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Performance measurement in urban development: unfolding a case of sustainability KPIs reporting

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Abstract

Purpose – This study explores the potential dynamics between performance measurement at the organisational level and emerging urban development projects at the macro-institutional field level of sustainability governance and accountability.

Design/methodology/approach – Using a theoretical triangulation between three theories: contingency theory, institutional theory, and social cognitive theory, this study investigates not only the macro-micro dynamics but also the (recursive) micro-macro dynamics between performance measurement and urban development. Using an Egyptian public sector urban development organisation and its sustainable energy project as an empirical example, interviews, documents, and observations were collected.

Findings – The dynamics emerged between field urban development projects and the (unintended) organisational implementation of the performance measurement system, the sustainability KPIs reporting system. Contributing to previous literature, these dynamics have been institutionalised through (three) interrelated levels: the (macro-field) urban development contingencies and pressures for sustainability KPIs reporting, the (organisational) institutionalisation of the urban development performance measurement system, and then the (micro-organisational) cognitive role of sustainability KPIs reports in (re)making political urban development decisions.

Research limitations/implications – This study faced some limitations that paved the way for future research axes. For political and security reasons, difficulties were encountered in conducting interviews with government actors in the sustainable energy project under study. Also, due to the practical separation of the environmental sustainability system from the sustainability KPIs reporting system in this case study, environmental sustainability is outside its scope.

Practical implications – Sustainability reports may influence public sector decision-making processes in a specific urban development context. These KPIs reports may also increase public sector management opportunities for urban auditing, transparency, accountability, and sustainability governance. These KPIs may also guide public sector management to lower prices in poor villages to increase smart energy consumption and improve community health.

Social implications – Sustainability reports may increase decision-makers' understanding of consumer behaviours and societal changes. This may help in making appropriate political decisions to improve their welfare and regular smart energy consumption. Not only urban citizens, but this social advantage may also extend to urban development employees through their promotion, training, and access to government-funded academic and professional scholarships.

Originality/value – This study is an attempt to develop current public sector performance measurement analyses in the emerging urban development field using a triadic analytical approach. It also fed the literature with an extended case study that clarified the (multi-level) and (two-way) dynamics between performance measurement and urban development.

Keywords: Performance measurement; urban development; sustainability KPIs reporting; contingency theory; institutional theory; social cognitive theory

1. Introduction

Urban development is no longer limited to the deployment of information and communication technologies but combines the city's networked infrastructure (Träskman, 2022). It is linked to the overall social, cultural and political efficiency, and commercially operating sustainability projects. It is also focused on social capital, the physical environment, and the appearance of sustainable cities based on community and private logics, as well as social laboratories. These cities become urban innovation and include strategies, plans and projects aimed at achieving sustainable economic and social development, in a smart way, so as to improve the quality of life of their population (Cohen and Karatzimas, 2021). To achieve legitimacy, transparency, and accountability and to intelligently and effectively project these urban innovations, performance measurement must be an integral part thereof. This is due to its transformation of city actors' operational effectiveness, its contribution to increased networking and its engagement of institutions to promote urban sustainability (Aleksandrov et al., 2022; Argento et al., 2020), all geared towards improving the well-being of a city's citizenry. As Millar and Searcy (2020) argue, urban development in developing countries can be considered more important than in developed countries given the high degree of infrastructure and economic activities in the urban innovations of those countries. These are typical of developing and emerging economies, which are characterised by an increase in rural-to-urban migration and a decrease in per capita income. This is compounded in certain developing countries where poor governance and government corruption are exacerbated by political interference (Alsaïd and Ambilichu, 2021). In these politically sensitive countries, especially in their sustainable urban development goals and projects, the powerful role(s) of performance measurement practices becomes more important for performance evaluation and improvement (Alsaïd, 2022, 2021).

Few public sector sustainability accounting studies have addressed urban development performance measurement practices, with a limited analytical focus. For example, using institutional theory and an interpretive case study, Alsaïd (2021) has analysed the powerful role(s) of performance measurement practices in smart city governance. Using institutional logics theory, Alsaïd and Ambilichu (2021) have provided an explanatory case study examining institutional pressures in the application of the performance measurement system. Although these studies have examined the relationship between performance measurement and smart cities/governance, they have not paid complete attention to 'exploring' how the implementation of sustainability performance measures in the politically sensitive context of urban development within a developing country is influenced by different forces inside and outside the organisation. Most of these attempts have focused on the organisational institutionalisation of a performance measurement system in smart cities/governance, with little attention being given to analysing the influence of macro-field level contingent pressures and micro-organisational level social cognitive considerations on this institutionalisation. More, they have not explicitly attended to the micro-macro ("recursive") dynamics between performance measurement and urban development by addressing the potential role of sustainability KPIs reports in political decision-making at the organisational and institutional field levels of urban development. By adding to this emerging stream of urban development performance measurement literature in the public sector, the present study seeks to explore the (macro-micro) dynamics between urban development and performance measurement by analysing the potential influence of urban sustainability pressures at the macro-field level on the implementation of a performance measurement system at the organisational level, represented by sustainability KPIs reporting. It also theorises the recursive (micro-macro) dynamics between performance measurement and urban development by analysing the social cognitive role of sustainability KPIs reporting in shaping political decisions within organisations. To bridge the existing literature gap, the overarching research question is: How have sustainability projects at the institutional field level of urban development influenced the implementation of a performance measurement system at the organisational level, exemplified by sustainability KPIs reporting? To ensure in-depth analysis and better understanding compared to the previous literature, this main question is divided into two interrelated sub-questions. The first is: How have field-level sustainable urban development projects shaped performance measurement pressures? The

second is: How have these pressures institutionalised certain sustainability KPIs to shape political decisions within organisations?

Using a tripartite approach, this study brought together the analytical underpinnings of ‘contingency’, ‘institutional’, and ‘social cognitive’ theories. The value of using this multi-lens theoretical framework lies in extending previous institutional-based urban development performance measurement analyses (Alsaïd, 2022, 2021; Alsaïd and Ambilichu, 2021) not only to the macro-field level contingent pressures for sustainability KPIs reporting but also the cognitive role of an institutionalised KPIs reporting in making political decisions at the micro-organisational level (within organisations). Combining these different ‘three’ theoretical angles into ‘one’ analysis is not only possible but also useful for a deeper understanding of the multi-level role(s) of performance measurement practices in sustainable urban development. This is consistent with Grossi et al. (2020) who argue for using an “interdisciplinary” (multi-lens) perspective to develop a rich understanding of urban development/smart cities and the role of management accounting/performance measurement (see also Argento et al., 2020). As analysed below, compared to previous studies, recursive dynamics emerged between field urban development pressures and the organisational implementation of a sustainability KPIs system. These dynamics revealed three unique but interrelated analytical levels: the macro-field level where urban sustainability pressured KPIs reporting, the organisational level where the sustainability KPIs are internally institutionalised, and the micro-organisational level where political decisions are based on sustainability KPIs reports. In this multi-level analytical sense, to understand the situational factors that lead to the revolutionary development of different formal structures, contingency theory argues that the development of organisational strategies for controlling and coordinating internal performance measurement is encouraged by the technical requirements imposed by the organisation’s activities (Modell, 2022). For institutional theory, as Polzer (2022) shown, this revolutionary development of an organisation’s formal structure is encouraged by the expectation of suitable organisational forms and behaviours. While institutional theory suggests that an organisation’s choice of performance measurement processes is influenced by regulatory requirements to demonstrate compliance and legitimacy with institutionalised expectations of rational practices, contingency theory suggests that the organisational environment and the technical nature of the activities undertaken by organisational members also determine the internal performance measurement of these members. Since internal performance measurement practices require human and behavioural input, it may be useful to better understand and in-depth analysis to consider that individual behaviour may not be entirely rational, i.e., the social cognitive approach (Ishaque, 2020). The cognitive approach, discussed by Ishaque (2020), assumes that human behaviour hinges on individuals’ mental representations, which can be different from objective indicators of the individuals’ well-being or their environment.

This study adopts a qualitative field single-case study approach from a developing country (Egypt) where the institutionalisation of performance measurement practices in emerging urban development is still in its infancy. The choice of Egypt is not only because of its economic growth but also because this continued growth is offset by increased urban development, shaped by the country’s economic history and social and political context. Egypt faced two political-military revolutions in its most recent urban development history, in 2011 and 2013, with particular “economic”, “social” and “political” characteristics. Consistent with Alsaïd (2021), the emerging Egyptian urban development field has not only been characterised by economic and/or social influences as described in other developed and emerging contexts but also by “political leadership” and “military engagement”. After the political revolutions and the state’s military leadership, important urban development projects have been implemented and are still in Egypt’s 2030 sustainable development strategy for urban governance and public accountability. These projects were partially funded by the European Union and fully implemented by various Egyptian (public-private) participations. The state’s political and military leaderships of these urban development projects were lobbied for “KPIs reporting” to enhance transparency, governance, and sustainability performance. Not only that, sustainability KPIs reports have also helped shape political decisions at the company and state level in urban development. These and other characteristics have provided a unique context for examining

the multi-level and two-way dynamics between field urban development pressures and the organisational implementation of a sustainability KPIs-supported performance measurement system. By asking about the practical meaning of “sustainability KPIs”, a KPIs reporting manager states:

In our daily practice, sustainability KPIs mean urban development performance measurement indicators, which integrate economic and social KPIs simultaneously. Sustainability reporting, which is seen as an integrated KPIs report, has been enforced by the state government in Egypt’s 2030 sustainable development strategy for urban governance and accountability. The political and military purpose of this sustainability KPIs report is not only to increase urban transparency and accountability but also to shape political decisions in this emerging field. Through this integrated reporting, urban development decision-makers at the company and state levels can fully read the economic and social performance of the entire project. While the economic KPIs reading refers to the financial sustainability performance of an urban development project, the social KPIs reflect the project’s non-financial sustainability performance.

