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Citation

Safronova, V. (2021). *How does the United Nations evaluate smart cities:: Analysing citizen participation indicators*.

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).

How does the United Nations evaluate smart cities:

Analysing citizen participation indicators

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Word count: 7977

Date: 21.05.2021



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Abstract

Over the past decade, smart cities - cities where modern technologies are used to enhance the quality of urban life - are increasingly suggested as a viable solution to urban issues. However, the development of smart city projects brings with it many political questions. For example, what urban problems can be solved with algorithms and technology instead of people? Smart cities risk taking democratic politics away from citizens by imposing technologies that provide clearer and faster data for decision-making than public deliberation procedures. The United Nations (UN) is actively involved in smart city projects and their assessment. This paper is concerned with examining whether this international organisation recognises the importance of citizen participation in the cities of the future. The study analysed the UN's evaluation of smart cities to see whether it pays attention to citizens political opportunities. It concludes that the UN largely excludes residents by making little provisions for their participation in smart city-making. Why does the UN neglect this important aspect? Two hypotheses about the source of the flaws are examined: neoliberal staff's incorporation of their views into policies and external pressures by city officials. The latter hypothesis was not grounded in empirical evidence. However, the hypothesis about staff's neoliberalism remains plausible after the empirical analysis. The research suggests that the UN includes more participation variables in its smart city assessments to preserve good governance.

Abbreviations used in the paper

ASEAN – Association of Southeast Asian Nations

EC – European Commission

ICT – Information and Communications Technology

IMF – International Monetary Fund

IO – International Organisation

ISO – International Organization for Standardisation

ITU – International Telecommunications Union

KPI – Key Performance Indicators

MBA – Master of Business Administration

SDG – Sustainable Development Goal

SSC – Smart and Sustainable City

ToR – Terms of References for the U4SSC initiative

UN – United Nations

UN-Habitat - UN Human Settlement Program

U4SSC – United for Smart Sustainable Cities

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I. Introduction

According to the United Nations (UN) Department of Economic and Social Affairs (2019), by 2050, 66% of the population will live in urban areas. UN Human Settlement Program (UN-Habitat) (2020) claims that rapid urbanisation will worsen air quality, traffic congestions and deteriorate social issues. UN initiative - United for Smart Sustainable Cities (U4SSC) suggests that smart cities can resolve these urban issues.

Van Waart, Mulder, and de Bont (2015), as well as Mora, Bolici and Deakin (2017), explain that even though the smart cities concept is used for about 20 years, it still does not have a commonly accepted definition. Additionally, Lai et al. (2020) analyse multiple definitions of smart cities and state that the common feature between them is the focus on enhancing citizens' living standards with the help of information and communication technologies (ICTs). Thus, a smart city is generally described as an urban area where advanced technologies tackle social and environmental issues. One flaw in these definitions is the obscured citizens' role (Kitchin et al., 2017): they are not considered to be the decision-makers on smart cities, and the importance of their participation in such projects is omitted.

This research paper will analyse how international organisations (IOs)¹ conceptualise smart cities, specifically focusing on how their assessments of these urban initiatives can be biased. Consequently, the main question addressed in this study is *How and why is the UN's evaluation of smart cities biased?* The paper zooms in on the UN, one of the most influential organisations attempting to define and promote smart cities. This research finds that the UN does not include indicators on citizen participation² into its smart city assessments. This study argues that such omission of civil engagement standards is a form of bias. The two possible sources of these blind spots are examined: The neoliberal orientation of the evaluation's authors (Cardullo & Kitchin, 2019) and the interests of external actors on the smart city assessment performed by the organisation (Broz & Hawes, 2006).

¹ For simplification purposes, the terms international organisations and international institutions are used interchangeably in this study. Although the researcher is aware that international organisations refer to formal bodies while institutions are sets of rules (Simmons & Martins, 2002).

² This research uses the terms civic/citizen engagement and civic/citizen participation interchangeably. Although, the distinction between these is highlighted in the "Methods and theories" section using Ekman and Amnå (2012) arguments.

This is a theoretical investigation of high societal and academic relevance. Firstly, smart cities' politics is a topic that is widely researched in terms of governance and public administration disciplines but hardly ever in connection to political science and international relations. Thus, there is a lack of consistent research on smart cities from the political point of view, and it is unclear how political issues play out in the smart city debate. Consequently, this paper is highly relevant as sheds light on such questions. Secondly, the topic of IOs' impact on smart cities has implications for democratic societies. For the citizens, municipalities, and businesses of smart cities, it is vital to understand who and how is changing the environment in which they live and operate.

This paper is divided into the following sections. Firstly, the literature review presents an overview of arguments about the nature of IOs' autonomy and common bias in the views of international institutions on smart cities. Secondly, the methods and theories section outlines the guiding scholarly theories which serve as the basis for this analysis, pinpoints the research design, and defines the key concepts. Thirdly, the empirical analysis gives an in-depth study of the UN's framework on smart cities. This section reveals that its smart city assessment does not contain many indicators on citizen engagement, and neoliberal ideology might be the reason. The hypothesis about external influence does not seem to be grounded in empirical evidence. Lastly, the paper is concluded by presenting the limitations of the research and offering implications of the findings for the UN.

II. Literature review

I) IOs authority

The question of power in global politics cause fundamental academic divisions in the international relations field. Realists (e.g. Morgenthau, Thompson and Clinton, 1985; Waltz, 1979) conceptualise power as the number of material resources possessed by nation-states. According to neorealist Mearsheimer (1994), the state is the only actor in an international arena with power. In this view, IOs do not have any authority as they are constituted by states and reflect the power distribution among them.

