Top-down sustainable urban development? Urban governance transformation in Saudi Arabia

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ABSTRACT

This paper focuses on transformation in sustainable urban governance by examining the prospect of fostering sustainable development through top-down urban governance. It takes a case study of urban development in Saudi Arabia, which had been administered through a centralized framework devoid of the environmental assessment of policies and plans. Urban planning documents made limited references to the environment. Consequently, Saudi cities have been ranked low on environmental sustainability. However, recently, due to the political imperative of addressing the problems, low oil prices, and the Arab Spring, there has been a remarkable transformation in urban governance. The planning of some of the major cities has been decentralized and some policies implemented to curb unsustainable development. This article reviews these changes to investigate how top-down approaches might still be relevant in promoting sustainable development. It concludes that there is a need to implement a framework of legislation and administrative procedures integrated with strategic environmental assessment (SEA) to ensure proper sustainable institutionalised urban governance. The findings could serve as lessons for those operating under similar political contexts especially in developing countries.

1. Introduction

The awareness of the relevance of urban governance and political will to achieving sustainable development has been increasing in recent times. They are part of the institutional framework that is needed to nurture social, economic and environmental dimensions of sustainable development. The institutional framework has been recognized as an important aspect of sustainable development by the United Nations Commission on Sustainable Development (UNSCD, 1996). It is regarded as a sustainability dimension with themes such as integrated decision making, governance, disaster preparedness, capacity building and public participation (UNSCD, 1996). The report of the United Nations Conference on Sustainable Development indicated that strong political will is required in the quest towards sustainable development and efforts must be made in strengthening institutional frameworks (UN, 2012).

In a study of the environmental assessment (EA) procedure, as an example, Cashmore and Richardson (2013) opined, that power or politics cannot be divorced from the EA process. Power influences the EA procedures and outcomes and it needs to be considered to better understand EA practice (Cashmore & Richardson, 2013). Environmental assessment has been recognised as a procedure that can be integrated with plans and policies to promote urban sustainability (Alshuwaikhat, Aina, & Rahman, 2006; He et al., 2011). Environmental assessment is a valuable tool that decision-makers can use to evaluate proposed and existing policies, plans and programmes (PPP) and their alternatives with a view to achieving sustainable development (Alshuwaikhat et al., 2006). Whether in an EA-based process or in regular decision-making on sustainable development, the role of politics or power dynamics cannot be disregarded. Hansen, Kornov, Cashmore, and Richardson (2013) asserted that power has a significant influence on decision making by enabling or constraining the actors involved in the process.

Despite the realisation of the importance of power dynamics and urban governance in fostering sustainable development, their roles have not been fully explored in research (Cashmore & Richardson, 2013). "In designing policies for sustainable development, the importance of the governance dimension is often either under-estimated or ignored altogether" (McNeill et al., 2014). Patterson et al. (2017) asserted that the governance dimension of the societal transition to

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sustainability has not been adequately addressed in the literature. Though governance more generally has been endlessly theorised, including in relation to urban development, sustainable urban development discussions should proceed with references to such debates. Jordan (2008) suggested that scholars should focus on the relationship between governance interventions and their outcomes rather than a simple description of the mode of governance. Also, many countries, especially in the global South, have not implemented adequate institutional frameworks and good urban governance that could engender sustainable development. It is questionable if the political will, that is fundamental to the formulation and implementation of sustainability policies, exists in many countries (Borel-Saladin and Turok, 2013).

Moreover, on the one hand, there may be a tendency to assume that 'traditional' top-down/centralized planning is at odds with SUD; on the other, the role of central government policy remains important in both democratic and non-democratic contexts. Crot (2013) in a study of Masdar City, argued that the non-democratic political context of the UAE poses a challenge to the achievement of sustainability. Crot (2013) posited that non-democratic regimes, governing through a top-down approach, do pursue sustainable urban development but the implementation is moderated by the relationship between a state and its society. The level of implementation of sustainability pursuit depends on the will of the state/leadership to incur the associated political costs (Crot, 2013). However, other studies indicated that, in certain contexts, top-down approaches might play a valuable role in sustainability planning (Cowley, 2015) and provide needed support for collective action in policy implementation and low carbon governance (Liu & Ravenscroft, 2017; Markantoni, 2016).

This paper aims to contribute to debates over the extent to which top-down approaches to governance can promote sustainability. It focuses on changes in urban governance through a case study of Saudi Arabia. Government documents and other secondary data sources such as academic literature, newspaper articles and websites were reviewed to depict the trend of sustainable urban governance in Saudi Arabia. Thereafter, the current practice in Saudi Arabia was compared with the best practices found in the literature to examine the shortcomings and make recommendations for improvement. The following sections of the paper discuss the findings. The first section highlights the role of urban governance in a sustainable development framework. The second section reviews the issues related to urban governance and sustainable development in Saudi Arabia. The third section highlights the recent changes in governance and sustainable urban development in Saudi Arabia. The final section examines the extent to which the recent changes have improved urban sustainability and presents an SEA-based urban development framework for Saudi Arabia.

2. Urban governance, power, and political will

2.1. From government to governance

According to Kjaer (2004), governance is a concept with "multiple meanings" and no agreed upon definition. The definition of governance depends on the context and the issue under consideration (Kjaer, 2004; Krahmann, 2003). In this study, the term governance is used to indicate a shift away from the traditional practices of 'government'. Some authors use the terms interchangeably and refer to the change from the 'traditional government' to governance as 'good governance' (Weiss, 2000). Kemp, Parto, and Gibson (2005) defined governance as "how one gets to act, through what types of interactions (deliberation, negotiation, self-regulation or authoritative choice) and the extent to which actors adhere to collective decisions". Governance highlights both the formal and informal aspects of a political setup unlike conventional government that is strictly formal (Kemp et al., 2005). It is a departure from the traditional government that denotes "hierarchical and well-institutionalised forms of governance performed by a dominant bureaucratic and administrative government" (Rijke et al., 2012).

"Top-down 'government' is broadly replaced by multi-actor practices of 'governance' that has been more communicative and inclusive" (Cowley, 2015). Governance is characterized by minimized bureaucracy and hierarchy (Jordan, 2008). The shift from government to governance could provide opportunities for sustainable urban governance (Kemp et al., 2005); since it has been argued that sustainability requires a governing environment that promotes "dialogue", "partnership", "shared responsibility" and "pluralistic public discourse" that might be difficult for the traditional government institutions to achieve (Griffin, 2010; Joss, 2015; Rydin, 2010). The following paragraphs discuss the principles, components and typologies of urban governance, though not definitive, that are adopted (compiled from the cited references) in evaluating the changes in Saudi urban governance and understanding the typology.

