making network and new business communities' proliferation. It is also a term used to describe the process leading to the more recent Public-Private-Partnerships (PPP) phenomenon.

Urban Regeneration was a term originating from the post-war city, applied to projects aiming to address both criminality and unemployment (Smith 2007). Avery notes that the term was used again in the UK in the 1980s and 1990s to describe the process that involved the establishment of ad hoc agencies to intervene in city life in terms of culture, economy, the environment and even politics. Robert and Sykes (2000) suggest that Urban Regeneration was often marked by divided or even contradictory objectives, such as the environment's competing needs and the economy. The term is also used for those policies that attempt to return derelict land and buildings to favorable use.

Urban Recovery refers to an exclusive physical aspect of the built property and has a direct consequence on the components of the urban structure, dealing with maintenance and conversion. According to Smith (2007), the term Regeneration was used to refer to policies designed to support the full legitimization of "gentrification." Tallon (2010), believed Gentrification is a diverse and all-around process that involves physical, economic, social and cultural transformations.

In Kuwait, Gentrification tended to be associated with the rehabilitation of older inner-city housing areas, resulting in a class transformation of the area from working-class to middle-class, besides a change in tenancy types from private renting to owner-occupation (Hamnett, 2003). Urban Restructuring explained the change in the 1980s, upon the establishment of modern globalization and Restructuring of production sectors that embrace a strong influence on urban areas.

This thesis is particularly interested in Urban Regeneration which attempts to reverse the urban decline by creating a physical structure that is intended to have a significant impact on the local economy. Thus, the term regeneration takes on a more social connotation, containing an economic element in which the physical component is less important. Having explained the different transforming cities' models, different types of urban regeneration models will be demonstrated below. There are four different types of urban regeneration models in the UK; retail-led, housing-led, designed and culture-led regeneration.

3.1 Retail-led Regeneration

Since the 1980s, retail-led regeneration has been a leading urban regeneration model and is acknowledged as a crucial way of revitalizing urban areas by providing jobs, stimulating economic development, creating attractive places and as an important place-making tool in wider urban regeneration (Kima & Jang, 2017).

In Kuwait, the government of the 1980s tried to attract investments by using retail centers as a way for regenerating deprived areas; thus, the Enterprise Zones (EZs) been introduced. This EZ policy was to support business activities by allowing tax relaxation or accelerating the application of statutory or administrative controls, leading to the development of several retail centers on brownfield land such as the Swansea enterprise zone, Kuwait Shopping Centre.

In the final years of the twentieth century, urban planning was increasingly concerned with repopulating and revitalizing inner-city areas (Tallon, 2010). It had been noted that there had been a population decline in city centers as a result of upwardly mobile citizens migrating out towards the suburbs, a phenomenon recognized by the Kuwait government as early as the late 1960s. The government strove to encourage a "back-to-center" approach to see shops and services returning to the inner city and encouraging people to take up residence there. By the 1990s, planning policy was actively designed to shift economic activity back to the city center and away from the out-of-town shopping complexes that had marked the previous era. Policies to promote this included 'living over the shop' (LOTS) strategies, which New Labour aimed to supplement with their proclaimed "urban renaissance, which would make inner cities more attractive places to live and work. Sometimes labelled Gentrification, the policy was justified on the grounds that it would encourage the wider regeneration of the city.

High-density urban living was first introduced by Le Corbusier (1929), who had first explored what he called high-density urban living; this would reduce travel distances and encourage an energy-efficient urban development. It was an idea revisited by Roger's concept of the sustainable city (1997), in which "compact and polycentric" communities would help create a greener and more sustainable cities.

4. RESULTS AND DISCUSSION

Fig. 1 presents a bar chart by which international infrastructure risk factors are illustrated on the x-axis and their corresponding percentage of authors' agreement.

In relation to the paper context, Egyptian-specific infrastructure risk categories have further been highlighted in Table 1. The table presents four recognized risk categories which can impact Kuwaitian IP delivery. Data includes reviewed paper publishers, their corresponding categorized groups, and the percentage of authors' agreement. Fig. 2 presents the infrastructure risk categories on the x-axis and the corresponding % of agreed authors on the y-axis.