A similar view is presented by liberal scholar Nye (2004). The crux of his argument is that IOs are "the creatures of the states that formed them," reflecting a view similar to the statist theories

presented above (Nye, 2004, p. 94). However, Nye (2004) argues that international institutions can develop soft power because of their control over information and the ability to frame issues. The author establishes a concept of *soft power* that is an actor's ability to shape the preferences of others through immaterial means. This conceptualisation of authority as a set of intangible resources and abilities is contrary to the material understanding of power pursued by realists. Thus, according to the scholar, IOs can impact the behaviour of states.

Constructivist scholars take a more unconventional, non-statist stance with regards to IOs authority. For instance, Barnett and Finnemore (2004) are constructivist scholars who demonstrate that IOs can exercise power. They argue that IOs are best viewed as international bureaucracies constrained by states, but that can still be independent actors with their agendas. Barnett and Finnemore (2004) explain that the institutions' control over technical expertise and information allows them to make policies independently and exercise authority. According to the scholars, international bureaucracies impact states' conduct by creating new categories of problems and actors, fixing their meanings, and diffusing global values. In contrast with the realist theories, these scholars argue that IOs shape their policies independently from external actors and influence their behaviour.

However, from Barnett and Finnemore's (2004) study, it is unclear who exactly in an IO holds power to change states' conduct. Broome and Seabrooke (2012) respond that international institutions' authority comes from the epistemic communities of bureaucrats within IOs, namely analytic institutions. According to these scholars, analytic institutions construct a specific vision of member states which is then translated into concrete policies that can change the behaviour of external actors. From this overview of claims made by non-statist scholars, it can be concluded that multiple authors argue that international institutions can create policies independently of member states.

One crucial literature gap can be identified in the research on IOs' authority. Namely, the scholarly arguments discussed above do not hypothesise about the autonomy of these actors in new policy areas. Thus, it is unclear which factors impact their conceptualisation and implementation of new issues. This question is worth scholarly examination as many more possible global policy areas arise with the advance of technologies, including smart cities. Both realist and non-statist perspectives have plausible arguments on the autonomy of IOs, however,

neither were previously applied to examine smart cities. This paper chooses to take on the constructivist view as it provides more insights into the operation of IOs. However, the validity of statist claims will also be investigated with regards to the UN evaluation of smart cities.

II) Citizens in smart cities

The Association of Southeast Asian Nations (ASEAN), European Commission (EC), British Standards Institutions, and national emphasise that the *raison d'être* of smart cities is to improve citizens' lives and well-being (Lai et al., 2020). However, despite this recognition of citizens' importance, various researchers (Kitchin et al., 2017; Kostakis, Bauwens, & Niaros, 2015) argue that public's opinions are ignored in smart cities debates and practices.

Kitchin et al. (2017) discuss the role of the smart city's epistemic community in the exclusion of citizens. According to Haas (1992), an epistemic community is "a network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area" (1992, p. 3). Kitchin et al. (2017) explain that professionals in the smart cities field pursue technological solutionism as the belief that digital technologies are a cure-all that can be utilised to solve any urban issue, disregarding the local opinions. Thus, epistemic communities promote the imposition of technologies on urban areas without consulting the citizens (Kitchin et al., 2017).

However, if applied in consideration with local conditions, smart city innovations can improve citizens' involvement in politics. Shirazi (2009) argues that ICTs can facilitate the wider spread of political information. This is said to improve multiple democratic processes such as public deliberation and collaboration, thus, increasing the inclusiveness and transparency of decision-making. Moreover, Vlachokyriakos et al. (2016) state that once city-produced data is available to the citizens, they can have a more active role in setting public agendas. Despite all the aspirations, Webster and Leleux (2020) conclude that currently, civic engagement in smart cities is mostly symbolic: Residents are needed in such projects only to generate data through the consumption of smart city services.

Excluding citizens from smart city politics has consequences for such initiatives. Wylie (2018) explains that one of the most promising smart city projects, Google's Sidewalk Toronto, failed because the residents' consultations were symbolic and mainly served to promote the project.

Carayannis and Campbell (as in van Waart et al., 2015) notice that citizens should be considered important as they formulate the demand for smart city technologies.

III) IOs impact on smart cities

Drawing on the theories provided by constructivist scholars (Barnett & Finnemore, 2004; Broome & Seabrooke, 2012), it can be suggested that IOs can influence smart city development through creating new rules and norms. More specifically, Lai et al. (2020) state that large expert organisations create international standards which are used to benchmark functional and technical performances of urban areas. Through these standards, organisations control the implementation of smart city projects by ensuring that technologies in cities are efficient, safe, and well-integrated. Ruso, Horvat, and Maričić (2018) emphasise that international standards play an essential role in developing smart cities and defining essential components of such initiatives. Thus, in the smart cities policy field, IOs can impact external actors' behaviour by setting international standards.

Nevertheless, many questions with regards to IOs role in this issue area remain unclear. For instance, how do IOs conceptualise smart cities, and how is this reflected in the international assessments they carry out? Patrão, Moura and de Almeida (2020) conclude that international standards tend to omit some aspects of smart cities, thus becoming biased. Huovila, Bosch, and Airaksinen (2019), as well as Ahvenniemi, Huovila, Pinto-Seppä, and Airaksinen (2017), find a lack of balance between the different smart city indicators, namely between the those related to sustainability and technologies with a substantial prevalence of the latter.

Ruso et al. (2018) discuss that the International Organization for Standardisation (ISO) sets energy efficiency, information security, information technology services, and the environment as benchmarks that make cities sustainable and smart. It should be noted that ISO includes no indicators promoting more active engagement of citizens in the list of standards that could improve smart cities.