In an effort to develop a typology of urban governance, in a broad sense that includes 'government', Pierre (1999) highlighted four typical models of urban governance based on participants, objectives, instruments and outcomes: managerial, corporatist, pro-growth and welfare. The welfare model might not be economically sustainable in the long term (Pierre, 1999) especially when spending might grow bigger than income leading to budget deficits. An alternative approach for characterizing forms of governance is to classify governance based on centralization, public participation, partnerships and consensus building. An urban governance form that is characterized by centralization, limited or no public participation and private partnership is regarded as traditional 'government' while the one characterized by decentralization, public participation, partnerships and consensus building is regarded as modern 'governance' and desirable (Evans, Joas, Sundback, & Theobald, 2006). This typology was also expressed by Obeng-Odoom (2012), who suggested that urban governance should be considered as "a cluster of meanings" comprising of decentralization, entrepreneurialism, and democratization (DED). The decentralization should not be simply deconcentration or delegation, partnership and collaboration among stakeholders should be emphasized (Obeng-Odoom, 2012). In order to coordinate the different levels of governance or tiers of government, a multilevel governance approach (Bulkeley & Betsill, 2005) should be considered or else local actions might work against regional/national policies. "In a world increasingly recognized as being multilevel, solutions must be as well" and "the complexities of multiple scales and multiple levels" should be addressed (Cash et al., 2006). The United Nations Economic and Social Council asserted that regardless of the form of urban governance, key enablers are needed to promote sustainable urban management (UN ECOSOC, 2014). The key enablers, which are similar to the components of good governance highlighted above, include "strong leadership of local authorities, broad-based participatory mechanisms and processes of civic engagement, strong public-private partnerships, and alignment of national and local government policy objectives and interventions" (UN ECOSOC, 2014).

As regards the components of urban governance, authors such as Kemp et al. (2005), Alshuwaikhat et al. (2006), Jordan (2008), Scott (2011), Smith and Wiek (2012) and Zurina and Hukil (2012) have highlighted the key components of good governance for promoting sustainable development. The components include:

- Public participation in decision-making
- Decentralized decision-making structures
- Proactive, adaptive and collaborative strategies (partnerships and multilevel governance) at all levels
- Sustainability-based criteria for planning (formally formulated and implemented to guide decision making)
- Accountability and transparency in governance structures
- Legislative framework
- Public environmental awareness
- Technology and openness to creativity and innovation

The components highlighted above, are the main principles of good governance that might promote sustainability if implemented within a framework. In an effort to assess the success of an urban sustainability governance framework, Smith and Wiek (2012) identified six evaluative components that include sustainability vision, sustainability targets, governance principles, sustainability actions, sustainable impacts, and organization. That is, apart from the governance principles drawn up above, an urban sustainability governance framework could incorporate the evaluative components.

2.2. Transformation towards sustainable urban governance

In the broad senses defined above, governance is widely seen as an important institutional dimension of the sustainable development framework. "Governance can offer both barriers and opportunities to transitioning towards urban sustainability and resilience" (Romero-Lankao, Frantzeskaki, & Griffith, 2018). In related discussions, pertinent issues such as public participation, capacity building, and disaster preparedness/resilience are typically brought to the fore and they could be considered in implementing a sustainability framework. A model of governance that lacks these institutional components might not be regarded as being sustainable. They are widely understood to be key components of best practice sustainable development frameworks. This framework can be applied at different levels of governance – local, national or global and encapsulates the institutional embeddedness of the balancing elements determining sustainability.

In line with the opinion that simple and cosmetic steps do not lead to good governance, the changes in urban governance could be carried out at three levels to engender transformation; specific episodes of "interactions among stakeholders" (roles, strategies and interests), governance processes (networks, coalitions and discourses) and governance cultures (modes of governance and cultural values) (Coaffee & Healey, 2003). Smith and Wiek (2012) suggested that the conventional features of government which include departmentalism, incrementalism and self-reliance must be challenged to foster sustainability. Departmentalism is the traditional way of having different government departments that handle government functions without adequate interdepartmental interaction or collaboration. Incrementalism is the notion of solving problems 'piece by piece' as they arise. Self-reliance is the conventional view that government should solely provide solutions to the urban problem with limited input from stakeholders.

In a treatise that is more relevant to sustainable urban development, McCormick, Anderberg, Coenen, and Neij (2013) defined sustainable urban transformation as "structural transformation processes – multi-dimensional and radical change – that can effectively direct urban development towards ambitious sustainability goals". They posited that governance and planning are very important in achieving sustainable urban transformation and a considerable shift in the "development paths" could lead to the transformation. Despite the advocacy to shift away from the traditional government, the political will and influence of such a government might help in the transformation towards sustainable governance in some contexts. Moser (2019) argued, with examples from Indonesia, India, Palestine, Kazakhstan and Ecuador, that the "political legitimacy" of leaders can be used to achieve their urban development goals. The following section assesses the extent to which similar tendencies may currently be observed in Saudi Arabia.

3. Urban governance and sustainable development in Saudi Arabia

The form of urban governance in Saudi Arabia affects urban management and sustainable urban development because changes in urban governance approaches have historically been constrained by a highly centralized policy-making process. Urban development has been administered through a centralized framework (Garba, 2004; Mandeli,

2008, 2016; Mubarak, 2004) with limited or no environmental assessment of policies and plans (Alshuwaikhat & Aina, 2004, 2005; Rachid & El-Fadel, 2013). Planning of the cities is influenced and approved by a central body, Ministry of Municipal and Rural Affairs (MOMRA), while the five-year national development plan is under the Ministry of Economy and Planning (MOEP). Urban planning documents make only limited references to the environment (Alshuwaikhat & Aina, 2004, 2005). Apart from the issue of governance or institutional frameworks, there are environmental issues such as high energy and water consumption (sustained by government subsidy), greenhouse gas (GHG) emission, seawater pollution, groundwater depletion and loss of vegetation to consider. The 2012 environmental performance index report indicated that Saudi Arabia is one of the countries with the worst record in environmental performance (ranked 82 out of 132 countries) (Emerson et al., 2012). In the recent 2018 report, though no longer in the list of worst performers, Saudi Arabia is ranked 86 out of 180 countries with a rank of 158 in air pollution (https://epi.envirocenter.yale.edu).

3.1. The case of urban environmental challenges in Riyadh

A case study of Riyadh, the capital city of Saudi Arabia, revealed that the city is already spatially sprawling with 'leap-frog' style land development (Al-Hathloul & Mughal, 2004; Mubarak, 2004; Rahman, 2016). A considerable number of the city lots, about one-fifth, are subdivided due to land speculations and the owners keep them undeveloped while waiting for a significant rise in prices (Ahmed, 2013). The ecological footprint of the city is very high relative to other neighbouring cities (Choguill, 2006). Riyadh's footprint is worsened by the fact that it is a landlocked city. For instance, the water provided to its populace is sourced from about 400 km away from the city. Though the city does not yet feature as a primate city at the national level, it is one of the five cities that have continuously accommodated a large share of Saudi urban population. The share of the population of these cities increased from 27% in 1974 to 45% in 2010. This expansive trend has implications for urban services and infrastructure provision in Riyadh and other cities (Abubakar & Aina, 2016; Gazzeh & Abubakar, 2018). It might also impact on the resilience of these cities to disasters. For instance, the Jeddah flood disaster in 2009 was exacerbated by the location of unplanned settlements along flood paths. The increasing vegetation loss recorded in Riyadh city in the late 90s might be similarly attributed to spatial expansion – a trend echoed at Tarut Bay (Al-Shihri, 2016; Khan & Al-Homaid, 2003). Negative environmental impacts due to large-scale urban development projects were also noted at Dammam Metropolitan Area by Alhowaish (2015) and Al-Shihri (2016). Moreover, Aina, Van der Merwe, and Alshuwaikhat (2014) reported an increase in the concentrations of satellite-derived $PM_{2.5}$ over Riyadh from $12.4\,\mu g/m^3$ in 2002 to $15\,\mu g/m^3$ in 2009. Similarly, Bian et al. (2018) concluded that the concentrations of $PM_{2.5}$ carbonaceous aerosol in Riyadh are comparable to other reported cases in the Middle East. They suggested that the sources of the particulates include cement industries, refineries, and vehicular emissions. Given that over five million people are exposed to these particulates, it seems probable that this growing problem will rise on the city's policy agenda in the coming years.