The Necasep sustainable energy project was selected as an interpretive case study. Necasep, which is a “pseudonym” for confidentiality (Yin, 2018), is a large public sector company responsible for implementing a sustainable energy project in Egypt. It is one of the first public companies to sign a partnership agreement with the private sector to implement and finance a sustainable energy project (a deputy board director explained). This is in line with Alsaïd’s (2021) New Cairo city council smart electricity project, arguing for the political importance of public-private partnerships in implementing these emerging projects. According to the chairman, Necasep was affected by field urban development goals and (mostly financial) pressures of the sustainable energy project. This was demonstrated in the organisational implementation of a sustainability KPIs-supported performance measurement system, which plays a strong role in shaping political decisions within the company. The fully sustainable energy project was expected to cost about \$100 million which was financially supported by the Egyptian government and the European Union. Due to political revolutions, subsequent economic turmoil, and price increases, the actual total cost was brought to about \$135 million. This unexpected increase was pressured Necasep to borrow from its investments and business profits at the macro-field level to self-finance the remaining amount of the project. This self-financing pressure was imposed on the company to become more concerned with economic KPIs (financial activities) than with social KPIs (non-financial activities). The political-military rationale was attempted to fuel social activities financially through the returns and profits of financial activities and economic investments. This was the rationale for choosing Necasep as an urban sustainability case study. As described below, data collection included multiple semi-structured interviews, observations, and documentary analysis. Data collection and analysis were processed at three interrelated levels: the macro-institutional field, organisational and micro-organisational.

This study fuels previous public sector performance measurement literature in urban development with the following contributions. First, its findings revealed the theoretical value of integrating three perspectives into the emerging field of urban development performance measurement: contingency, institutional and social-cognitive. This multi-lens integration has provided a deeper analysis of the powerful role(s) of the sustainability KPIs reporting system in this emerging field. As analysed and discussed below, this accounting system is institutionalised through three interrelated levels: macro-field, organisational and micro-organisational. It has emerged as an ‘emerging field’ to meet the political and military demands of urban development, which the sustainable energy project represents. By adding to previous studies, the organisational-level institutionalisation of this sustainability KPIs system has also included various contingency pressures (Modell, 2022) at the macro-field level and social cognitive considerations (Ishaque, 2020) at the micro-organisational level. Second, in developing and emerging economies with excessive political influence on sustainable urban development such as Egypt, the organisational institutionalisation of a performance measurement system is directed towards ‘political’ goals and ‘social’ ambitions rather than simply measuring and reporting traditional, well-known KPIs as described in the previous literature

(Thoradeniya et al., 2021). This extends previous public sector performance measurement analyses to include ‘political influence’ and ‘social cognitive’ into account. This is in line with the institutional view and social review of the seminal chapter by Hopper et al. (2015) on the importance of theorising the political and social aspects of organisational accounting and performance. Third, considering political influence as also evidenced by Bedford et al. (2019), there is an ‘unintended’ situation of institutional conflict and cognitive complexity has emerged between the project’s social and economic KPIs. Compared to previous literature on urban development performance measurement, the case findings reveal the “institutional cognitive dominance” (Uddin et al., 2021) of economic KPIs. This is due to the partial self-financing of this project and the organisational need for sufficient funds to fund social KPIs through economic returns and/or partnership with the private sector. Fourth, in an attempt to reinvent political interventions (Hiebl, 2018), the city council/government is transforming itself into an ‘interconnected’ accountability and governance body. This imparts a new operational sense of “regulatory and organisational engagement” (Kuruppu et al., 2016) between the various institutional actors in the project, highlighting the powerful influence of contingent-institutional-cognitive dynamics on the implementation (and network) of sustainability KPIs in urban development.

The remainder of this study is structured as follows. Section 2 reviews the previous literature and presents the adopted theoretical framework. Section 3 explains the data and methodology. Section 4 analyses the main findings while section 5 discusses them with the previous literature. Section 6 concludes the study and proposes future research proposals.

2. Literature and theory

Urban development performance measurement in the public sector is still in its infancy. As above, there is a relative lack of theoretical and empirical studies on the recursive dynamics between urban development projects and pressures at the macro-institutional field level and the implementation of a performance measurement (sustainability KPIs reporting) system at the organisational level. The previous studies mentioned above and others have analysed the organisational institutionalisation process of a performance measurement system in smart and sustainable cities. Argento et al. (2020) is one of the first accounting studies to explore the issue (or question) of smart city performance measurement. This early case study from Finland has adopted the 2009 Foucauldian governmentality framework to analyse the effective role of performance measurement systems in achieving smart city goals and programmes. However, its interventionist approach has exposed the “ineffective” function of performance measurement systems due to the “fragmentation” of inter-departmental processes within the city network and the emergence of “resistance” among the parties involved. This was due to the lack of good communication and cooperation at the city level, which led to a “temporary paralysis” in achieving the targeted goals and programmes. Although these valuable research attempts have provided meaningful analytical frameworks, they have paid little attention to these recursive dynamics, considering potential contingent pressures at the macro-field level and social cognitive considerations at the micro-organisational level. Not only that, these earlier analyses and dynamics have also been framed using a single (mostly institutional or governmentality) theory. This single (individual) view has shaped the limitation(s) of the theoretical arguments, analytical frameworks, and empirical insights of these valuable studies. This is in line with some studies (Modell, 2022; Polzer, 2022) advocating the need of the sustainability performance management and accounting community to use a theoretical triangulation perspective for a better understanding and deeper analysis of the powerful role(s) of performance measurement practices in the emerging field of urban development. This was a strong impetus for integrating three different theories into one analytical framework: contingency theory, institutional theory, and social cognitive theory. This is to extend previous analytical frameworks and insights with (multi-level) and (two-way) dynamics between performance measurement and urban development. Especially since the empirical findings of the present case study (see below) have revealed the dynamics between performance measurement and urban development through three distinct but interrelated levels: the macro-institutional field, organisational and micro-organisational. Compared to

previous studies, the present findings also reveal recursive dynamics that reflect the strong role(s) of sustainability KPIs reporting in making urban development decisions within the case company. This means that the present case findings have expressed not only a one-sided analysis but a two-sided analysis, which required the need to combine three different theories.

The urban development requirement to fulfil multiple and often different objectives has been identified by numerous organisations who recognise the city's need for "social responsibility" (Alsaid and Ambilichu, 2021) in attracting and maintaining shareholders, employees, and customers. This implies a 'dynamic' urban development approach is required in order for multiple and different organisational objectives to be fulfilled (Burfitt et al., 2020). Burfitt et al. (2020) argue that a dynamic framework that combines financial (economic) and non-financial (social) approaches provides most of the solutions to urban sustainability problems posed by both approaches. This is because social (personally informed) values influence the decision-making process, which is also influenced by external (contingent) forces. The results of decision-making processes cannot only be attributed to the actions and responses of individuals, but also to the combined effect of the interaction between three distinct levels: individuals, organisations and societies (Burfitt et al., 2020). This (present) study argues that these multi-level dynamics of urban development performance measurement are in agreement with the three theories (contingent, institutional and social cognitive) that have been espoused. To be clear, regarding the contingency perspective that reflects the external urban development environment, it is posited that while some sustainability performance measurement practices within an organisation may be instrumental in achieving control and improving performance, others may be more symbolic (Ishaque, 2020). As in the below case study, performance measurement practices may not respond to the task technology used by the organisation, as these organisational practices can be institutionalised over time. The institutional perspective supposes that legitimacy is gained by an organisation when it separates its internal technical tasks from externally directed symbolic exhibitions while complying with external expectations of acceptable performance measurement practices (Modell, 2022). The social cognitive theory focuses on the assumption that although individuals at the micro-organisational level intend to behave rationally, their performance measurement behaviours in sustainable urban development are often completely irrational due to their limited cognitive processing capacity, i.e., the assumption of "bounded rationality" (Ishaque, 2020).