Thus, there grounds to suggest that international smart city standards are biased. Exclusion of people and their concerns in the smart cities debate is also reflected in IOs evaluations of such projects. Why is this the case? Cardullo and Kitchin (2019) argue that supra-national organisations are neoliberal. Neoliberalism promotes a new form of citizenship that largely

ignores the importance of citizen participation in a polity. Thus, the neoliberal orientation of the IOs might lead them to adopt smart cities conceptualisations that neglect civic engagement.

A different explanation is provided by Broz and Hawes (2006). They explain that external actors promote their interests through the International Monetary Fund (IMF). These national interests largely influence the policies produced by the Fund. According to this point of view, smart city evaluations created by the IOs are impacted by the city leaders who use these to promote their views.

The goals of this paper are twofold. Firstly, it aims to determine whether the UN's evaluation of smart cities assesses citizen participation. This will be investigated by analysing the newest smart city key performance indicators (KPIs) developed by the U4SSC initiative. Webster and Leleux (2020) argue that the civic engagement component of smart and sustainable cities (SSC) is usually omitted. Thus, it could be expected that the KPIs do not contain many indicators in this domain, making it biased. Secondly, if the number of such standards is minor, the study will investigate the possible reasons behind this. Thus, this paper asks: *How and why is the UN's evaluation of smart cities biased?*

III. Methods and theories

I) Theories

The first theory unpacks the notion of SSC pursued by the U4SSC. Webster and Leleux (2020) argue that developments in three main domains, namely, sustainability, technology, and citizen participation, will lead to achieving SSC. Particularly interesting for this research is the discussion of the last aspect - civic participation. Webster and Leleux (2020) argue that SSC should include citizen engagement as such inclusion ensures that new public services meet the demands of residents.

Webster and Leleux (2020) state that even though ICTs have a lot of potential to facilitate civic engagement, these technologies are rarely utilised to do so. Thus, the scholars conclude that the citizen participation component of SSC is usually neglected. Overall, Webster and Leleux's (2020) investigation suggests a theoretical justification useful to answer *how* the UN's evaluation of smart cities is biased: it might omit citizen participation. This flaw was also highlighted in the literature review.

These scholars do not explain which actors and why keep civic engagement out of SSC. For instance, do IOs that promote SSC initiatives also overlook the importance of citizens' participation? This question will be analysed in this study with regards to the U4SSC. By using this scholarly argument, this research has grounds to suggest that the U4SSC initiative, which focuses on the SSC, is biased as it neglects civic participation aspects of this notion.

Investigation of *why* the UN's evaluation is biased is grounded in two studies. The first one by Cardullo and Kitchin (2019) sheds light on the reasons why some IOs could pay less attention to citizens' engagement in smart cities. The authors state that neoliberalism is embedded in international institutions. This ideology forces IOs to promote initiatives emphasising neoliberal citizenship in contemporary smart cities. Traditionally, citizenship is a set of rights and duties that ties an individual to the polity. However, neoliberal citizenship significantly reforms citizens' political and social entitlements. It shifts citizenship away from inviolable rights towards individual obligations and responsibilities. Thus, in neoliberal smart cities, citizens do not have the right to participate in a polity but act more as consumers who have to negotiate their engagement based on their social, political and economic opportunities (Cardullo & Kitchin, 2019). Thus, neoliberalism changes the nature of citizenship, restricting the opportunities for citizen participation.

The findings of Cardullo and Kitchin (2019) suggest that the neoliberal ideology of IOs might lead them to define smart cities in neoliberal ways, neglecting the importance of civic engagement. Thus, there will not be many indicators on participation in smart city assessments of the U4SSC. However, Cardullo and Kitchin (2019) do not explain what the sources of neoliberalism within IOs are.

To bridge this gap, the research employs Chwioroth's (2007) analysis of the role of staff in the IMF. The author argues that it is possible to identify neoliberal ideology in international institutions by looking at the previous experiences of the lead bureaucrats. The author finds that the content of people's professional training shapes their belief system by promoting a certain set of values, in this case, neoliberalism (Chwioroth, 2007). Thus, professionals who studied at university departments that pursue neoliberal economics are likely to channel these views into policies when joining epistemic communities in IOs. This view is in line with the

constructivist understanding of international institutions that emphasises the influence of internal dynamics on policy-making. Based on the theories by Cardullo and Kitchin (2019) as well as Chwioroth (2007), the following hypothesis can be put forward:

Hypothesis 1: Neoliberal orientation of the U4SSC KPIs' authors produce the biased evaluation of smart cities.

Another factor that can impact smart city assessment performed by the UN is the influence of external actors, in this case, city governments. Broz and Hawes (2006) analyse the role of member states in the policy-making of the IMF. The scholars expect that by translating their domestic interests into the organisation's work, the US' executive shapes the lending policies of the IMF. Broz and Hawes (2006) find that of all members requiring IMF assistance, the Fund is more likely to finance those states with larger debts to US banks. This is considered to be reflecting the interest and influence of the US. Therefore, this theory represents a statist approach to IOs by stressing that external actors have a large impact on the policies of these institutions.

Notably, Broz and Hawes (2006) discuss the influence of member states on IOs policies. However, this research will apply their framework to city-level actors. This adjustment must be made because U4SSC mainly collaborates with cities instead of national governments. In this initiative of the UN, cities are the main stakeholders that can exert influence on the operation of the body. Thus, viewing cities as external actors and KPIs as one of the policies pursued by the U4SSC, this paper suggests that city officials introduce bias in the smart city assessments as they try to translate their interests into these. Thus, based on this argument, another hypothesis of this paper follows:

Hypothesis 2: Interests of city leaders translated into U4SSC KPIs produce the biased evaluation of smart cities.