3.2. Pressures for change in Saudi urban governance

Saudi Arabia's centralized policy processes might not be characterized as being immune to incremental or even dramatic change. According to Romero-Lankao et al. (2018), governments are regularly subjected to pressures in form of innovations and experimentations, conflict and contestation, and environmental impacts and triggers that can lead to transformation. Their characterization of the process of transformation through pressures and drivers might be relevant to the Saudi Arabian context. Recently, due to the political pressure of the

Arab Spring events, the imperative of addressing environmental problems and the low oil prices, there has been a remarkable transformation in urban governance in Saudi Arabia. The political upheavals of the Arab Spring, which started in 2011 in Tunisia, influenced the actions of government especially in the social aspect of urban sustainability (Kyriazis, Balasis, & Patsavos, 2018). Though Saudi Arabia was not majorly affected, in terms of regime change and protests, by the Arab Spring (Al Tamamy, 2012), notable steps were taken to assuage the populace. The government took actions on reducing youth unemployment, providing avenues for public participation at the municipal level, inaugurating social welfare programs and increasing infrastructure spending (Quamar, 2014). Natural disasters such as the Jeddah flood in 2009 and 2011 have also increased the pressure on the government to make far-reaching changes especially in tackling environmental problems. Moreover, the dwindling oil revenues due to low oil prices have added to the pressure on the government to adopt measures that promote sustainability at the national and municipal level.

4. Recent changes in Saudi urban sustainability

4.1. Changes in urban governance

The recent changes by the Saudi government include changes in the institutional framework of urban governance and far-reaching changes to bring about urban social and environmental sustainability. At the national level, the national development plans have explicitly dealt with issues such as rationalization of subsidies, enhancing productivity and efficiency at municipalities, balanced regional development, quality of life and environmental protection (Al-Jasser, 2013; MOEP, 2005, 2010). In terms of urban governance, procedures followed by some of the cities have been altered. The municipalities have been granted more autonomy to make planning decisions and may develop their own plans instead of being subjected to centralized planning control by the Ministry of Municipal and Rural Affairs (MOMRA). Also, the private sector has been given more opportunities to participate in urban and economic development through public-private partnerships (Abdulaal, 2011; MOEP, 2005). As shown in Table 1, members of the public are now elected into the municipal council to participate in local decision making. They can make meaningful input into the plans and policies of the cities.

4.2. Urban environmental sustainability

With regard to urban environmental sustainability, Saudi Arabia has started different projects that focus on providing water and energy through renewable energy sources (Bhutto, Bazmi, Zahedi, & Klemes, 2014; Rahman & Khondaker, 2012). They have initiated projects to establish public transportation in big cities to reduce traffic congestion

and carbon emissions. Prior to this development, there had been insufficient or no public transportation in most Saudi cities. The following three examples: smart city and urban observatory projects, mobility, urban infrastructure and housing, and urban greening are examined to highlight the changes to the real aspects of physical planning and urban sustainability in Saudi Arabia. The examples show that changes have not only occurred in the regulation and procedural aspects of planning but also in the cityscapes of Saudi cities. The first example demonstrates, on the one hand, that there are changes in urban governance driving the Saudi new smart urbanism in the form of public-private partnership; but on the other, that there are challenges in implementing human-centred smart cities. It would be difficult not to see the second example as the usual mega city projects, and yet the approach and targetted facilities remain untypical for large infrastructural projects in the Kingdom. The third example provides evidence of more holistic 'green' thinking at the level of urban design.

1. Smart city and urban observatory projects

Saudi Arabia has established initiatives and projects to build smart cities (Aina, 2017). Though some of the projects are yet to be completed, a number of achievements are noteworthy. For example, an e-government initiative has been implemented in public agencies which are providing more than 875 e-services (GCF, 2015). At the city level, new or existing cities are planned or being developed as smart cities. The King Abdullah Economic City, one of the new smart cities, is being built to have modern smart infrastructure, e-services and broadband connectivity with a budget of about $100 billion (Moser, Swain, & Alkhabbaz, 2015). The project exemplifies the adoption of a public-private partnership approach in executing projects as the city is managed by a private company with 'entrepreneurship' form of governance. That is, the city is an enterprise and the residents are customers to the company that is managing the city (Moser et al., 2015). Moser et al. (2015) have expressed concern about how the new city projects will be able to navigate socio-cultural, governance and bureaucratic challenges of the Kingdom. Moreover, recent smart city studies, Rizzo (2017), Cugurullo (2018) and Yigitcanlar et al. (2018), have argued that smart cities, especially new ones, tend to be located in isolation and unconnected with their context thereby leading to 'fragmented urbanism' that is not human-centred. These concerns might be addressed by the Kingdom's recent political will to resolve the bottlenecks in implementing such projects. Most especially, the announcement of the plan for a bigger unrivalled project of a new city (Neom city) in the north western part of the Kingdom (http://discoverneom.com/) might lead to a new era in implementation. However, the challenge of avoiding fragmentation and a technology-centric smart city lacking 'social intelligence' (Mora, Bolici, & Deakin, 2017) might remain. The existing cities that are being developed as smart cities include, but are

Table 1
Changes in the structure and characteristics of urban governance.
(Source: Mubarak, 2004; MOEP, 2005; Mandeli, 2008; Abdulaal, 2012a; Arab News, 2015; Saudi Gazette, 2014; Mandeli, 2016; MOMRA, 2016)

The structure and characteristics of urban governance before 2004	The structure and characteristics of urban governance after 2004	Approved future changes
• No functional municipal council • Finance from the central government through MOMRA • Full monitoring of municipalities by MOMRA • Establishment of special authority for the development of Riyadh • Limited municipal level coordination of agents of central ministries that provide municipal utilities • Limited private participation • Welfare model of governance	• Semi-elected (two-third of the members) municipal council • A Municipality can generate funds from services provided to the public (privatization of some municipal services) • Indirect monitoring by MOMRA (municipal council liaises between municipality and MOMRA) • Establishment of special development authorities in more cities (e.g. Makkah and Madinah). • Coordination of the agents of central ministries through the municipal council • Women's participation in the municipal council • Establishment of Public-Private partnership • Post-welfare model of governance	• Municipal councils to approve municipal plans and programs • Inauguration of the law of freedom of information • Inauguration of land use planning guidelines

Fig. 1. Yanbu digital map and information kiosk.

Fig. 2. Riyadh traffic management system.
(Source: ADA www.ada.gov.sa)

not limited to, Riyadh, Yanbu, Jubail, Jeddah, Makkah, Dammam and Madinah. Some of the cities have implemented smart city systems and applications such as data centre, fibre connectivity, enterprise GIS and digital mapping (Fig. 1), traffic control and management (Fig. 2), digital signage and address, environmental monitoring and access control (Aina, 2017). As regards environmental monitoring, ArRiyadh Development Authority (ADA) has completed about 32 air quality monitoring stations which are linked to a common database and published on a website (http://www.arriyadhenv.gov.sa/en/).