Performance measurement then constitutes an acceptable system with restrictive rules and consistent social practices (Modell, 2022), it is a legitimate and legitimising organisational practice. For a performance measurement system to be valid and credible, it should embody the socio-political and economic rationalities of the social system (Thoradeniya et al., 2021). Considering the need to maintain legitimacy in order to gain continued support from external constituent institutions, performance measurement practices result either from an organisation's conscious endeavour or imposed by external bodies (Uddin et al., 2021) which may include urban development funding agencies. As Kuruppu et al. (2016) explain, the elements of formal organisational structures (standardised performance measurement practices) may be officially adopted by an organisation, not to control its members but to reveal the rationality of its operations to external constituent members. Although performance measurement is a basis for evaluation and accountability in the public sector context of urban development, the option to refrain from drawing conclusions on the sole basis of measurement information (to employ its peculiar methods of rule-following) is always available to firms. Urban development performance measurement that is directed by political decisions can be 'symbolic', with limited influence on, and use within, internal operations (Aleksandrov et al., 2022). Even within the same firm, its operating environment influences the use of accounting information. For instance, the use of performance measurement (budgetary) information by senior management to evaluate managerial performance in a liberal operating environment is different from the use of such information to evaluate performance in a tough operating environment (Uddin et al., 2021). As analysed below, it is important to 'question' the special nature of organisational objectives and to understand the interrelated practices by which they are set and who influences them in order to ascertain the powerful relationships and relative authority of those participating in organisational operations. As

below, the political driver for sustainability KPIs is likely to be due to conflicts between symbolic representation, rationality and power; the rational relationships between performance measurement significance, legitimacy and hegemony. Through the aforementioned multi-lens theoretical perception in the emerging field of public sector urban sustainability, performance measurements are mapped within competing (multiple but different) relationships between agencies and structures, where KPIs originate from the approach to which social agents are adapted to (de)institutionalise the urban sustainability structures of KPIs significance, legitimacy and hegemony.

Accordingly, urban development performance measurement in the public sector serves to improve sustainability performance, communication and accountability. Since organisations are demanded to ‘report’ their accomplishments to key stakeholders, as in the case company below with a smart energy project, there is a political demand for organisations to show their input into sustainability performance. Considerable interest in measuring organisational performance has been engendered by the need to demonstrate the connection between planning, decision, action and outcomes (Uddin et al., 2021). Mapping causalities between performance drivers and outcomes, to understand the relationship, is facilitated by the transparent presentation of performance results and related discussions which create spheres of visibility (Cohen and Karatzimas, 2021). In the urban development of the public sector, different performance measurement systems are presented based on multiple but different (political, economic and social) ideologies (Alsaid, 2021). For example, sustainability KPIs reporting systems attract the socio-political and economic attention of city administrators and local politicians to attract resources (funding), and link sustainability performance to citizens, visitors, and investors (Aleksandrov et al., 2022). While the successful implementation of urban development performance measurement depends on sustainable implementation and use by firm members, proper use of sustainability KPIs improves performance and serves as a reporting tool for cultural change within organisations (Cohen and Karatzimas, 2021). Further, successful implementation will depend on the organisations’ control practices. Because control practices -the actual application of management controls, including budgets, performance measurements and policies- can change if necessary, organisations can choose from among these variables (Bolívar et al., 2018). In the urban development, consistent with the case findings below, it is important that performance measurement systems have emerged and are geared towards ‘linking’ management responsibilities to accounting calculations, considering institutions, agencies, agents, and processes influence and are influenced by management accounting (Hiebl, 2018). This supports previous literature that sustainable consequences of organisational performance measurement and management in the public sector result from the interaction between individuals and performance measurement and management systems (Modell, 2022), and include the contingent-institutional-cognitive effect on organisational attributes. This is the theoretical and empirical motive for integrating these (three) different theories into one analytical framework.

3. Data and methodology

This study feeds into the previous public sector performance measurement literature with an interpretive case study from a developing urban development country. As explained above, the sustainable energy project is the case urban development project, which is currently being implemented in Egypt by Necasep. Necasep was chosen for two main reasons. The first is that Necasep, different from other Egyptian companies (Alsaid, 2022, 2021; Alsaid and Ambilichu, 2021), is the “mother urban development company” (as described by the interviewees) that was established in mid-2015 by the central (state) government characterised by political and military leadership. Under political leadership and military involvement, Necasep’s goal is to implement a sustainable energy project in different urban cities in collaboration with city councils, private companies, and government oversight agencies (e.g., the ministry of electricity and energy, the ministry of urban renewal and informal settlements, the ministry of housing, utilities, and urban communities, and the financial regulatory authority). Within the framework of national and local policies, and in line with Egypt’s 2030 sustainable development strategy for urban governance and accountability,

the case company/project adopts sustainability goals and plans to achieve urban development in Egypt. To achieve this, the company has come under pressure from the government and funding bodies to implement a performance measurement system at the organisational level, represented in the sustainability KPIs reporting system (as explained by a sustainability reporting manager). The second reason is that the implementation of the new sustainability KPIs system, compared to its peers in this emerging field, has crowned Necasep to be a major player in the transparency, accountability, and governance of the project's sustainability performance. Not only that, the KPIs reports have broadened the company's strong contributions to political decision-making at the macro-field level with state/city governments and other accountability/oversight agencies. As a field leader, with 6 subsidiaries and more than 6000 employees working on project implementation in different cities, Necasep is a prominent player in project performance measurement and decision-making. Necasep provides central governments and associated agencies with quarterly sustainability reports, which combine economic and social KPIs (a project manager explained).

Given these dynamics of performance measurement in urban development, data were collected from two interrelated institutional levels. The first is (macro) field-level urban development policies and projects, with a particular focus on the sustainable energy project. The second is the (micro) organisational level, which is the internal configuration of performance measurement processes through which Necasep can manage the sustainability performance of a smart energy project. In line with Yin (2018), field-level data came from extensive documentary readings of several secondary materials published online and/or in the company's library. Organisational level data came from 23 semi-structured interviews (June-September 2019) with 17 organisational members/actors in Necasep, particularly those involved in measuring and reporting project sustainability performance. Table 1 describes the profile of the interviewees and the interviews conducted. As shown in Table 1, these 17 actors included a Necasep board director, a deputy board director, a project manager, a KPIs reporting manager, a sustainability reports manager, three executive directors, five senior accounting and performance officers, two sustainability governance officers, and two senior transparency and accountability officers. They are categorised into 3 politicians, 5 public managers, and 9 controllers. Their age range between 35 and 65 years old. They are highly educated, and most of them have MSc, ACCA, PhD and others. Their work experiences range from 5 to 30 years. Some of these participants were interviewed more than once. 6 of the 23 main interviews were another interview with a deputy board director, two interviews with a project manager, one interview with a KPIs reporting manager, and two interviews with two senior accounting and performance officers. These (6) interviews with these particular participants had a positive effect and added some important observations for case findings and previous interviews. During these (additional) interviews, we accompanied the participants in their daily work and 'watched' what they were actually doing through their internal performance measurement system. As analysed in section 4, we saw an operational SAP-based "portal" through which a sustainability performance measurement system runs within the case company. This supported our literature-based knowledge of the (new and different) operational features of the SAP-based performance measurement system in emerging urban development projects. Each interview took from 30 minutes to about an hour and a half, depending on the work conditions. In line with Parker (2012), interviews were tape recorded or taken notes and then transcribed. Interviews were conducted in Arabic and English (respondents selected). Although the interview guide used was the same, the way the questions were presented to each participant was slightly modified due to differences in their positional roles within the case company and/or project performance measurement and reporting. The interview guide is included in Table 2, detailing the hierarchical method used for data analysis and coding as described below.

During the above interviews, useful documents were collected. These included, among others, the European Union funding programme, project performance measurement protocols, functionalities and printscreens, and quarterly sustainability KPIs reports. These documents augmented interview data with an additional understanding of planned and actual project budgets, project movement reports, sustainability governance regulations, economic and social performance indicators, and political urban development decisions. After a deputy board director's approval, "participant" observations from "direct participation" (Parker, 2012)

for three joint meetings, side discussions, and two project-related managerial meetings were also noted. For joint meetings, the first meeting was attended by a Necasep board director, a deputy board director, and a project manager simultaneously. The second was attended by a KPIs reporting manager, a sustainability reports manager, and an executive director. The third was with two senior accounting and performance officers, a sustainability governance officer, and a senior transparency and accountability officer. Another opportunity was given to discuss some of the accounting and performance employees sideways during their daily practices, and also during lunchtime in the company's restaurant and coffee (and smoke) area. Two project-related senior management meetings were also attended, where sustainability KPIs reports were discussed and important decisions were taken. As analysed in section 4, the value of these direct engagements and observations is not only to better understand the role of performance measurement in urban development, but also to deepen insights into day-to-day practices and attitudes around sustainability performance measurement and management, and the role of KPIs reports in political decisions within the case company/project. Seven ex-post semi-structured interviews (via Skype and Microsoft Teams) were also conducted in December 2020 and January 2021 (during Covid-19) to follow up on project implementation and performance. These interviews (which lasted from 30 minutes to 1 hour each) included some of the interviewees earlier, including a deputy board director, a project manager, a sustainability reports manager, a sustainability governance officer, a senior transparency and accountability officer, and two senior accounting and performance officers. These interviews were useful because the interviewees not only provided assurance that no additional issues, for those previously collected, were necessary for inclusion in the current findings, but were also extended to address future advanced performance measurement projects (backed by political and military ties) for sustainable urban development governance, transparency, and auditing. As analysed below, the existing company/project performance measurement system is being developed to include additional KPIs with which senior management can enhance its management, measurement and reporting on operational urban development risks, financial pressures, and internal controls. This advanced version of the current operating system will be implemented in September 2025, under the so-called "measures-based urban auditing system".