II) Research design

The research will carry out an in-depth qualitative examination of U4SSC's assessment of smart cities. Schramm (1971) explains that case studies illustrate how and why certain decisions are made. This is what will be analysed in this study as well: How U4SSC evaluates

smart cities and the reasons behind such assessment. U4SSC was chosen as it is the only current interdepartmental initiative of the UN that deals with smart cities evaluation. This international initiative incorporates 17 partners constituting various UN agencies. This allows for the investigation of the views of multiple UN bodies on smart cities.

This paper will collect the data by analysing the KPIs methodology documents and reports issued by the U4SSC. The content analysis enables the researcher to examine the opinions of different actors (Halperine & Heath, 2017). In this study, content analysis will allow making justified claims about the neoliberal beliefs of KPIs' authors and the interests of the cities. To assess the hypotheses, this study will analyse the latent and manifest content of the documents as both are deemed to be fit for fulfilling the objectives of the research.

According to Halperine and Heath (2017), latent content analysis looks at the communication patterns that are not easily observable and can expose hidden meanings. In the analysis of U4SSC's smart city framework, latent content analysis will be used to detect possible neoliberal and city-specific bias. However, to assess whether KPIs are biased, analysis of manifest content is more suitable. It will allow interpreting whether the words associated with citizen participation are present in the indicators.

Content analysis is advantageous as it helps reduce issues associated with obtrusive methods of data collection (Halperine & Heath, 2017). It allows to avoid respondent bias, interview and Heisenberg effects and get more reliable information from the texts. Moreover, with the help of content analysis of U4SSC reports, this research can assess data about the staff's opinions which would otherwise be hard to obtain as it comes from high-ranked officials of the UN. One main weakness of such a method of analysis is human bias in interpreting the content of the documents. However, the researcher is aware of such limitations and aims to provide a well-justified and transparent analysis of textual information.

III) Conceptualisation and operationalisation

In order to investigate the research question and assess the validity of the hypotheses, several concepts must be defined and operationalised. The first one is the dependent variable - the UN evaluation of smart cities. The UN created a set of goals that constitute the main framework for international cooperation and development for the upcoming decades - the Sustainable

Development Goals (SDGs) (International Institute for Sustainable Development, 2020). SSC is promoted as a solution to some of the Goals. Thus, the UN put smart cities at the epicentre of the international agenda and the way it defines smart cities will be one of the most prominent conceptualisations in the field.

In order to work on smart cities, in 2016, the U4SSC was launched (U4SSC, 2019a). The International Telecommunication Union (ITU) and the UN Economic Commission for Europe are the core founders of the U4SSC. All its activities aim at providing guidance on achieving SSC in accordance with the SDGs (U4SSC, 2019a). Moreover, it evaluates smart cities by designing a set of international KPIs. KPIs were designed so that cities can measure their progress over time and compare their performance to other urban areas. The indicators are divided into three broad areas: Economy, environment as well as society and culture. Within each dimension, there are subdivisions that evaluate specific domains of performance. This paper will examine whether these indicators can be associated with measuring the levels of civic participation in smart cities.

What is exactly meant by civic participation? Ekman and Amnå (2012) develop a useful framework on the concepts that will serve as the basis for the analysis. The authors point out that civic engagement is different from political participation. Political participation is “all actions directed towards influencing governmental decisions and political outcomes” (Ekman & Amnå, 2012, p. 289). In contrast, civic engagement refers to activities of individuals or the collective aimed at influencing broader societal issues. This notion does not presuppose political engagement as people can impact society through unpolitical actions such as donations and recycling.

This paper will look at the presence or absence of political participation and civic engagement indicators in the KPIs and other U4SSC documents. Regarding KPIs, each variable introduced by the U4SSC will be evaluated to see if it measures the efforts of cities in either of the two dimensions. Moreover, it is assumed that if such terms as “participation” or “engagement” are present in the indicators’ description, they are intended to promote citizen engagement and political participation. If the number of such indicators is low, it means that U4SSC does not prioritise these processes, which would be in line with Webster and Leleux’s (2020) theory.

Another independent variable is neoliberal ideology. For this analysis, it is vital to establish what can be counted as neoliberal ideas. Prechel and Harms (2007) point out that neoliberalism advocates for turning health, education and personal human experiences into tradable goods as well as eliminating social schemes to foster individual responsibility. As noted above by Cardullo and Kitchin (2019), these changes have serious consequences for citizens, their rights and conditions for their participation. The scholars state that in their analysis of the European Innovation Partnership on Smart Cities and Communities, they found a lot of similarities between propositions made in the organisations' policy documents and neoliberal ideology (Cardullo & Kitchin, 2019). Similar analysis will be carried out in this paper but with regards to the documents of the U4SSC.

The guiding operationalisation used to detect neoliberalism is borrowed from Cardullo (2021). He states that there are five main features of neoliberal development in cities. However, analysing the presence of all five is outside the scope of this research. Thus, the paper will focus on detecting any rhetoric associated with technological solutionism defined by the author as "smart urbanism that strives to capture public assets and services by offering technological solutions to urban problems" (Cardullo, 2021, p. 34). Cardullo and Kitchin (2019) argue that technological solutionism is at the core of neoliberal smart citizenship and is its key problem. ICTs imposed upon a city within a framework of technological solutionism provide opportunities for grounding municipal decision-making processes in real-time data instead of public deliberation. This might completely exclude the public from political discussions and make political participation obsolete. Based on Cardullo's (2021) framework, the U4SSC policy documents and KPIs will be assessed to see whether there are sections praising technologies as the sole solution to urban issues, hence showcasing neoliberal bias.