Since the establishment of an urban observatory in Jeddah in 2003 in collaboration with the UN-Habitat and Arab Urban Development Institute (AUDI), other cities in the Kingdom have adopted the concept (Jackson & Simpson, 2012). The aim of the urban observatory is to contribute to the UN's Global Urban Observatory (GUO) and develop a set of urban indicators for monitoring the social, economic and environmental performance of cities. The indicators are standardised to enable comparison between cities (MOMRA, 2016). This is a significant development bearing in mind that as of 2014 the Central Department of Statistics and Information did not have its socioeconomic data on Saudi Arabia in GIS format (MOMRA, 2016). According to MOMRA (2016), about 25 cities are at different stages of implementing urban observatories.

2. Mobility, urban infrastructure, and housing

As mentioned above, Saudi Arabia has embarked on transportation projects, both at the national and city levels, to establish public transit and rail systems. Fast inter- and intra-city metro lines are being constructed to ease traffic congestion. For example, the new Al-Mashaaer Metro that transports pilgrims during the Hajj season has obviated the need for about 12,000 buses since its inauguration (Hazaimeh, 2014). The Haramain rail system has just been completed. The rail line connects the holy cities of Makkah and Madinah (about 400 km) via Jeddah and Rabigh (Fig. 3). In Riyadh, the public transit being implemented consists of 6 Metro lines (about 176 km) and a network of 22 bus routes (Fig. 4). It is proposed that the transit system will reduce the city's fuel consumption by 400,000 l per day (http://riyadhmetro.sa/en/). Apart from construction, the project team is also engaging in a cultural awareness campaign to prepare the populace for the coming lifestyle change. Choguill (2006) and Nahiduzzaman et al. (2018) have highlighted the need and importance of behavioural change intervention in the drive towards sustainability in Saudi Arabia.

Fig. 3. Haramain rail network linking Makkah and Madinah.

Fig. 4. Riyadh Metro line and station under construction.

New urban drainage plans and flood monitoring systems are being implemented to improve the resilience of Saudi cities to flood disasters (Aina, 2017). Urban flooding has been a recurrent issue in cities like Riyadh, Makkah, and Jeddah (Khal, 2013). The General Authority of Meteorology and Environmental Protection has also implemented an early warning system to alert citizens of impending severe weather. The government has provided a fund for building houses for the poor to improve the social aspect of sustainability. The Saudi Ministry of Housing allocated more than one hundred thousand housing units in the first quarter of 2018 (Arab News, 2018). However, Kyriazis et al. (2018) has noted that the mega housing project is facing challenges of administrative conflicts, socio-cultural issues, and technical problems. Also, there is a drive towards nationalization of jobs in the private sector (MOEP, 2005, 2010) which had hitherto been handled mainly by foreign workers.

3. Urban greening

Aljoufie and Tiwari (2015) have highlighted the lack of green infrastructure in Jeddah, Saudi Arabia's second-largest city. However, there has been an increase in the number of urban projects being implemented across Saudi cities. In Riyadh, a special environmental project has been implemented to restore and preserve Wadi Hanifah wetlands (120 km green desert valley), which has been polluted by industrial and agricultural activities (Arab News, 2010). In Jeddah, the municipality had initiated a project to maintain and restore about 480 public gardens (Al-Hamid, 2014). In order to avoid the impacts of urban greening on water and energy consumption, a project had been started in Riyadh to use renewable energy in a new international park (Arab News, 2014). Another initiative is the planting of trees along road centreline to improve the greenscape and provide shade for pedestrians. In Yanbu, a 12 km waterfront project with green areas has been inaugurated to promote sustainable tourism (Aina, 2017; Rahman & Khondaker, 2012). Also, green areas covering about 1.2 million m² have been developed in the past two decades making the coverage of greenery in the city to be about 40% (Fig. 5) (RCY, 2016).

Recently, in 2016, the government of Saudi Arabia unveiled a Vision 2030 plan to guide the country to sustainable growth and development. The plan explicitly highlights the importance of environmental sustainability and provides a set of indicators and targets for achieving sustainability (http://vision2030.gov.sa/en). For example, one of the targets of Vision 2030 is to have three Saudi cities in the top-ranked 100 cities in the world. This might result in improving the social, economic and environmental status of some Saudi cities (Aina, 2017). The Vision

2030 and the corresponding National Transformation Program (NTP) 2020 also include targets on improving the level of public participation in the planning process, enhancing the quality of life in the cities and promoting sustainable and balanced urban development (Aina, 2017; Alshuwaikhat & Mohammed, 2017). In terms of governance, the Saudi Vision 2030 is administered by the Council of Ministers which has mandated the Council of Economic and Development Affairs (CEDA) to implement the plan (http://vision2030.gov.sa/en). Government agencies should identify the part of the vision that is relevant to them and strategic roadmaps for achieving it. The government agencies are to be strengthened to be more flexible, accountable and adaptable to challenges (http://vision2030.gov.sa/en). The Saudi Vision 2030 is in line with the evaluative framework developed by Smith and Wiek (2012). They emphasized the need for sustainability vision, targets and actions for promoting sustainable urban governance. In the same vein, MOMRA has established a partnership with the UN-Habitat to implement the Future Saudi Cities program (https://www.futuresaudicities.org). The program is going to follow a three-prong approach to achieve sustainable urbanization in Saudi Arabia. The approach has urban planning and design, urban rules and regulation, and municipal finance aspects. While it is too early to assess the impacts of these vision and program on sustainable urban governance in Saudi Arabia, it is expected that they will bring notable changes.

5. Examining the transformations in Saudi Arabia using the referenced frameworks

The transformations that have been implemented in Saudi Arabia could have impacts on sustainable urban development in the Kingdom. Using the frameworks of urban governance typology by Pierre (1999), Obeng-Odoom (2012), Bulkeley and Betsill (2005), Cash et al. (2006), Coaffee and Healey (2003) and McCormick et al. (2013), it is arguable that the Kingdom is experiencing a shift in urban governance from the traditional welfare mode to the modern post-welfare mode. Since the change affects the structure of urban governance and includes specific sustainability actions, it can be regarded as a sustainable urban transformation. However, some researchers like Alkadry (2015) do opine that the changes towards decentralization are cosmetic and do not necessarily strengthen urban governance since decisions are still made centrally. Mandeli (2016) having acknowledged the changes in the configuration of public management, observed a lack of consolidation of the state administrative system and no improvement in organizational effectiveness. Despite the observations by Alkadry (2015) and Mandeli (2016), the changes can still be acknowledged as constituting

Fig. 5. A park in Yanbu with solar-powered lamp posts.

an unprecedented drive towards sustainable urban governance in Saudi Arabia. They could create "awareness about urban planning and development" at the local government level and "promote good governance" (Mandeli, 2008). Moreover, since the shift in the mode of urban governance can be conceptualized as a continuum (Evans et al., 2006), especially from the traditional 'government' to the modern 'governance' mode, the Saudi experience can be regarded as progress towards sustainability. That is, if indeed the shift to governance is beneficial to sustainable outcomes, then this would seem to be a welcome development. The transformation in urban governance corroborates the view that political power or will could have an influence on sustainable urban governance. Thus, practitioners should explore ways of harnessing the influence of power in their quest towards sustainability.