Data analysis was performed manually to ensure true meaning and reflection of interviewees' responses. As in Table 2, the collected data were analysed and coded into (three) interrelated phases. The first phase involved general (re)readings of the interview transcripts and (re)listening to audio recordings in an effort to identify important (relevant) interview issues related to the research topic and question(s). Among many others, important issues (or aspects) were political pressure from the military regime on sustainability KPIs reporting, regulatory compliance, sustainable development projects, political pressure to partially fund the smart energy project, performance measurement system application, economic and social KPIs, and the conflict between them. It also included issues related to the managerial welcome of sustainability KPIs in decision-making, influential smart energy project problems and sustainability reportings' contributions to their solutions, and the impact of smart behaviours and employee traits on decision-making processes based on sustainability KPIs. After the relevant issues were carefully identified, they were 'grouped' in the second phase of the analysis into three fieldwork themes. Each theme has its own code and sub-codes, which have taken the hierarchical form of a "tree" (Yin, 2018). The first theme of this coding tree brought together issues related to urban development pressures for sustainability KPIs. The second dealt with those related to the detailed process of institutionalising the sustainability performance measurement system. The third theme amalgamated issues and examples related to the influential role(s) of sustainability KPIs reports in shaping political decisions within the case company/project. Then, in the third and final analytical phase, these three (coded) themes were linked to three theoretical levels used together with relevant literature and researchers' personal reflections (Parker, 2012). The first level analysed macro-field urban development contingencies for sustainability KPIs reporting, citing the application of contingency theory. The second level explained the process of organisational institutionalisation of the sustainability performance measurement system through the institutional theory. Using social cognitive theory, the third level clarified the strong role(s) of sustainability KPIs in shaping political urban development decisions at the micro-organisational level of the case company/project. Accordingly, as in section 4, the collected data were

analysed and interpreted hierarchically according to the multi-level and two-way dynamics of the sustainability KPIs reporting in urban development governance and accountability.

4. Empirical findings

4.1 Macro-field urban development contingencies for sustainability KPIs reporting

In Egypt, performance measurement has faced, and continues to face, a number of reporting issues and operational conflicts within public sector organisations in the emerging field of sustainable urban development. In Necasep as an empirical urban development case, these macro-field level struggles have posed various contingent and institutional pressures that led to the unintended implementation of the performance measurement system, which is exemplified by the “sustainability KPIs reporting” system (a KPIs reporting manager explains). With sustainable urban development, especially the smart energy project, a project manager explains that the state/city government’s decision on measuring and reporting urban sustainability KPIs was not only “technical” but also reflected a “contingent-institutional” situation (Uddin et al., 2021) for project management, transparency, and accountability strategy in sustainable smart city governance. As explained earlier and as indicated by the secondary documentary readings, the contingent situation (“historical event”) in the emerging field of Egyptian urban development was the two political revolutions (2011 and 2013) that “negatively” affected the self-financing of the smart energy project and encouraged the government to institutionalise the performance measurement system supported by sustainability KPIs in Necasep. As a result of the revolutions and subsequent economic pressures, as evidenced by case interviews and company secondary reports, the actual implementation costs of the project, which was financially supported by the Egyptian government and the European Union, were exceeded from the project budget by about \$35 million. This has put pressure on the case company to rely on its economic activities and collaborate for the first time with the private sector to fill the “financing gap” for the project (a senior accountant clarifies). Adding to this, a KPIs reporting manager says:

The institutional rationale for implementing a sustainability performance measurement system in emerging urban development is that post-revolutionary political and military management were considered KPIs as sustainable financing sources for the project. National and international funding bodies are required sustainability KPIs reports to assess the economic and social performance of the project and decide their financial contributions to the project.

Sustainability KPIs reports have become a contingency and institutional demand at the macro-field level of emerging urban development. A sustainability reports manager explains that this political and military demand has forced Necasep to institutionalise the “sustainability reporting” system, which has witnessed, and continues to witness, macro-micro conflicts over institutionalised KPIs. For example, as a sustainability reports manager explained, an important contingent-institutional conflict was whether “newly built houses” should be included in the accounting measurement and reporting of sustainability KPIs. The contingent-institutional pressure was that this type of modern houses is intended for “rich citizens”, while the overall and social objective of the project is to satisfy the many different demands of poor citizens and to achieve social justice and sustainability. A project manager expresses his opinion that if the project is explicitly directed to newly built (modern) houses and then to rich citizens, this means that the project will “lose” its social accountability, integrity, legitimacy and political objective towards providing sustainable public services (e.g., energy) to poor citizens and achieving “social balance” in society. However, a board director says:

In Egypt’s 2030 sustainable development strategy for urban governance and accountability, strong political and military pressure from city and state governments on our executive management has resulted in the unintended inclusion of newly built houses in urban smart cities in the sustainability KPIs reporting system. Despite differences among the project staff on this critique indicator, senior management decided to include these houses in the SAP-based KPIs system. Having an integrated

and advanced measurement system, such as SAP, may have helped us to efficiently include this specific KPI. The political and institutional inclusion of this [contingent] KPI was due to the project's partial self-financing, arguing that wealthy homes in the sustainable city are the primary funding source for project implementation in poor living areas.

Another critique contingent pressure was the institutional conflict over whether “jar business activities” should be part of institutionalised sustainability KPIs. A project manager states that such business activities should be a “full part” of the project as another funding source to support project implementation in poorer areas. However, in the multi-pronged side discussions, some project staff reflect that they “disagree” with a project manager's view, arguing the inclusion of such activities would “harm” the social KPIs goal of the entire project. To eliminate this conflict and pressure that led to the unintended emergence of contingency jar business activities in the institutionalised KPIs system, a senior accountant states:

After consulting with relevant government and accountability bodies, project management agreed to consider jar business activities in the institutionalised SAP-KPIs system, arguing that including this KPI would help achieve economic and then social sustainability of the project. While the economic sustainability of the project means improving financial outputs and returns, social sustainability means improving public health and societal regularity in smart energy consumption.

Another critical contingency pressure was whether to include “capital expenditures” and related different types of direct costs, fixed costs, overheads, and research and development expenditures in the institutionalised sustainability KPIs system. For this contingent-institutional conflict, as observed during some joint meetings, some project actors see “there is no need” to consider these capital expenditures in the accounting measurement and reporting of sustainability KPIs. The state government has always financed these expenditures for emerging urban development projects. This is consistent with the empirical findings of some previous studies (Alsaid and Ambilichu, 2021; Bolívar et al., 2018). However, in the present case (smart energy) project, this national sustainability project is based on partial self-financing of each urban smart city. Regarding this specific KPI, a project's senior accountant says:

I believe, from my business experience, we cannot measure the project's capital expenditures in the short term, but they can be accurately measured and reported in the long term. The company/project management decided to include specific types of these expenditures in the SAP-KPIs system... for example, direct costs, fixed costs, overheads... but not research and development expenses on the grounds that this type of capital expenditure was financed by the city government.

Accordingly, the above unintended inclusion of these sustainability KPIs is seen as regulatory compliance with field-level political requirements and ministerial pressures for urban auditing and sustainability governance especially in ‘full political support’ for these expensive projects. As noted during interviews with a deputy board director and a project manager, the ministry of public sector (including Necasep) is involved in the implementation of about 180 urban development projects across Egypt at an approximate cost of about \$260 million. This cost, as disclosed by the company's periodic reports and statistics, is 40% funded by the international monetary fund, 25% by the private sector and businesses, 15% by the “Tahya Misr” fund, 12% by the city government, and 8% the project self-financing. A deputy board director commented on this during follow-up interviews:

The national motto for these political initiatives and new sustainability projects is a decent life to achieve the country's societal protection and citizen welfare. These projects cover different areas of citizens' lives, such as electricity, water, sewage, health, natural gas and others. These are currently implemented in 44 villages in 22 urban cities across the country.