It is unlikely that the research will find the sentences that will explicitly state that neoliberal ideology impacts the U4SSC's evaluation of smart cities. However, it is expected that if there is such an influence, the KPIs and other policy documents will contain phrases or paragraphs that reflect this bias.

This paper will also use Chwiero's (2007) framework about the influence of neoliberal education on the staff to identify the sources of such ideology in the organisation. Thus, the educational background of the lead KPIs' authors will be analysed in this study. As suggested,

if the key authors have a degree in economics, they are likely to pursue the marketisation of smart cities and bring these ideas into the U4SSC's framework and KPIs.

Additionally, the impact of external actors on IOs' policy-making needs to be refined. It should first be noted that KPIs hold great benefits for cities. Most importantly, cities can monitor their performance with KPIs. Having concrete data on performance can improve the international image and competitive position of a city in the eyes of investors (Patrão et al., 2020). Thus, urban leaders calculate that it is in their best interest to score well on the KPIs. The best performance can be achieved by excluding the indicators on which the city does not achieve good results. Therefore, urban areas are presumed to be interested in translating their objectives into these indicators.

It is expected that cities located in states with lower levels of democracy will not want to have many public engagement indicators in the KPIs. That is because non-democratic leaders, as opposed to democratic ones, do not rely on public support. Instead, authoritarian regimes are backed by the small number of people that get rewarded (Smith, Siverson, Morrow, & Bueno De Mesquita, 2003). As such, leaders of non-democratic cities can view KPIs as a way to attract revenue that might be later distributed among a small group of supporters.

In order to assess the validity of the hypothesis about external influence, it should be established whether the city leaders could contribute to the KPIs according to the regulations of the U4SSC. Then, if they could indeed participate in the production of the indicators, there should be a way to trace these contributions. This can be done by comparing the smart city frameworks of member cities to the KPIs. The main themes and values of those urban strategies have to be identified. Consequently, the KPIs should be analysed to see whether the points prioritised by specific cities in their strategies are present in the indicators.

IV. Empirical analysis

1) How is the UN evaluation of smart cities biased?

This section analyses empirical evidence that can prove the suggestion that the U4SSC neglects citizen participation indicators in its smart city assessment.

One of the most notable contributions to the smart city studies field made by the U4SSC is the coherent definition of the SSC. This conceptualisation is as follows:

“A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.” (U4SSC, 2020a, p. 4).

This definition can be roughly divided into two parts. The first section - technological smartness - emphasises the role of ICTs. The second - sustainability aspect - roughly repeats the UN’s conceptualisation of sustainable development. Notably, this definition does not explicitly indicate that SSCs contribute to improving the political opportunities of citizens. The smart city part does not mention whose quality of life is improved, while the second section does not mention sustainability in political aspects. This definition correlates with the assumptions presented by Webster and Leleux (2020). As the authors predicted, U4SSC’s notion of SSC highlights the importance of technological and sustainability aspects of the term but neglects the civic participation domain.

i. Analysing KPIs on citizen participation

The analysis of the KPIs presented in the “Collection methodology for Key Performance Indicators for Smart Sustainable Cities” document reveals the bias discussed above (U4SSC, 2017a). Out of 91 KPIs currently developed, only three can be in some way related to the promotion of civic engagement and political participation. These indicators are e-government, voter participation and open data.

The U4SSC defines *e-government* as the “number of public services delivered through electronic means” (2017a, p. 30). It aims to create more effective public services as well as increase transparency and accountability of governmental institutions (U4SSC, 2017a). Another essential goal of e-government, highlighted in the document, is to increase public participation in local decision-making. This indicator explicitly mentions the word “participation” and is connected to improving the political participation of citizens in smart cities. Thus, e-government can be considered an indicator that the U4SSC uses to assess citizen

participation in smart cities. However, it is labelled by the initiative as an advanced indicator which means that not all cities should provide data on it. Thus, even though the U4SSC recognises the importance of citizen engagement through assessing e-government, its effects on civic participation in practice will be limited as it is not needed to perform well on the KPIs.

Voter participation is the second KPI that contains the word “participation”. It is related to measuring the levels of political participation among smart citizens. In the description of the indicator, KPIs’ authors operationalise it as the number of voting ballots cast at the municipal elections as a proportion of the residents who reached voting age (U4SSC, 2017a). The U4SSC labels this standard as the core indicator, which means that if a city strives to perform well on the KPIs, it should have high levels of voter participation. This has the potential to affect citizen engagement in smart cities.

Lastly, *open data* is said to “facilitate government transparency, accountability and public participation in government” (U4SSC, 2017a, p. 29). Indeed, making the data the city collects and produces publicly available is beneficial. Firstly, open data can make the government’s decision-making processes more transparent as the information base of the policies is known to various actors (Ubaldi, 2013). The residents can also hold the public institutions accountable by controlling the data flows. Once citizens believe that they have a say in the decision-making processes, the governmental policies’ output legitimacy increases. It is concluded that this indicator, same as the two mentioned above, is meant to measure the engagement and participation of citizens in municipal decision-making. However, similar to the e-government indicator, this standard is categorised as advanced, thus, not very impactful for the lives of the residents in many cities.