5.1. Assessing the changes in Saudi urban governance

Despite the laudable changes, there are still some issues such as sustainable planning and legislative frameworks, subsidies, automobile-dependent lifestyle, undeveloped city lots and pollution that need to be addressed. A highlight of the changes that have occurred and the components of sustainable urban governance shows that there are some important areas that are yet to be adequately addressed (Table 2). Sustainability-based criteria for planning and legislative frameworks are yet to be changed or are changed in a limited way. Some other issues relevant to sustainability such as subsidy on water, fuel and electricity tariffs, changing the automobile-dependent lifestyle, undeveloped city lots and pollution of coastal environment might jeopardize the gains of the recent transformations if they are not properly addressed. For instance, the government could not easily find vacant land to allocate new housing projects in the major cities due to leap-frogging development. There are many vacant lots within the city that are owned by speculators. In the case of subsidies for water, fuel and electricity tariffs; the government is still weighing its options since the removal of the subsidies might not be supported by the populace. Though the tariffs had been increased in 2015 (Atalla, Gasim, & Hunt, 2018), Saudi Arabia is still one of the top countries with fossil-fuel subsidies; having spent about 22.3 billion on oil subsidy in 2017 (IEA, 2018). The issue needs to be resolved in time since local oil consumption is already having an impact on available oil for export (Abubakar & Aina, 2016). Also, the case whereby environmental activists have to intervene in Tarut Bay to halt the replacement of rare mangrove vegetation by urban development calls into question sustainability planning in the Kingdom (Arab News, 2013). The incident also raised the issue of valuing ecosystem services since the incentive for developers to acquire land in the area was the low prices. Abdulaal (2011, 2012b) highlighted that the gain of implementing public-private partnership

might be jeopardized by the lack of institutional framework and governance legislation for supporting the initiative.

Moreover, since some of the changes are still at the proposal stage, they might be jeopardized by policy implementation failure. Howes et al. (2017) argued that the gap between governments' commitments to sustainability and the actual achievement of building sustainable societies by states has been due to policy implementation failure. Some of the Saudi urban development projects such as the King Abdullah Economic City and King Abdullah Financial District have not been completed due to implementation problems (Aina, 2017). Also, the drainage plan to combat urban flooding has not been fully implemented as recent cases of devastating urban flooding were reported in districts of Jeddah (Arab News, 2017). Though the devastation was relatively minimal due to the broadcast of the weather forecast through the social media to discourage people from going out unnecessarily, the incomplete drainage system contributed to the flooding (Arab News, 2017).

5.2. Comparison with international practices

The United States, Canada, United Kingdom, European Union and Australia have implemented the practice of integrating sustainability principles through strategic environmental assessment (SEA) into their planning processes. A notable difference between urban governance in these countries and urban governance in Saudi Arabia is the finance of the local government. The municipalities in Saudi Arabia get their financial allocation mainly from the central government and their dependence on the government limits their autonomy and incentive to promote efficiency. Despite the reforms, Saudi municipalities still depend on the central government, to a large extent, for their finances. Similar outcomes have been reported in some developing countries where governance is characterized by low tax levels and lack of autonomy due to over-centralization of decision making (Garba & Al-Mubaiyedh, 1999). In these countries, local governments generate their funds through taxation and they are consequently accountable to the taxpayers. This is part of the challenges highlighted by Crot (2013), in the study of Masdar City, which might be inimical to urban sustainability.

In Canada, the municipalities have autonomy on how they plan and implement sustainability strategy; and there are documented guidelines on consultation with the community and integration of sustainability principles in their plans (Stuart, Collins, Alger, & Whitelaw, 2014). Each municipality is encouraged to make an Integrated Community Sustainability Plan (ICSP) but without regulatory authority or formal procedure (Stuart et al., 2014). In the UK, sustainability governance is guided by the EU SEA Directive (European Commission, 2001) that

Table 2

The highlight of components of sustainable urban governance and recent changes.

Components of sustainable urban governance	Recent changes in urban governance	Issues to be addressed
Public participation	• Public sittings that showcase future plans • Debates on social media about future plans • Election of municipal council members	• Yet to have a formalised public participation procedure
Decentralized decision making	• Municipalities have greater autonomy • Big cities such as Makkah, Riyadh Madinah have special development authorities	• The decentralization is yet to be completed since most decisions are still made centrally • Municipalities still depend on the central government for funds
Proactive, adaptive and collaborative strategies (multilevel governance)	• Public-private partnership • Establishment of the national committee on GIS spatial data infrastructure • Partnership with UN-Habitat on the Future Saudi Cities program	• Need for an institutional framework to support public-private partnership
Sustainability-based criteria for planning	• Use of sustainability criteria (indicators and targets) in Saudi Vision 2030 document	
Accountability and transparency	• Establishment of the national anti-corruption body (The National Anti-Corruption Commission) to promote corporate governance • Establishment of a body for measuring and monitoring the performance government agencies	
Legislative framework	• Yet to be changed	• Updating the legislative framework
Public environmental awareness	• Increasing coverage of environmental issues by the press • Establishment of the Non-governmental environmental body (Saudi Environmental Society). • Environmental activism (the case of experts who are campaigning for the declaration of Tarut Bay as a conservation area)	• The level of participation of Non-governmental body is still low.
Technology and openness to creativity and innovation	• Use of renewable energy • Smart city projects • Adoption of advanced geospatial techniques and the creation of urban observatories by municipalities	• Need to develop local talents

requires the implementation of the SEA in planning and policy-making (Atkinson & Klausen, 2011). The planning procedure can be described as hierarchical, technocratic, sectoral with low public awareness (Atkinson & Klausen, 2011). In Sweden, spatial planning is mainly carried out by the local governments without any central control (Persson, 2013). It was reported by Persson (2013) that the planners have already adopted the principles of sustainable development and they make their plans sustainable 'by default'. It can be concluded from this comparison that the implementation of sustainability in planning varies even within the same country. However, there are some themes that are common to the reviewed cases. Autonomy of the local planning authorities (decentralization), sustainability planning guidelines and public participation are the themes that are prevalent in all the cases.

5.3. Towards SEA-based sustainable urban development framework in Saudi Arabia

The implementation of SEA-based planning framework has been acknowledged as a means of promoting sustainable urban development (Alshuwaikhat & Aina, 2004, 2005). However, as discussed in the previous sections, Saudi Arabia has not implemented an SEA-based framework for sustainable urban development. This shortcoming has been noted by several studies such as Alshuwaikhat and Aina (2004, 2005), Rachid and El-Fadel (2013) and MOMRA (2016). These studies noted that there is no SEA legislation or guidelines (except environmental impact assessment (EIA) of plans), limited public participation and no influence of the SEA on decision making. A framework can be implemented by the Presidency of Meteorology and Environment (PME) and the Council of Ministers as suggested by Alshuwaikhat and Aina (2004) since the hierarchy of decision making has not changed much except the enhancement of the municipal council. In their view, policy SEA should be implemented at the top decision-making level such as Council of Ministers while plan and program SEA should be implemented at the ministries involved in planning and detailed plan and program SEA should be done at the municipal level (Alshuwaikhat & Aina, 2004). The municipal council should be empowered to co-ordinate the agents of the different ministries at the municipal level

especially where their duties and services overlap. It is expected that the forthcoming land use planning guide (MOMRA, 2016) might address the prevailing shortcomings. In addition, there is a need to review the General Environment Code which is the main legal document for EIA. The code has been inaugurated since 2001 and it has not been revised since then.