As observed during the interviews, there is active political and military cooperation in the successful completion of these (sustainable city) projects. This is reflected in the company's/project's strong sustainability performance. As observed, three main regulatory actors (Necasep board director, deputy board director, and project manager) are the 'politicians' in the case company. As indicated by some of the side discussions, these specific actors form a "political connection" with the relevant military department responsible for implementing sustainable urban development projects in cooperation with various public, private and state-owned companies. This fruitful collaboration, coupled with financial pressures, pressured on Necasep (among others) to move towards developing the present performance measurement system by institutionalising additional KPIs for risk management, financial management and strong internal controls. This is the so-called "comprehensive urban auditing system", which the case company intends to operate from September 2025. This differs from the empirical findings of Cohen and Karatzimas (2021), which reveal that smart city reports and urban development technologies are developed "conventionally" and do not include "technological advancements". Commenting on this proposed (and future) operating system during follow-up interviews, a sustainability governance officer says:

In cooperation with El-Sewedy Information Technology Company, Necasep seeks to develop the current system into a so-called measures-based urban audit system. This new system, which will be built through the advanced SAP package, will aim to institutionalise certain KPIs to not only measure the sustainability performance of urban development projects as in the current system but also to manage risks and internal controls. This 2025 revolutionary development of the current performance measurement system is an organisational response to field-level political requirements and military pressures for urban auditing and sustainability governance especially in Egypt's growing economic and social development projects. Egypt achieved the highest growth rate and advanced 19 places in the global urban development index.

4.2 Organisational institutionalisation of a sustainability KPIs system in urban development

The above field contingencies have put pressure on Necasep to institutionalise sustainability KPIs as an 'emerging field'. To illustrate, the concept of an emerging field, in the present case (sustainable energy) project, refers to the clear emergence and growth of employing sustainability KPIs in urban development (as the interviewees reflected). This is consistent with Mahmood and Uddin (2021) regarding the unintended emergence of "sustainability reporting" as an emerging field in institutional multiplicity and practice variations within (especially developing country) organisations. This field (emerging system) of performance measurement has been institutionalised within Necasep through sustainable governance structures and accountability processes of defining, measuring, and reporting economic and social KPIs (a board director). These KPIs are close to those used in a smart water project presented by Alsaïd and Ambilichu (2021). This is, as a senior accountant explained, because the government has institutionalised these KPIs in line with the economic and social objectives of Egypt's 2030 sustainable development strategy for urban governance and accountability. Various urban development companies apply these KPIs as "regulatory practices". These KPIs include the "scale", "penetration", "regularity", "self-financing" and "economic efficiency" for each project. The differences between these companies lie in the "practices" or "process", i.e., the way each company adopts for the sustainable application of these (governance and accountability) KPIs. For example, some companies and related projects include an economic efficiency KPI in their performance measurement system while others do not include this KPI (a senior accountant).

In Necasep, and the related smart energy project, three different KPIs are designed in relation to their regulatory social sustainability practices. As a senior accountant explained, first, the "scale" of the sustainable energy project, defined by a number of citizens with direct access to multiple points in the smart grid. Here, the project scale corresponds to the project's ability to invest in expanding and intensifying the sustainable grid. Second, the level of "penetration", i.e., the ability of the project to penetrate the covered area and "transform" the population, with access to sustainable energy products and services, to become

“regular” customers and “stop” from using old (unhealthy) alternative sources. Third, the “regularity” of each customer’s consumption. This KPI is required to ensure that customers start using sustainable (healthy) energy products and services regularly. Moreover, in relation to regulatory economic sustainability practices, two different KPIs are also intended. According to a senior accountant: First, the “self-financing rate” is an important KPI as the case company chose to rely on “project sales/revenues” to cover the project financial gap, which shaped a strong “institutional pressure” on management. A board director indicated that despite the financial support from the European Union, the state government made the “partial self-financing” decision after the political revolutions and economic crisis in Egypt that affected the project implementation budget. Since then, the government has decided that each urban city “must fill” the project financing gap through its economic activities and/or private sector partnership. An executive manager explains that the state government has pushed urban development companies (e.g., Necasep) to form “public-private partnerships”, which are part of Egypt’s 2030 strategy to finance and implement sustainability projects. Besides, and as also indicated in the secondary documentary readings, Necasep is relying on its economic resources and businesses to bridge the project financing gap. Second, “economic efficiency”. Due to the project’s partial self-financing, this efficiency indicator was not sufficient to break even. The city/company management needed a “metric” (KPIs) that allows the various institutional actors (entities involved in the project) to measure and report the contribution margin of each cluster of customers, such as the contribution margin of each sustainable smart grid. According to a project manager:

The project management chose to monitor the operational [cost] movement of new grids, to ensure that customers pay for a smart service that ensures sustainable cost control. While implementing these [above] sustainability performance indicators, the economic efficiency KPI was eliminated to reduce measurement problems for KPIs [previously represented by contingent-institutional conflicts at the macro-field level of emerging urban development].

After identifying sustainability KPIs, it was important to institutionalise a reliable and rigorous regulatory process for collecting relevant operational data. A member of the project’s operational team explains that the project’s operational team, which visited the city’s residents to assess the health safety awareness of sustainable smart energy, collected data. During this institutionalisation process of performance measurement, the operational team reported to the project management that the accounting measurement of certain sustainability KPIs was “unsatisfactory”. As the project’s operational member put it: “they did not achieve our targets”. After consultation between Necasep management and the government, a “revolutionary” accounting change (Uddin et al., 2021) was made regarding the measurement method(s) for these KPIs. A senior accountant personified this change in performance measurement by saying:

...For example, regarding the penetration rate, there has been a change from a measurement based solely on meter readings to a sustainable measurement based on daily electronic readings and records kept by our company. These daily electronic readings and records are set up automatically through an advanced performance measurement system based on an integrated IT package, called SAP. With this high-tech system, the various institutional actors of the project have the ability to integrate and access these readings and records on a daily basis. This operating system has revitalised the quickness and quality of decision-making at the company and project levels.

This revolutionary institutional change in performance measurement was a political requirement to achieve the project’s social objective. During joint meetings and side discussions, a sustainability governance officer and a senior transparency and accountability officer explain that the rationale behind this change is that the old measurement of penetration rate “confused” two different types of information, i.e., the number of citizens and average consumption per household. This was a practical problem because the project must set the social goal that average sustainable smart grid consumption is important for each household. The new measurement required the project management to record the number of households consuming “largely” new energy products and services, rather than having as many households consuming only aging sources as it was in the old measurement. A project manager adds:

The new accounting measurement method allowed the project management to calculate and communicate the number of citizens covered, the average daily consumption and the percentage of regular customers. Since then, through SAP, the project management began maintaining a daily performance measurement record of each customer's purchases of sustainable energy products and smart services.

Through SAP, as observed during face-to-face interviews and accompanied by direct participation, the sustainability KPIs reporting system has been institutionalised within the case company. These KPIs reports are produced based on regular and accurate readings and records that the SAP-based performance measurement system provides daily and electronically. Using these sustainability accounting reports, as observed, different actors assess whether the project is achieving urban development goals (economic and social) by comparing sustainability KPIs over time. Although this is useful in (re)making political decisions for the project, some actors (e.g., the ministry of urban renewal and informal settlements and the ministry of housing, utilities and urban communities) continued to request further clarification. For example, according to a project accountant, the ministry of housing, utilities and urban communities has stressed "institutional demand" (Bolívar et al., 2018) to set "targets" and monitor "achievements" for sustainability KPIs in a timely manner rather than just showing multiple different "numbers". The accountant continued:

...I am looking at multiple and different KPI numbers to reach the government's urban sustainability goal... I mean, the accounting measurement of social along with economic sustainability. If you reach the goal, how do you tell us? To some extent, it will not be possible to achieve this goal. If you do not have a target, then you cannot work toward that goal.

To do this, the SAP-based performance measurement system has institutionalised the 'integration' between different operational departments and employees involved in sustainability KPIs reporting. This is in line with the empirical findings of Aleksandrov et al. (2022), arguing that smart city reportings create a state of communication between different organisational and city actors, leading to "dialogic accounting" and accountability. As was particularly observed during the joint meetings at Necasep, each department has its own operational portal defined in the SAP system through which its employees can perform their daily accounting and performance management tasks. The head of each department has access to the entire department portal to 'see' and 'control' the day-to-day practices that run within the department. If there are operational comments by the department head, such comments can be placed in a special section through the system called "daily movement feedback". Once the department head puts these comments, the system displays a "warning message in red" for the concerned employees so that they can see and act upon these comments. Another important observation, taken during interviews, each employee has a special "identity" (username and password) with which each employee logs into the SAP system. After logging in, the daily work screen is configured for each employee based on the job role(s) allowed by the department head. This (technical) configuration appears in specific operational "menus", "functions", "templates", and "forms" through which each employee can perform their daily job roles with regard to performance measurement and sustainability indicators. Most interestingly as observed during direct participation, if an employee makes a mistake in entering the initial accounting data and numbers, s/he will not have the ability to correct this unless the department head gives "permission" through the system to do so. Each department head has the ability to remotely access and control each employee's work page within the department portal on the SAP system. To name a few, during the live engagement, it was observed that a senior accounting and performance controller entered the wrong number (180 instead of 108) for a particular KPI. Once she became aware of this entry error, she filled out a specific "correction request" form which was sent through the system to the department head ("line manager"), requesting permission to make the correction. Within a minute, the department head gave permission, and an hour later the department head checked the system to ensure that the concerned employee had made this correction. In particular, as observed during daily performance measurement practices, each department produces what is called a "daily movement report". This detailed movement report is seen as an "internal audit" tool through which the head of each department

can review the daily sustainability performance of urban development projects being implemented across the country. After reviewing and approving the daily movement reports, each department head stores these performance reports in a “data warehouse” for each department on the SAP system. As also observed, by the end of the working day, the IT manager saves copies of these reports on CDs in a safe place as a “backup”. The deputy board director and project manager review these reports daily to make necessary decisions. Through these reports, sustainability KPIs reports (monthly and quarterly) are produced and sent to the senior management of the case company/project, the ministry of the public sector, and other relevant accountability bodies at the state/city level. The above and other observations reflect the powerful role(s) and recursive dynamics of an institutionalised sustainability KPIs system in emerging urban development projects.