This analysis shows that the U4SSC uses very few participation indicators in its KPIs. Moreover, two out of three that are said to measure political participation and civic engagement have a very limited impact on the conduct of external actors. Thus, the suggestion that citizens engagement is largely absent in the KPIs is supported by the data.

ii. Analysing U4SSC deliverables on citizen participation

To triangulate the data and increase the validity of the claims, the subsection of the paper sets out to back up the findings from the KPIs by reviewing the other policy documents produced

by the U4SSC. This investigation is expected to answer the question of how the U4SSC assessment is biased in more detail.

Even though ICTs have a lot of potential to improve civic participation in decision-making, in multiple U4SSC deliverables the public is not expected to benefit from the ICTs and smart city initiatives. For instance, in the “Accelerating city transformation using frontier technologies” report, the organisation defines future cities as “urban agglomerations that harness the power of frontier technologies to improve the quality of public services and promote long-term sustainability” (U4SSC, 2020b, p. 1). Thus, it argues that the goal of urban digitalisation is solely to improve service provision and sustainability, but there is no indication about the benefits that these improvements hold for citizen participation in cities.

Additionally, “A UN initiative” brochure stresses that SSC uses digital technologies “to improve quality of life, enhance the efficiency of urban operation and services” (U4SSC, 2020a, p. 3). In this statement, political benefits for citizens are not mentioned explicitly. There is a possibility that enhancement of the “quality of life” includes improvements in the political domain, but the document does not further elaborate on the particular aspects in which life quality will be increased. Therefore, this assumption cannot be upheld. These two documents showcase that U4SSC neglects advantages that citizens’ political life could get from the ICTs. Thus, showing one way of how this assessment is biased in terms of civic engagement.

Another important aspect is that in rare times when participation is mentioned in the deliverables, it is either not connected to citizens at all or is said to bring about better economic, but not political, outcomes. For instance, the “Enhancing innovation and participation in smart and sustainable cities” report stresses that urban stakeholders should participate in SSC in order to “catalyse and foster innovation capacity” (U4SSC, 2017c, p. 5). In this statement, it is unclear whether the citizens are stakeholders. Moreover, the political benefits of participation are not mentioned, while economic improvements are highlighted.

Thus, U4SSC prioritises the economic virtues of smart cities over the political ones. In the “Accelerating city transformation using frontier technologies” report, there is a statement that the Internet, as a critical technology of a smart city, will primarily allow citizens’ participation in the economic activities of the cities (U4SSC, 2020b). Importantly, it mentions no political

benefits that the Internet could provide. Instead, it chooses to outline that this technology expands the new digital economy, thereby reflecting prioritisation of economic advantages of technologies over the political ones. This adds another aspect to the bias of the U4SSC in the citizen participation domain: The initiative does not only disregard the potential of the ICTs to improve civic engagement and political participation but also prioritises the economic benefits of these technologies over the political ones.

Overall, this section explains how exactly the U4SSC evaluation of smart cities is biased: It prioritises the economic benefits of the ICTs over political ones. Therefore, political participation and civic engagement advantages of smart city projects are primarily ignored by the initiative.

Nevertheless, some of the U4SSC reports do recognise the importance of citizen participation. For instance, a paper titled “Implementing sustainable development goal 11 by connecting sustainability policies and urban-planning practices through ICTs” outlines several recommendations for strategic urban planning practices (U4SSC, 2017b). One of them is “fostering community, individual participation and inclusiveness” (U4SSC, 2017b, p. 15). To implement this, the U4SSC recommends setting up mechanisms that would facilitate civic engagement and adopt new city investments only once these underwent participatory budgeting procedures. These provisions promote not only civic engagement but also political participation in the form of participatory budgeting. However, this is the only instance showcasing the U4SSC’s support for citizen engagement in smart city governance. Thus, it can be concluded that not only do the KPIs ignore the importance of civic participation, so do the other policy documents issued by the U4SSC. Thus, the findings of this analysis support the theory about the negligence of citizen engagement in this UN’s initiative.

II) Why is the UN evaluation of smart cities biased?

i. Analysing neoliberalism: KPIs’ authors

In order to evaluate the validity of the second hypothesis, the neoliberal orientation of the key KPIs’ authors has to be examined. The staff responsible for developing the KPIs are John Smiciklas, Gundula Prokop, Pawel Stano and Ziqin Sang (U4SSC, 2017a). According to Chwioroth (2007), individuals educated in neoliberal economic departments are likely to be neoliberals. J. Smiciklas and G. Prokop hold Master of Business Administration (MBA)

degrees (ITU, 2021). Business administration is not an economic degree, however, Orta (2019) argues that neoliberalism is inherent in the MBA programmes. Business students are taught to marketise any activity and see elected officials as unknowledgeable. Both of these premises are neoliberal ideas which MBA students can bring into policy-making of IOs. Consequently, two out of four KPIs' authors might hold neoliberal ideas because of their neoliberal education.

P. Stano and Z. Sang have a more technological background. Mr Stano has a master's degree in applied and stochastic mathematics (ITU, 2021). Meanwhile, Z. Sang obtained a doctorate in pattern recognition and intelligent systems (ITU, 2021). These programs are unconnected to economics or business but might serve as an indication of technological solutionism. Authors from a technical educational background might be keener on promoting technologies as the cure-all for all urban problems, disregarding these solutions' political and social implications.