6. Conclusion

This article has explored the urban governance and sustainable urban development debate that a top-down approach to governance could influence urban sustainability in a positive way using the framework of sustainable urban governance. In the case of Saudi Arabia, there have been notable positive changes in urban governance and the governance for sustainable development. Due to the imperative of addressing pressing environmental issues, low oil prices and the pressure from Arab Spring, the government has implemented notable projects and policies to reduce Saudi environmental footprint.

These transformations buttress the point that a top-down approach initiated by those in the top echelon of a society can have a great influence on the move towards sustainability. The top-down approach provides the needed leadership and political will to "make things happen". For example, the new Vision 2030 plan that provides a vision of urban sustainability and set of goals to be achieved which were previously non-existent was established by the central government and had been adopted by all agencies and the private sector. The new Saudi Vision 2030 plan and partnership with UN-Habitat on the Future Saudi Cities program might lead to an improvement in sustainable urban governance. The partnership with UN-Habitat can provide an opportunity for sharing experiences and technical skills. Also, the smart city projects, such as the new Neom city, are envisioned and supported by the government. The adoption and implementation of these projects by all the levels of government had been facilitated by the centralized form of governance. This could be relevant in other contexts as noted by Moser (2019). The adoption of the top-down approach does not preclude the need for bottom-up interactions through citizen and stakeholder participation. As argued by Patterson et al. (2017) there might

be a need for both "top-down steering and bottom-up self-organization" to achieve a successful transformation to sustainable urban governance. The development of public-private partnership projects is an aspect of the bottom-up approach that could be further explored. The main point is that government, either centralized or otherwise, might be motivated by pressures to carry out changes which might have great effects with the appropriate leadership. Leadership is an aspect of the top-down approach that might be usefully retained or explored in Saudi Arabia or elsewhere.

It should be noted that the changes in Saudi urban governance have not been experienced by some vital aspects of sustainability. The legislative framework and the administrative procedures for sustainable urban development are still mainly in business as usual mode. There is a need to implement a framework of legislation and administrative procedures to ensure proper sustainable institutionalised urban governance. Also, the drive towards decentralization has not been far-reaching. The municipalities still depend on the central government for their finance. The adopted public-partnership has faced the challenges of lack of operational framework and legislation. These limitations need to be addressed to improve on the recent transformation.

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References

Abdulaal, W. A. (2011). Public-private partnership in regenerating unplanned settlements in Jeddah. *International Journal of Sustainable Development and Planning, 6*(2), 181–194.

Abdulaal, W. A. (2012a). Municipal councils in Saudi Arabia: Context and organization. *Journal of King Abdul Aziz University: Environmental Design Sciences, 6*(1), 3–29.

Abdulaal, W. A. (2012b). Potentials for public private partnerships for Saudi municipalities. *Journal of King Abdul Aziz University: Environmental Design Sciences, 6*(1), 31–62.

Abubakar, I. R., & Aina, Y. A. (2016). Achieving sustainable cities in Saudi Arabia: Juggling the competing urbanization challenges. In U. G. Benna, & S. B. Garba (Eds.). *Population growth and rapid urbanization in the developing world* (pp. 42–63). Hershey, PA: IGI Global.

Ahmed, M. D. A. (2013). 60% Saudis live in rented houses. Arab News, 26 April 2013. Available online: http://www.arabnews.com/news/449475 (accessed on 30 September 2014).

Aina, Y. A. (2017). Achieving smart sustainable cities with GeoICT support: The Saudi evolving smart cities. *Cities, 71,* 49–58.

Aina, Y. A., Van der Merwe, J. H., & Alshuwaikhat, H. M. (2014). Spatial and temporal variations of satellite-derived multi-year particulate data of Saudi Arabia: An exploratory analysis. *International Journal of Environmental Research and Public Health, 11*(11), 11152–11166.

Al Tamamy, S. M. (2012). Saudi Arabia and the Arab Spring: Opportunities and challenges of security. *Journal of Arabian Studies, 2*(2), 143–156.

Al-Hamid, N. (2014). Jeddah's public parks require maintenance. Arab News, 25 February 2014. Available online: http://www.arabnews.com/news/530966 (accessed on 29 November 2017).

Al-Hathloul, S., & Mughal, M. A. (2004). Urban growth management-the Saudi experience. *Habitat International, 28*(4), 609–623.

Alhowaish, A. K. (2015). Eighty years of urban growth and socioeconomic trends in Dammam Metropolitan Area, Saudi Arabia. *Habitat International, 50,* 90–98.

Al-Jasser, M. (2013) Keynote address. M. E. E. D. conference on Saudi mega infrastructure projects, 17 September, 2013, Riyadh, Saudi Arabia.

Aljoufie, M., & Tiwari, A. (2015). Valuing 'green infrastructure' in Jeddah: A city lost in 'grey' infrastructure. *Journal of Architecture and Urbanism, 39*(4), 248–259.

Alkadry, M. G. (2015). Saudi Arabia and the mirage of decentralization. In A. R. Dawoody (Ed.). *Public administration and policy in the Middle East, public administration, governance and globalization, 9* (pp. 173–188). New York: Springer.

Al-Shihri, F. S. (2016). Impacts of large-scale residential projects on urban sustainability in Dammam Metropolitan Area, Saudi Arabia. *Habitat International, 56,* 201–211.

Alshuwaikhat, H., Aina, Y., & Rahman, S. M. (2006). Integration of urban growth management and strategic environmental assessment to ensure sustainable urban development: The case of Arabian Gulf cities. *International Journal of Sustainable Development and Planning, 1*(2), 203–213.

Alshuwaikhat, H., & Aina, Y. A. (2004). Sustainable cities: Implementation of strategic environmental assessment in Saudi Arabian municipalities. *Journal of Environmental Planning and Management, 47*(2), 303–311.

Alshuwaikhat, H. M., & Aina, Y. A. (2005). Sustainable planning: The need for strategic environmental assessment-based municipal planning in Saudi Arabia. *Journal of Environmental Assessment Policy and Management, 7*(3), 387–405.

Alshuwaikhat, H. M., & Mohammed, I. (2017). Sustainability matters in national development visions—Evidence from Saudi Arabia's vision for 2030. Sustainability, 9(3), 408:1–15.

Arab News (2010). Wadi Hanifa project to protect wetlands. Arab News, 2 May 2010. Available online: http://www.arabnews.com/node/343945 (accessed on 30 September 2014).

Arab News (2013). Activists want EP forest declared nature reserve. Arab News, 27 October 2013. Available online: http://www.arabnews.com/news/468972 (accessed on 30 September 2014).

Arab News (2014). King Abdullah gardens project starts in Riyadh. Arab News, 28 February 2014. Available online: http://www.arabnews.com/news/532561 (accessed on 29 November 2015).

Arab News (2015). Over 1.7 million to vote in civic elections. Arab News, 18 September 2015. Available online: http://www.arabnews.com/saudi-arabia/news/808001 (accessed on 29 November 2015).