4.3 Micro-organisational cognitive role of sustainability KPIs in political urban decisions

The above institutionalisation of the sustainability KPIs reporting system has been influenced not only by the above-mentioned contingency factors at the macro-field level of urban development but also by social cognitive conflicts between project outputs and outcomes at the micro-organisational level of Necasep. As observed previously, in subsections 4.1 and 4.2, the institutionalised SAP-KPIs system has enabled project management to ‘change’ the traditional way of thinking about performance measurement. Consistent with Uddin et al. (2021), the emerging KPIs field in this smart energy project has institutionalised “sustainability performance indicators” that emerged from the cognitive behaviour, experience and knowledge of Necasep management and not just on traditional economic measures based on energy revenues/sales. The social cognition and understanding of project employees have become a “powerful political tool” (Alsaïd and Ambilichu, 2021) in institutionalising the emerging and sustainable field of KPIs by “identifying” those who are consuming new energy grids and those who have not yet (a project director explained). As a project director also observed, during and after the contingent-institutional establishment of the sustainability KPIs reporting system, outputs (expected economic growth of total sales/revenues) were “uneven” with outcomes (expected social improvement of public health). This is because improving social health is not only about “positive” outcomes but also about identifying and reducing “negative” outcomes that are usually “difficult” to do in practice due to the extreme complexity of the measurement process.

In practice, sustainability performance measures depend largely on outputs such as energy quality or customer service, rather than on outcomes and changes in consumer behaviours. This subsequently generated an unintended situation of cognitive conflicts between outputs and outcomes, i.e., between economic (financial) sustainability and social (non-financial) sustainability (as explained by a KPIs reporting manager). This agrees with Bedford et al.’s (2019) social cognitive view that performance measurement systems are a “generator of cognitive conflict”. With this cognitive conflict within the organisational institutionalisation of sustainability KPIs, a senior accountant says:

There is a conflicting and complex relationship between performance measures for economic and social sustainability. Although the main objective of this project is social, especially after the political revolution, broad social demands and government support for urban development and sustainability projects, economic concerns and accountability pressures have emerged. The institutional reason and the political justification for this is the partial self-financing and the almost complete dependence of each urban smart city on its resources to cover the financial gap in implementing the project in partnership with the parent company, Necasep.

Therefore, by differing from previous literature above, a strong cognitive influence was emerged and observed in the sustainable institutionalisation of the KPIs reporting system in the case company. As a senior accountant observed, this cognitive influence was evidenced in every sustainable city when the household began the “urban transformation” from using a safe energy source to “regular consumption” behaviour. While sustainability KPIs were institutionalised for economic outputs, various project actors

paid special attention and focus on “social KPIs”. This cognition not only included well-known social outcomes (social health improvement) as shown in previous studies above but extended previous analyses to include “desirable changes” in consumer behaviours (“regularity in consumption”). This reflects the effect of social cognition and conflict on the institutional process of sustainable urban transformation (output vs. outcome KPIs). A sustainability reports manager exemplifies:

The company/project management has found it is difficult to assess employee performance on an economic basis only, or on a social basis only. But, consistent with the macro-field level multiple institutional demands and complex political goals of urban development projects, we have found it best to use both categories of economic and social sustainability indicators to ensure fairness and consistency in our assessments and decisions. If you look at our KPIs over the past few years, you will observe that although the smart energy project has achieved greater financial indicators because the regularity in consumption has become a prominent characteristic for most citizens and urban areas, a strong improvement in social performance indicators is also remarkable. A noticeable indication of this improvement is the decrease in the increasing death rates, to which we were accustomed in the past, among urban areas and citizens that are now characterised by the sustainable and regular smart energy consumption.

Then, economic sustainability outputs are not the only KPIs that measure project (and employee) performance, but social sustainability outcomes are also present. As observed and documented during face-to-face interviews and joint meetings, the sustainable achievement of economic outputs depends not only on the efficiency of employee performance but also on the realisation (cognition) of urban areas and citizens for the significance of regularity in smart energy consumption. Different from the previous literature above, “Regularity”, as micro-organisational interviewees and government level published sustainability reports explained, is seen as an institutional-political tool (or, as a “magic instrument”) to ensure the success of both economic and social sustainability goals and indicators. As confirmed by a board director, it does not matter to implement the project or install new energy grids, or even citizens come up and purchase our smart service. But, most importantly, these citizens and their urban areas “continue” to regularly consume our smart energy service. Without regularity, “we cannot guarantee the effectiveness of project implementation and its sustainability performance measurement”. Another senior manager says:

We had a choice between two different performance measurement approaches in the public sector. First, the government’s approach, which called for project documentation. With this, we can move towards some real indicators to assess employees’ operational performance. The reality, in urban governance and accountability language, is to combine both economic and social sustainability indicators into one package, represented by the integrated SAP-KPIs reporting system...

Second, the peer measurement approach, which came as a result of the experiences and applications of previous urban development projects such as the sustainability projects of smart water and smart health. This second approach was to distinguish between the accounting measurement of project performance and employee performance. This approach, which we did not advance, was looking to measure employee performance and KPIs as something to motivate our project teams. It proposes a simple incentive for specific employee achievements, which is practically unfair and unrealistic...

This is the reason why the city council and the ministry of electricity and energy confirmed the government’s approach to measurement and documentation. This was to ensure good governance and social accountability on the one hand, and the fairness and reality of measuring and reporting our employee performance in the project on the other.

To this end, the sustainability KPIs report has contributed significantly to making and remaking political decisions not only at the micro-organisational level of the case company/project but also at the macro-institutional field level of government urban development policies. By the end of the 2018/19 financial year, as exemplified by a senior accountant, the company/project management received the annual

sustainability SAP-KPIs report, which showed a clear “lack” of citizens’ awareness, knowledge and understanding (social cognition) of the significance of using sustainable energy sources in some (rural) geographical areas in the urban city. Based on this sustainability management, accounting and accountability report and in consultation with other government control bodies, Necasep management formed some “outreach committees” that visited and investigated this deficiency in these living areas. The purpose was to persuade people to use modern energy consumption models (e.g., “HVAC”) and new passive tools (e.g., “natural ventilation”) with which to achieve the social goal of the entire project, represented by “maximising” the quality of indoor life and “minimising” energy consumption and waste, ensuring a high (social welfare) level of improved health and comfort. This was a “cognitive attempt” (Farneti and Guthrie, 2009) to help citizens understand and realise not only the sustainability requirement of this project but also the “social health” requirement of using smart energy sources in buildings, which often depends -among other things- on three main factors: “thermal comfort”, “visual comfort”, and “air quality comfort” (a senior accountant said). Commenting on this successful cognitive (“knowledge”) attempt and “pushing” people to use smart energy services, a board director says:

The company/project management and other government bodies largely rely on the sustainability SAP-KPIs report in shaping important institutional-political decisions. Practically, this is seen as an important sustainability accounting and accountability report, which is sent every three months to not only the executive and senior management of the company/project but also supports the relevant ministries and accountability bodies... Among many other things, these decisions are often related to urban sustainability, smart cities, project service quality, employee promotion and/or sustainable project financing in order to achieve the multiple and different demands and goals of sustainable urban development in the Egypt 2030 strategy for governance, transparency, and accountability.

Another example, as observed during two project related managerial meetings, is that some KPIs reports have shown a “decline” in smart electricity consumption rates in some remote villages despite the recent installation of a sustainable electricity grid near these villages. After investigation, as presented by the deputy board director at the meetings, the competent team discovered that these villages’ citizens were consuming old electricity sources because of their cheap prices. This was a political and social reason for the “smart lowering” of electricity prices in these poor villages. After lowering prices and educating citizens, sustainability KPIs reports revealed not only significant improvement in smart electricity consumption rates but also improved community health in these particular villages. Another important observation, during the same meetings, is that sustainability KPIs reports also contribute to decisions regarding the “promotion” and “training” of internal employees. As observed, 5 employees (3 of the case project) were promoted to the senior management and accounting level of the company. These decisions also awarded 12 other employees (7 of the case project) a company-funded scholarship to attend training workshops and/or to study professional qualifications at accredited institutions. As observed during interviews and as Table 1 shows, most of the company/project employees are academically accredited (PhD, MSc, etc.) and professionally qualified (ACCA, CIMA, etc.).