Another important observation that stems from the analysis of KPIs' authors' education is that none of the scholars holds a degree related to political or social sciences, which might affect their understanding of some societal issues such as civic engagement. Overall, the data support the hypothesis about neoliberal education of KPIs' authors. Due to key staff's backgrounds, the KPIs are likely to reflect neoliberal bias and neglect citizen participation. If that is the case, then these flaws should be present in the KPIs.

ii. Analysing neoliberalism: KPIs

Regarding the KPIs, it is evident that technological indicators are overrepresented: Out of 91 standards, there are 38 associated with ICTs and technological infrastructure. This means that 41% of all indicators is dedicated to technologies alone, while the other 59 is divided between environmental, social and other economic standards (U4SSC, 2017a). To investigate whether technological solutionism is present, the paper analyses the standards that promote innovations as solutions for urban issues. The U4SSC makes no provisions for the differences in local contexts among the cities that strive to implement the KPIs: Indicators emphasising technologies are expected to be equally effective for solving urban problems worldwide. Thus, the KPIs that promote technologies as a global solution for urban issues represent technological solutionism biases of the assessment.

SDG 11 aims at solving urban issues. Therefore, this research first selects all the KPIs aimed at reaching SDG 11 and then assess how many of these suggest a technological solution to problems addressed in that SDG. Then, there are six indicators associated with technological solutionism. For instance, U4SSC states under *Dynamic public transport information*, *Traffic monitoring*, and *Intersection control* standards that these can help resolve issues with congestion (U4SSC, 2017a). According to KPIs' authors, one way to do so is by creating special applications or websites to report information on public transport and cameras or sensors to capture traffic flows. In a similar vein, in the description of the *Urban Development and Spatial Planning* indicator, such technologies as spatial analytics, geographic information system and big data are suggested to help overcome challenges with ineffective development and planning policies (U4SSC, 2017a). Thus, it is implied that creating special technologies that will monitor traffic, visualise transport information and improve planning will resolve the related urban issues, demonstrating technological solutionism. Consequently, the data from KPIs supports the hypothesis about neoliberal bias in the U4SSC evaluation.

It can be observed that there are not so many indicators that reflect the technological solutionism standpoint. It is the general presence of such standards that matters for the analysis. In combination with the educational background of the authors, this finding points towards a technological solutionism bias in the U4SSC. In order to further prove that this UN initiative contains a form of neoliberal thinking, it is necessary to discuss the presence or absence of technological solutionism in the framework documents.

iii. Analysing neoliberalism: U4SSC deliverables

Firstly, the purpose of the U4SSC largely correlates with the ideas of technological solutionism. In the “Terms of references of the U4SSC initiative” (ToR) document, it is stated that one of the goals of the initiative is to promote the dialogue on the importance of advanced technologies in transitioning to SSC (U4SSC, 2019a). This goal showcases that the U4SSC aims at promoting ICTs as the solution to issues faced by contemporary cities. Such an approach is exactly what Cardullo (2021) defines as technological solutionism. Secondly, in its publication “Accelerating city transformation using frontier technologies”, the U4SSC argues that ICTs have a universal application and can be implemented in spheres ranging from health services to monitoring climate conditions and enhancing emergency responses (U4SSC,

2020b). This statement showcases that this UN initiative envisions the almost-universal application of technologies, disregarding the diversity of urban issues and their local causes.

Nevertheless, in the newest report produced by the initiative - “Simple ways to be smart”, it is highlighted that technological interventions should not be imposed purposelessly but consider the needs of the target population (U4SSC, 2021). This suggests that the U4SSC does not regard technologies as a cure-all but is more thoughtful of local contexts, which goes against technological solutionism instances outlined above. Despite this, out of nine relevant documents analysed, this is the only one that provides evidence against the general ideology of technological solutionism found in other U4SSC deliverables. Thus, it might be that the U4SSC became more aware of the neoliberal ideology traces in the latest year. However, most of its previous work can be considered to contain technological solutionism narratives.

Contrary to the expectations, some of the sentences in U4SSC’ policy documents clearly emphasise neoliberal citizenship. For instance, the “Enhancing innovation and participation in smart and sustainable cities” report explicitly states that citizens are consumers of smart city solutions: “smart, sustainable city solutions ultimately address and meet the needs of people living in a city (as consumers of solutions) ...” (U4SSC, 2017c, p. 108). If this quote read that people living in the city have the rights to these solutions just because they belong to a polity, then it would represent the traditional way of understanding citizenship. However, currently, it reflects the neoliberal citizenship idea as it shows that the U4SSC considers smart citizens merely as inactive consumers of ICTs imposed on them.

Consequently, evidence from the KPIs and the broader framework suggests that neoliberal bias in forms of technological solutionism and neoliberal citizenship are present in the U4SSC documents and could have influenced the U4SSC’s evaluation. Therefore, the first hypothesis is upheld. In this particular case, non-statist claims to IOs that stress the importance of internal actors in policy-making are supported by the data.

iv. Analysing the external influence

Moving on to analysing the second hypothesis, the first aspect that needs to be assessed is whether city-level actors can impact the KPIs. The document outlining the structure and responsibilities of members of the initiative is the “ToR”. It mentions that the participation in

the work of the initiative is open for stakeholders outside the UN system (U4SSC, 2019a). This means that the city governors could potentially impact the policies of the U4SSC.

Cities and their associations are classified as the participants of the U4SSC along with other experts (U4SSC, 2019a). When examining the responsibilities of these actors, it can be noted that there is no information on how they can contribute to KPIs. The only things the document states is that the participants can choose to contribute to the deliverables of the U4SSC. However, KPIs are not classified as deliverables, and the experts worked on them separately. Moreover, no provisions on modifying the KPIs that were published in September 2017 are made in ToR. Thus, there is not enough evidence to conclude that the current participants can make any changes to the KPIs.