Arab News (2017). Editorial: Jeddah floods a reminder of why we need the anti-corruption drive. Arab News, 22 November 2017. Available online: http://www.arabnews.com/node/1197196/editorial (accessed on 29 November 2017).

Arab News (2018). Saudi Housing Ministry allocates over 100,000 residential units. Arab News, 16 May 2018. Available online: http://www.arabnews.com/node/1303211/saudi-arabia (accessed on 23 May 2018).

Atalla, T. N., Gasim, A. A., & Hunt, L. C. (2018). Gasoline demand, pricing policy, and social welfare in Saudi Arabia: A quantitative analysis. *Energy Policy, 114,* 123–133.

Atkinson, R., & Klausen, J. E. (2011). Understanding sustainability policy: Governance, knowledge and the search for integration. *Journal of Environmental Policy & Planning, 13*(3), 231–251.

Bhutto, A. W., Bazmi, A. A., Zahedi, G., & Klemeš, J. J. (2014). A review of progress in renewable energy implementation in the Gulf Cooperation Council countries. *Journal of Cleaner Production, 71,* 168–180.

Bian, Q., Alharbi, B., Shareef, M. M., Husain, T., Pasha, M. J., Atwood, S. A., & Kreidenweis, S. M. (2018). Sources of $PM_{2.5}$ carbonaceous aerosol in Riyadh, Saudi Arabia. *Atmospheric Chemistry and Physics, 18*(6), 3969–3985.

Borel-Saladin, J. M., & Turok, I. N. (2013). The green economy: incremental change or transformation? *Environmental Policy and Governance, 23*(4), 209–220.

Bulkeley, H., & Betsill, M. M. (2005). Rethinking sustainable cities: Multilevel governance and the 'urban' politics of climate change. *Environmental Politics, 14*(1), 42–63.

Cash, D. W., Adger, W., Berkes, F., Garden, P., Lebel, L., Olsson, P., ... Young, O. (2006). Scale and cross-scale dynamics: governance and information in a multilevel world. *Ecology and Society, 11*(2), 8–19.

Cashmore, M., & Richardson, T. (2013). Power and environmental assessment: Introduction to the special issue. *Environmental Impact Assessment Review, 39,* 1–4.

Choguill, C. (2006). Assessing the urban sustainability of Riyadh. *Paper presented at the Jeddah International Urban Forum and Exhibition, April 2006.* Jeddah: Saudi Arabia.

Coaffee, J., & Healey, P. (2003). 'My voice: My place': Tracking transformations in urban governance. *Urban Studies, 40*(10), 1979–1999.

Cowley, R. (2015). In defence of top-down sustainability planning: The case of Sejong City. In J. Condie, & A. M. Cooper (Eds.). *Dialogues of sustainable urbanisation: Social science research and transitions to urban contexts, 36–40.* Penrith, Australia: University of Western Sydney.

Crot, L. (2013). Planning for sustainability in non-democratic polities: The case of Masdar City. *Urban Studies, 50*(13), 2809–2825.

Cugurullo, F. (2018). Exposing smart cities and eco-cities: Frankenstein urbanism and the sustainability challenges of the experimental city. *Environment and Planning A: Economy and Space, 50*(1), 73–92.

Emerson, J. W., Hsu, A., Levy, M. A., de Sherbinin, A., Mara, V., Esty, D. C., & Jaiteh, M. (2012). *2012 environmental performance index and pilot trend environmental performance index.* New Haven: Yale Center for Environmental Law and Policy.

European Commission (2001). Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. *Official Journal of the European Communities L, 197,* 30–37.

Evans, B., Joas, M., Sundback, S., & Theobald, K. (2006). Governing local sustainability. *Journal of Environmental Planning and Management, 49*(6), 849–867.

Garba, S. B. (2004). Managing urban growth and development in the Riyadh metropolitan area, Saudi Arabia. *Habitat International, 28*(4), 593–608.

Garba, S. B., & Al-Mubaiyedh, S. (1999). An assessment framework for public land management intervention. *Land Use Policy, 16,* 269–279.

Gazzeh, K., & Abubakar, I. R. (2018). Regional disparity in access to basic public services in Saudi Arabia: A sustainability challenge. *Utilities Policy, 52,* 70–80.

GCF (2015). Competitive governments – Information and Communication Technology (ICT) sector in Saudi Arabia. Available online: http://gcf.org.sa/en/MediaCenter/MediaLibrary/Documents/WP_ICT.pdf (accessed on 27 July 2016).

Griffin, L. (2010). Editorial: Governance innovation for sustainability: Exploring the tensions and dilemmas. *Environmental Policy and Governance, 20*(6), 365–369.

Hansen, A. M., Kornov, L., Cashmore, M., & Richardson, T. (2013). The significance of structural power in strategic environmental assessment. *Environmental Impact Assessment Review, 39,* 37–45.

Hazaimeh, H. (2014). Metro transports nearly 1m pilgrims. Arab News, 5 October 2014. Available online: http://www.arabnews.com/saudi-arabia/news/639976 (accessed

on 6 October 2014).

He, J., Bao, C. K., Shu, T. F., Yun, X. X., Jiang, D., & Brwon, L. (2011). Framework for integration of urban planning, strategic environmental assessment and ecological planning for urban sustainability within the context of China. *Environmental Impact Assessment Review, 31*, 549–560.

Howes, M., Wortley, L., Potts, R., Dedekorkut-Howes, A., Serrao-Neumann, S., Davidson, J., ... Nunn, P. (2017). Environmental sustainability: A case of policy implementation failure? *Sustainability, 9*(2), 165.

IEA (2018). *World energy outlook 2018.* Paris: IEA.

Jackson, D., & Simpson, R. (2012). *Digital earth, virtual nations, data cities – Connecting global futures for environmental planning.* Newton, NSW, Australia: DCity Pty Ltd.

Jordan, A. (2008). The governance of sustainable development: Taking stock and looking forwards. *Environment and Planning. C, Government & Policy, 26*(1), 17–33.

Joss, S. (2015). *Sustainable cities: Governing for urban innovation.* London: Palgrave Macmillan.

Kemp, R., Parto, S., & Gibson, R. B. (2005). Governance for sustainable development: Moving from theory to practice. *International Journal of Sustainable Development, 8*(1), 12–30.

Khal, A. (2013). Rains make a mockery of the Kingdom's drainage projects. Saudi Gazette, 21 November 2013. Available online: http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20131122187382 (accessed on 6 October 2014).

Khan, M. A., & Al-Homaid, N. (2003). Remote sensing study on mangrove depletion, Tarut Bay, Saudi Arabia. *A. S. Alsharhan, W. W. Wood, A. S. Goudie, A. Fowler and E. M. Abdellatif (Ed.): Desertification in the third millennium: Proceedings of an international conference, Dubai, 12–15 February 2000* (pp. 227–234). Netherlands: Swets & Zeitlinger B.V.

Kjaer, A. M. (2004). *Governance - Key concepts.* Cambridge: Polity Press.

Krahmann, E. (2003). National, regional, and global governance: One phenomenon or many? *Global Governance, 9*(3), 323–346.

Kyriazis, A., Balasis, E., & Patsavos, N. (2018). Social housing as a state-funded mega project: A case study from Saudi Arabia. *Architecture MPS, 13*(3), 3.