The RBS shall help the risk management team understand and, therefore, identify and assess the risk. Risk categories provide a structure that ensures the comprehensive process of systematically identifying risks to a

consistent level of detail and contributes to the effectiveness and quality of risk process identification. Table 2 presents the review for identified infrastructure execution risks and their corresponding number of agreed authors conducted from infrastructure execution risks in international and Egyptian literature. Fig. 3, shows the percentage of agreed authors and infrastructure risks in international studies, Fig.4 illustrating a bar chart regarding the percentage of agreement among authors on and infrastructure risks in Egyptian researches.

Fig. 1. Percentage of Agreed Authors and Infrastructure Risks in International Studies.

Table 1:Infrastructure recognized risks categories in Kuwait

Author	Risk Category	% Agreed
Ghada (2016), El Kholy (2015)	External factors	34
Hamdi (2002), Ibrahim et al (2014), El Kholy (2015), Emad (2014), Ahmed (2014)	Financial risks	83
Ibrahim et al (2014), El Kholy (2015), Ghada (2016), Ahmed (2014)	Projects Management	67
El Kholy (2015), Ghada (2016), Emad (2014)	Technical related	50

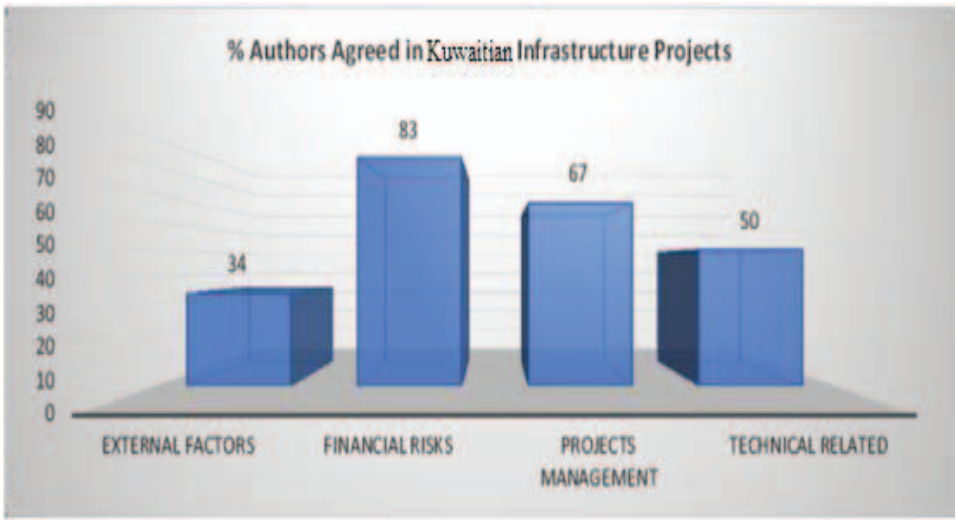

Fig. 2. Percentage of Agreed Authors and Infrastructure Risks Categories in Kuwaitian Researches.

Table 2: Identified international and authors infrastructure construction risks

Author	Risk Category	% Agreed
Ghada (2016), El Kholy (2015)	External factors	34
Hamdi (2002), Ibrahim et al (2014), El Kholy (2015), Emad (2014), Ahmed (2014)	Financial risks	83
Ibrahim et al (2014), El Kholy (2015), Ghada (2016), Ahmed (2014)	Projects Management	67
El Kholy (2015), Ghada (2016), Emad (2014)	Technical related	50