After all, not only did the case findings reveal the institutional dynamics between urban development pressures and performance measurement applications. They also revealed recursive dynamics represented by the powerful role(s) of sustainability KPIs reporting in shaping political decisions. These (multi-level) and (two-way) dynamics have been institutionalised through three interrelated levels: macro, organisational and micro. As analysed above and discussed below, field-level urban development pressures have affected the implementation of the SAP-powered sustainability accounting system. This system and its outputs for KPIs have contributed to improving decision-making processes at the organisational and field levels for urban development.

5. Discussion

The above findings provide a clear presentation and reflection on the influential role of sustainability performance measurement in urban development. With urban development projects, as in the present case of the smart energy project, the organisational-level performance measurement system, represented by sustainability KPIs, has been institutionalised as an emerging field. This (newly established) field of urban sustainability KPIs (“sustainability KPIs reporting” as the interviewees said) was embraced by not only institutional forces and political demands (Bolívar et al., 2018; Hopper et al., 2015) by the central government and/or other various urban governance and social accountability bodies. As apparently evidenced and documented by the few and recent Egyptian case studies (Alsaid, 2022, 2021; Alsaid and Ambilichu, 2021), these urban development pressures and demands stem in particular from the central government’s call for partial self-financing. City governments were mainly depended on their financial resources to implement urban sustainability projects (as in the case of the present smart energy project) in participation with various public and private companies (as in the case of the present company, Necasep). This supports Alsaid (2021) on the institutional (political and financial) pressure imposed by the central government to adopt a public-private participation policy and experience in the emerging context of sustainable urban development projects (in particular, the developing Egyptian context).

By differing from these previous studies, the present case analysis has extended the usual frameworks of institutional-political analyses to include other contingent factors and social cognitive considerations. Previous studies on the potential connection between performance measurement and urban development were limited to the internal institutionalisation process of some common performance management and measurement tools such as the balanced scorecard, benchmarking, and budgeting (Thoradeniya et al., 2021; Kuruppu et al., 2016). Despite their valuable contributions to the particular performance measurement literature and the broad management accounting community for urban sustainability and city development, these previous studies have not explicitly addressed the multiple and different factors and considerations behind this internal institutionalisation. Together with the normal (regular) institutionalisation process (sustainability KPIs), and by differing from previous studies, the present multi-lens theoretical analysis has directly addressed multiple contingent factors and different cognitive considerations that have (or may have) a “strong role” (Uddin et al., 2021) in (re)shaping institutionalised KPIs in the emerging context (political framework) of sustainable urban development. In this (specific) political context and urban development framework, compared to previous theories and field studies (Träskman, 2022; Cohen and Karatzimas, 2021; Argento et al., 2020), sustainability KPIs are institutionally viewed as a “typology” (means or devices) of “innovation diffusion” (Thoradeniya et al., 2021). Consistent with Thoradeniya et al. (2021) and others, these KPIs are, therefore, seen as a “dynamic tool” that politically and socially connects micro-level organisational practices with macro-level institutional field demands. This fully reinforces Hopper et al.’s (2015) seminal presentation of “institutional dynamics” in their book chapter on “social theorisation of accounting”, arguing for the institutional-political-social importance of the micro-narratives “interaction” with macro-economic factors and studies.

In this multi-lens sense, this case study adds ‘new’ theoretical dimensions and empirical analyses to previous public sector performance measurement literature and sustainability KPIs studies in the developing context of urban development. As it appears in the present case of the smart energy project, sustainability KPIs have been an institutional-political demand (Uddin et al., 2021) by the government to monitor the sustainability performance of urban development projects. The emerging field of institutionalised KPIs is becoming driven not only by economic or financial (contingent-institutional) sustainability as in previous studies (Bolívar et al., 2018; Kuruppu et al., 2016), but also through social or non-financial sustainability cognition (Ishaque, 2020; Bedford et al., 2019). Most of these previous studies have focused on exploring the institutional and/or contingent effects on the diffusion (not the sustainable implementation) of performance measurement systems. With the smart energy project, as explained above, the present study focuses on clarifying how an operating ‘system’ of economic and social KPIs can be

implemented sustainably to include multiple different factors, particularly the social cognition factors represented in the ‘regularity’ in smart energy consumption. This political urban development system (which includes sustainability KPIs and calls in practice a “dialogic” accounting measurement system) constitutes an integrated accounting measurement and reporting platform that most previous studies have been far from in their institutional and contingency analyses in the urban development context. This is consistent with the “dialogic accounting” message by Aleksandrov et al. (2022), considering the importance of this approach in sustainability performance measurement systems. This approach is a corollary of the ‘legitimacy demands’ and ‘political rhetoric’ (Hopper et al., 2015) for the governance, accounting, and accountability environment in the modern business world (urban development). According to Necasep and other government and city speeches, this rhetorical approach is consistent with their operational (multi-indicator) system in the smart energy project, which requires (sometimes) to change (shape and reshape) institutionalised accounting indicators (from time to time) to adapt to the ongoing (multiple but different) urban development reporting requirements and complexities.

In this media and disclosure sense, largely neglected by previous studies, sustainability (KPIs) reporting is seen as a ‘remarkable’ decision-making tool through which various organisational and regulatory actors can make important decisions regarding the project and its operational and financial issues. This KPIs report, for example, has become an important “consultant” (Uddin et al., 2021) that the case company (Necasep) employs to request a fund from national and local urban development bodies and civil society funders. This report was a strong “regulatory” tool (Farneti and Guthrie, 2009) to obtain some funds from the National Bank of Egypt (as interpreted by some interviewees) to finance some project activities. This is consistent with Gazzola et al. (2021) arguing for sustainability reporting practices and their social impact on Italian non-government organisations “funding”. Their findings demonstrate the powerful media role and key (financial and social) advantages of sustainability reporting. Sustainability reporting was seen as a useful social impact disclosure and measurement tool to legitimise, secure social performance, and gain the local and national trust of civil society funders. Besides, this accounting report sustainably serves as a powerful “assurance” tool (Thoradeniya et al., 2021) in the development and reform of local government practices, policies and regulations at the macro-institutional field level of urban city development. This is in line with Grossi et al.’s (2020) public management perspective on urban smart cities, arguing that this KPIs-based accounting report is viewed as an “urban auditing” mechanism for sustainability management, governance and accountability. In line with this perspective and compared to other previous studies, this auditing mechanism has added political legitimacy and emphasised the ‘de facto’ existence of urban development transparency and cooperation between the various actors for the entire (smart energy) project. This agrees with Farneti and Guthrie (2009) arguing for the “political importance” and “government demand” of sustainability KPIs reporting for social impact disclosure, measurement, transparency and adoption in public sector organisations.

Here, the institutional actions and political decisions of Necasep’s management are aimed at managing ‘legitimacy’ to ensure support from various government control agencies and civil society funders. Given the political nature of the smart energy project, institutionalised KPIs ‘do not mean’ that the different regulatory and organisational actors have fully agreed for the sustainability KPIs package. In contrast to the previous studies above, there were some ‘unusual’ (contingent-institutional) situations as in the Egyptian political revolutions and the self-reliance on sustainable funding sources (through civil society funders). These have led to the ‘unintended’ institutionalisation of ‘extra KPIs’ such as sustainable urban houses, business activities, and capital expenditures. Consistent with other previous studies (Alsaid, 2022, 2021), the present findings revealed an unexpected set of institutional complexities and cognitive conflicts that have emerged among the project actors in the internal institutionalisation process of the KPIs system. This indicates “contingent effects” (Ishaque, 2020) in the emergence of some important additional indicators in an institutionalised KPIs working approach. With these effects, which differ from previous studies, smart energy project actors have interpreted the ‘inclusion’ or ‘exclusion’ decisions of these particular KPIs ‘differently’. While some actors have attributed more value to these additional indicators, others did not.

Despite the intense discussions and disagreements surrounding these (government) decisions among the various actors at the macro-institutional and micro-organisational levels, they eventually ‘agreed’ to include and practice these indicators in the operational KPIs system. The political desire and government ambition behind this “systematic” and “regulatory” inclusion (Uddin et al., 2021) were due to the project’s partial self-financing and the “contingent requirement” (Bedford et al., 2019) for sustainable financial sources. This ‘disagrees’ with the findings of some performance and measurement studies above (e.g., Argento et al., 2020) that reveal different attitudes to employee resistance in addition to a lack of accountability and cooperation among the institutional actors of urban development projects. These have hindered the practical implementation of the KPIs system in their case organisations.