Liu, P., & Ravenscroft, N. (2017). Collective action in implementing top-down land policy: The case of Chengdu, China. *Land Use Policy, 65*, 45–52.

Mandeli, K. N. (2008). The realities of integrating physical planning and local management into urban development: A case study of Jeddah, Saudi Arabia. *Habitat International, 32*(4), 512–533.

Mandeli, K. N. (2016). New public governance in Saudi cities: An empirical assessment of the quality of the municipal system in Jeddah. *Habitat International, 51*, 114–123.

Markantoni, M. (2016). Low carbon governance: Mobilizing community energy through top-down support? *Environmental Policy and Governance, 26*(3), 155–169.

McCormick, K., Anderberg, S., Coenen, L., & Neij, L. (2013). Advancing sustainable urban transformation. *Journal of Cleaner Production, 50*, 1–11.

McNeill, D., Bursztyn, M., Novira, N., Purushothaman, S., Verburg, R., & Rodrigues-Filho, S. (2014). Taking account of governance: The challenge for land-use planning models. *Land Use Policy, 37*, 6–13.

MOEP (Ministry of Economy and Planning) (2005). *The eighth development plan.* Saudi Arabia: Riyadh.

MOEP (Ministry of Economy and Planning) (2010). *The ninth development plan.* Saudi Arabia: Riyadh.

MOMRA (2016). *The national report for the third UN conference on housing and sustainable urban development (HABITAT III) for the Kingdom of Saudi Arabia.* Riyadh, Saudi Arabia: Ministry of Municipality and Rural Affairs.

Mora, L., Bolici, R., & Deakin, M. (2017). The first two decades of smart-city research: A bibliometric analysis. *Journal of Urban Technology, 24*(1), 3–27.

Moser, S. (2019). "Two days to shape the future": A Saudi Arabian node in the transnational circulation of new cities ideas. *H. Molotch and D. Ponzini (Eds): The new Arab urban: Gulf cities of wealth, ambition, and distress* (pp. 213–232). New York: NYU Press.

Moser, S., Swain, M., & Alkhabbaz, M. H. (2015). King Abdullah Economic City: Engineering Saudi Arabia's post-oil future. *Cities, 45*, 71–80.

Mubarak, F. A. (2004). Urban growth boundary policy and residential suburbanization: Riyadh, Saudi Arabia. *Habitat International, 28*(4), 567–591.

Nahiduzzaman, K. M., Aldosary, A. S., Abdallah, A. S., Asif, M., Kua, H. W., & Alqadhib, A. M. (2018). Households energy conservation in Saudi Arabia: Lessons learnt from change-agents driven interventions program. *Journal of Cleaner Production, 185*, 998–1014.

Obeng-Odoom, F. (2012). On the origin, meaning and evaluation of urban governance. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography, 66*, 204–212.

Patterson, J., Schulz, K., Vervoort, J., van der Hel, S., Widerberg, O., Adler, C., ... Barau, A. (2017). Exploring the governance and politics of transformations towards sustainability. *Environmental Innovation and Societal Transitions, 24*, 1–16.

Persson, C. (2013). Deliberation or doctrine? Land use and spatial planning for sustainable development in Sweden. *Land Use Policy, 34*, 301–313.

Pierre, J. (1999). Models of urban governance: The institutional dimension of urban politics. *Urban Affairs Review, 34*(3), 372–396.

Quamar, M. M. (2014). Managing the Arab Spring: The Saudi way. *Contemporary Review of the Middle East, 1*(2), 141–163.

Rachid, G., & El-Fadel, M. (2013). Comparative SWOT analysis of strategic environmental assessment systems in the Middle East and North Africa region. *Journal of Environmental Management, 125*, 85–93.

Rahman, M. T. (2016). Land use and land cover changes and urban sprawl in Riyadh, Saudi Arabia: An analysis using multi-temporal Landsat data and SHANNON'S Entropy Index. ISPRS-International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLI-B8, 1017–1021.

Rahman, S. M., & Khondaker, A. N. (2012). Mitigation measures to reduce greenhouse gas emissions and enhance carbon capture and storage in Saudi Arabia. *Renewable and Sustainable Energy Reviews, 16*(5), 2446–2460.

RCY (2016). Sustainability report – Royal Commission Yanbu. Available online https://www.rcjy.gov.sa/en-US/Yanbu/Investment/Documents/SUSTAINABILITY%20REPORT%20NEW.pdf, Accessed date: 23 May 2018.

Rijke, J., Brown, R., Zevenbergen, C., Ashley, R., Farrelly, M., Morison, P., & van Herk, S. (2012). Fit-for-purpose governance: A framework to make adaptive governance operational. *Environmental Science & Policy, 22*, 73–84.

Rizzo, A. (2017). Why knowledge megaprojects will fail to transform Gulf countries in post-carbon economies: The case of Qatar. *Journal of Urban Technology, 24*(3), 85–98.

Romero-Lankao, P., Frantzeskaki, N., & Griffith, C. (2018). Sustainability transformation emerging from better governance. In T. Elmqvist, X. Bai, N. Frantzeskaki, C. Griffith, D. Maddox, T. McPhearson, S. Parnell, P. Romero-Lankao, D. Simon, M. Watkins (Ed.): The urban planet: Knowledge towards sustainable cities, p. 263. UK: Cambridge University Press.

Rydin, Y. (2010). *Governing for sustainable urban development.* London: Earthscan.

Saudi Gazette (2014). Shoura to study draft law on freedom of information. Saudi Gazette, 16 April 2014. Available online: http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20140416202125 (accessed on 30 September 2014).

Scott, C. (2011). Governmentality and strategic environmental assessment: Challenging the SEA/good governance nexus. *Journal of Environmental Assessment Policy and Management, 13*(1), 67–100.

Smith, R., & Wiek, A. (2012). Achievements and opportunities in initiating governance for urban sustainability. *Environment and Planning. C, Government & Policy, 30*(3), 429–447.

Stuart, J., Collins, P., Alger, M., & Whitelaw, G. (2014). Embracing sustainability: The incorporation of sustainability principles in municipal planning and policy in four mid-sized municipalities in Ontario, Canada. *Local Environment, 21*(2), 219–240.

UN (United Nations) (2012). *Report of the United Nations conference on sustainable development – Rio de Janeiro, Brazil 2012.* New York: United Nations.

UN ECOSOC (2014). *Effective governance, policymaking and planning for sustainable urbanization.* United Nations Economic and Social Council: Report of the Secretary-General.

UNCSD (United Nations Commission on Sustainable Development) (1996). *Indicators of sustainable development: Framework and methodologies.* New York: United Nations.

Weiss, T. G. (2000). Governance, good governance and global governance: conceptual and actual challenges. *Third World Quarterly, 21*(5), 795–814.

Yigitcanlar, T., Kamruzzaman, M., Buys, L., Ioppolo, G., Sabatini-Marques, J., da Costa, E. M., & Yun, J. J. (2018). Understanding 'smart cities': Intertwining development drivers with desired outcomes in a multidimensional framework. *Cities, 81*, 145–160.

Zurina, M., & Hukil, S. (2012). Appraising good governance in Malaysia based on sustainable development values. *Journal of Sustainable Science and Management, 7*(2), 247–253.