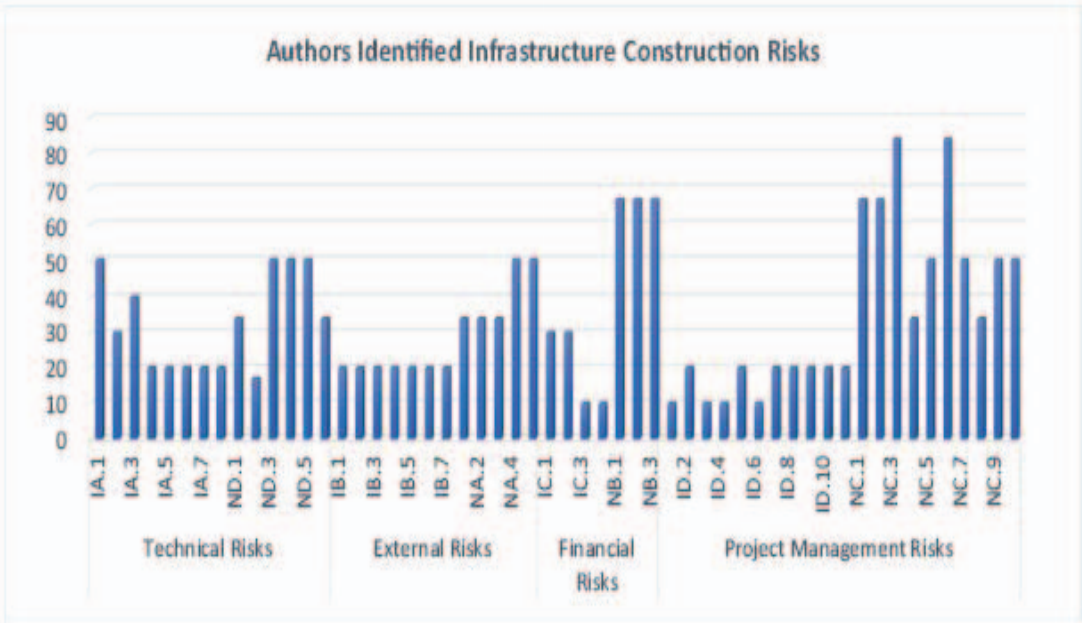

Fig. 3. Authors Identified Infrastructure Construction Risks

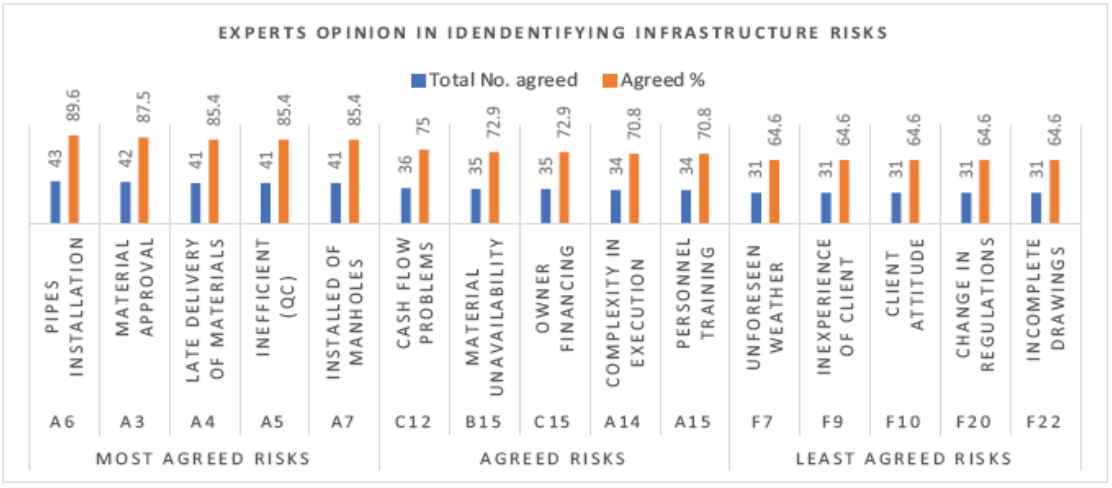

Fig. 4. Identified Infrastructure Risks based on Experts Opinions

5. CONCLUSION

This paper presents the risk identification process as the first phase of risk management processes, where this process is considered an iterative one, where new risks may arise during the project progress, through its life cycle. The frequency of iteration and who participates varies from one case to another. This paper's risk identification process alternatively leads to risk analysis processes, where risk factors are analyzed qualitatively. Infrastructure investment involves complex risk analysis, risk allocation and risk mitigation, given the highly idiosyncratic and illiquid nature. It is important to examine and identify project-specific potential hazards which can cause cost overrun and delay of infrastructure projects in Kuwait. It is said that 16.6% of projects always face cost overrun, 37% often suffer from cost increase, and 98% of Kuwaitian contractors have been delayed in delivering their project on time planned. This may be done by reducing them to a detailed level, allowing the evaluator to understand the significance of any risk and identify its origins and causes.

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