Accordingly, the practical acceptance of these specific and additional KPIs as sustainable financial sources was a contingent institutional demand in the case company and its smart energy project. Institutionally and politically, as most of the people interviewed and compared to previous studies made clear, there was “no choice” rather than to include and operationalise these government (financial sustainability) indicators for funding and the systematic pursuit of social sustainability and accountability. Most of the above studies have demonstrated the institutional “dominance” and political “power” of financial sustainability indicators without analysing their contributions to financing social sustainability activities. Their narrow analytical frameworks, as described earlier, are limited to financial sustainability activities. Expanding on and contributing to this, the present case analysis establishes and justifies the institutional importance and political validation of various financial sustainability activities (as is the present case of jar business activities) in financially supporting social sustainability practices (as is the present case of social cognition practices). This differs from some previous studies (Uddin et al., 2021; Thoradeniya et al., 2021), arguing that only performance measurement practices are limited to financial sustainability activities that are affected by “political factors”. Along with these political factors, based on the case observations, joint meetings, and side-discussions, the present analysis extends this narrow institutional-political view to include the multi-lens perspective of contingent factors and social cognition aspects based primarily on contingency theory and social cognitive theory. Drawing on these interrelated theoretical views, institutionalised KPIs have looked not only for more ‘political legitimacy’ but also for more ‘social formality’ in the sustainability context of urban development. This is in line with Hopper et al.’s (2015) message in their book chapter on the journey of “searching for legitimacy and formality” in management accounting research, represented in the present case by ‘institutionalised KPIs’. Given the institutional nature and political mindset of the developing country context such as Egypt, these institutionalised KPIs act as a sustainability performance measurement ‘system’ that brings together the (wider) state/city social objectives and policies in urban development (i.e., social sustainability) and the (narrower) economic objectives and desires of the smart energy project (i.e., financial sustainability). This suggestively validates the use of a triadic analytical model (approach) in the betterment of understanding and interpreting the implementation of a performance measurement system in urban sustainability projects.

6. Conclusion

Using a triadic analytical approach, which integrates institutional theory, contingency theory, and social cognitive theory, the present study explores the potential influence of urban development projects on the implementation of a performance measurement system. Compared to previous literature, this study examines how a sustainability KPIs reporting system has been shaped by multiple but different dynamics at the institutional field and organisational levels of an urban development organisation in a developing country context. Different from previous research in developed and developing contexts, the present case findings reveal that a sustainability KPIs system in urban development has been politically institutionalised as an emerging field. Given the political nature and social climate in the developing Egyptian context, the KPIs system has not been institutionalised in the usual manner as previously described in early studies. Unusually and unexpectedly, its institutionalisation has been affected by other additional contingent factors, which promoted the unintended emergence and application of institutionalised KPIs. Moreover, given the

urban social development goals at the state and city level, this institutionalisation has also been affected by cognitive conflicts and complexities, which paved the institutional and political prospects towards a mixture of economic (financial) sustainability and social (non-financial) sustainability in a single and individual KPIs system. In this multi-lens view, this interpretive case study adds ‘new insights’ to the previous literature on the specific association between performance measurement practices and urban development. Comparing and contributing to previous research, it provides different theoretical arguments and empirical evidence confirming the operationalisation and politicisation of a KPIs system as an emerging case and practice of sustainability in the urban development field.

These findings above pave the way towards future research prospects in this emerging and growing field of public sector performance measurement in sustainable urban development. There were some limitations to collecting specific categories of empirical data. These include, for example, different employee attributes, behaviours, and characteristics, and their potential implications for the implementation of a sustainability KPIs system in urban development. Given the confidentiality of these sensitive issues, and respect for the idiosyncrasies of the smart energy project, these issues (claims) and others were addressed at ‘face value’, distinguishing ‘academic research’ from ‘investigative journalism’ (Alawattage and Alsaïd, 2018). Hopefully, further research in the future could include such important claims to explore their potential implications for the association between performance measurement and urban development especially in the special context of emerging economies. Another limitation relates to the difficulties of accessing and interviewing project government actors at the macro-institutional field level of urban development. This was due to the political secrecy and security purposes of urban sustainability projects in Egypt. This study, as described previously, relied on publicly published secondary materials, extensive documentary research, and the organisational-level interviewees’ personal reflections to identify macro-field urban development contingencies (pressures) for a sustainability KPIs reporting system. This paves the way for possible research of such government-level interviews which may add new political and military dimensions to the present case analysis. Another limitation is that environmental sustainability is beyond the methodological scope of this study. The main focus was the study of the urban development performance measurement system in the public sector, which revealed a mix of KPIs for economic and social sustainability. As the interviewees pointed out, public sector urban development organisations (Necasep as an example) now have an environmental sustainability system (“in place for two years”) separate from the sustainability KPIs reporting system being studied. As a future research proposal, the new sustainability system for environmental accounting and reporting also merits consideration, particularly in the emerging field of urban development and Egypt’s 2030 strategy for sustainable governance and accountability. Finally yet importantly, as follow-up interviews showed, Necasep -among other public sector organisations- is currently upgrading the existing system with an advanced SAP-KPIs version to enhance its organisational power not only for sustainability performance measurement but also for risk management, financial management, and internal controls. As a future research aspiration, it may be possible to examine the multiple but different powerful roles of this new version of the sustainability KPIs in urban development governance, accountability, and auditing, particularly in developing countries.

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Table 1: Profile of the interviewees

(17) interviewees	Interviewees' categories	Age	Academic and professional qualifications	Field (practical) experience	(23) main face-to-face interviews	Tape recorded or notes taken	Interview duration	(7) ex-post online interview(ee)s (30mins-1hr)
a Necasep board director	politician	56yrs	PhD, CIMA	30yrs	1	noted	1hr	-
a deputy board director	politician	54	PhD, ACCA	27	2	recorded	1-1.30hrs	1
a project manager	politician	53	MSc	23	3	recorded	1hr	1
a KPIs reporting manager	public manager	51	Mphil, MSc	21	2	recorded	30-45mins	-
a sustainability reports manager	public manager	49	MBA, FCCA	20	1	noted	45mins	1
three executive directors	public managers	45-50	MBA, CPA	18-20	3	recorded	45-50mins	-
five senior accounting and performance officers	controllers	35-55	ACCA, MSc, BA	5-15	7	recorded	1-1.20hrs	2
two sustainability governance officers	controllers	45-48	ACMA	15-20	2	recorded	40mins	1
two senior transparency and accountability officers	controllers	50-55	CGMA	13-19	2	noted	1.15hrs	1

Table 2: Interview guidelines

Levels	Fieldwork themes	Interview issues
<p>The case fieldwork has developed previous urban development performance measurement analyses in the public sector to integrate (three) different theories into one analytical framework. Compared to previous one-sided outlooks, these fieldwork levels, themes, and issues have expressed (multi-level) and (two-way) dynamics of sustainability KPIs reporting in urban development governance and accountability.</p>		
<p>At the macro-field level (Herewith contingency theory)</p>	<p>Urban development pressures for sustainability KPIs (Coding: MF)</p>	<p>MF1: Egypt's 2030 urban sustainability strategy and its implications for sustainable corporate governance and accountability. MF2: Political pressure from the military regime on sustainability KPIs reporting. MF3: Sustainability reporting regulatory compliance and enforcement. MF4: Sustainable development goals and smart city projects. MF5: Smart energy projects and government financial support. MF6: European Union partial funding initiative. MF7: The concept of sustainability KPIs. MF8: Stakeholders' economic and social expectations regarding sustainability reporting. MF9: Differences in the quality and quantity of sustainability KPIs disclosures. MF10: How did KPIs disclosures become a sustainability accounting tool for decision-making processes?</p>
<p>At the organisational level (Herewith institutional theory)</p>	<p>Institutionalisation process of a sustainability performance measurement system (Coding: OS)</p>	<p>OS1: The impact of field urban development pressures on the organisational level. OS2: Political pressure to partially fund the smart energy project. OS3: Key government agencies and accountability actors in the project. OS4: Sustainability performance measurement and reporting system application. OS5: Economic KPIs for the project's financial sustainability measurement. OS6: Social KPIs for the project's non-financial sustainability measurement. OS7: Relative dominance and power of economic KPIs over social KPIs. OS8: Potential conflicts between economic and social sustainability activities. OS9: Nature of the technology system (with SAP attached) used to measure and report on project sustainability performance. OS10: Functional protocol and staff portal to SAP-powered sustainability reporting system (herewith employee identities, menus, functions, templates, forms, etc.).</p>

<p>At the micro-organisational level (Herewith social cognitive theory)</p>	<p>Influential role(s) of sustainability KPIs reports within organisations (Coding: MO)</p>	<p>MO1: The impact of institutionalised sustainability KPIs reports on shaping political urban development decisions. MO2: Regulative KPIs reporting formats in public sector urban development organisations. MO3: The various executive departments involved in measuring and reporting on sustainability KPIs. MO4: Managerial welcome of sustainability KPIs reports in decision-making processes. MO5: Examples of influential smart energy project problems and sustainability reportings' contributions to their solutions. MO6: The impact of smart behaviours and employee traits on decision-making processes based on sustainability KPIs. MO7: Enforcement of harmonising and standardising sustainability reporting practices and indications. MO8: Implications of the sustainability KPIs disclosures on the project's financial and non-financial results.</p>
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