However, the “Collection methodology for Key Performance Indicators for Smart Sustainable Cities” document states that contributions from many stakeholders, including the city leaders, were taken into account when developing the KPIs (U4SSC, 2017a). The question that stems from this is in what ways did these city experts affect KPIs? The KPIs methodology document mentions that each indicator was under review process from experts to ensure that they support the SDGs (U4SSC, 2017a). More specifically, for instance, it is documented that Singapore reviewed the KPIs and suggested some indicators measuring e-government activities (ITU, 2017). However, this is only an operationalisation change, and in large, Singapore did not provide major documented changes for the KPIs. Moreover, it is unclear whether this suggestion by Singapore made after the publication of the KPIs will ever be implemented. The Action plan for 2020-21 does not include any activities connected to revising the KPIs (U4SSC, 2020c).

Overall, it can be concluded that neither current nor past city participants exerted substantial influence on the KPIs. Thus, it cannot be suggested that bias in the U4SSC evaluation came from the fact that the external actors influenced the assessment. Consequently, the second hypothesis cannot be upheld. This leaves the first hypothesis about the influence of neoliberal bias on the UN evaluation a plausible explanation. Additionally, this means that in the case of smart cities assessment of the KPIs, the statist arguments that emphasise the role of external actors in IOs’ policy-making are not grounded in evidence.

V. Conclusion

This research has shown that the UN's evaluation of smart cities is biased. The evidence from the U4SSC KPIs and reports is supportive of the hypothesis that the KPIs do not contain many indicators connected to citizen engagement. Two theories were analysed in order to reveal the source of such biases.

The first theory suggested that the evaluation does not contain many political indicators due to neoliberal ideology among the KPIs' authors. The evidence found in the methodology documents as well as in U4SSC reports is supportive of the hypothesis that neoliberal staff relates to the biases of the KPIs. The second theory suggests that city leaders influence KPIs by translating their interests into them. The data suggest that urban leaders had an insignificant impact on the development of the indicators from the start. Thus, the hypothesis about the city interests being the source of bias in the U4SSC's assessment of smart cities can not be upheld.

This research has limitations. Firstly, the content analysis of the documents does not allow to make conclusions about the causality in the first explanatory hypothesis. The thing that is evident from the analysis is that the neoliberal bias is present in policy documents and the KPIs, not that these biases have caused a flawed evaluation. Thus, it could only be suggested from the literature that neoliberalism in the IOs' staff might affect its policies, but this link is not explicit in the documents under analysis. Further research can establish a firmer causal relationship by conducting interviews with U4SSC's experts or carrying out the quantitative study.

Secondly, neoliberalism is a complex term to operationalise. This paper took technological solutionism as a guiding operationalisation of the concept. Thus, the empirical findings show the presence of technological solutionism, a form of neoliberalism, in the U4SSC documents instead of neoliberal ideology in general. Further research can examine other operationalisations of the term suggested by Cardullo (2021) or other scholars.

This research shows that the U4SSC's assessment and KPIs are biased. This conclusion might serve as a push for the UN to reassess its evaluation of smart cities. More indicators that measure the civic engagement and political participation are needed. Additionally, in reports carried out by the U4SSC, more attention should be paid to citizens' political opportunities.

Goals and indicators from the UN-Habitat's flagship program, "People-centred smart cities" (UN-Habitat, 2019) or Participation Index for Cities and Municipalities (World Forum for Democracy, 2016) can serve as examples of initiatives that focus on fostering better political opportunities for citizens in (smart) cities.

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VII. Appendix 1: Content analysis.

Table.1 Content analysis of the U4SSC deliverables

Source	Neoliberalism (H1)	Analysis	Political participation and civic engagement	Analysis
<p><i>Presentation: U4SSC Key Performance Indicators for Smart Sustainable Cities presentation (2019b)</i></p>	<p>You cannot manage what you cannot measure by Peter Drucker. Therefore, you cannot improve it (p. 40)</p>	<p>Quantitative approach to urban issues. Only quantifiable problems can be resolved. Usually, social issues are not quantifiable, thus, will not be considered resolvable.</p>		

<p><i>Report “Accelerating city transformation using frontier technologies” (2020b)</i></p>	<p>Frontier technologies provide cities with an innovatory opportunity to expedite their transformation to unique cyber-physical systems, capitalising on data exchange among heterogeneous agents, while encapsulating the concepts of “smartness” and “sustainability” in their operations. To this end, the transformative potential of frontier technologies is exemplified in their ability to reshape the way cities provide services and meet citizens’ needs (p. iii).</p>	<p>Technological solutionism as technologies are promoted as solutions to inefficient service provision and other citizen problems.</p>	<p>Cities of the future are urban agglomerations that harness the power of frontier technologies to improve the quality of public services and promote long-term sustainability (p. 1).</p>	<p>All future city improvements concern citizens and their quality of life only indirectly. Urban innovations are not meant to benefit residents directly.</p>
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	<p>Along the same trajectory of the Internet paving the way for the information age in the late 20th century, frontier technologies are laying the foundation for a new technological age that is characterised by the digitalisation wave, heavily predicated on data and associated analytics. The combination of these three elements can profoundly reshape the way cities operate and meet the basic needs of every citizen (p. 1).</p>	<p>Technological solutionism as technologies are promoted as solutions to inefficient service provision and other citizen problems.</p>	<p>A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects (p. 2)</p>	<p>A definition of smart cities that consists of smart and sustainable sides but does not take civil engagement into account.</p>
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	<p>The application of frontier technologies can be extended to practically every urban operation, from improving access to health services and monitoring climatic conditions to enhancing emergency responses (p. 1).</p>	<p>The most obvious example of technological solutionism as technologies are promoted as solutions to all urban issues. No mention of local specificities which might hinder problem resolution.</p>	<p>Cities become smarter and more sustainable by leveraging data insights obtained from intelligent sensors and other connected devices to improve operational and environmental efficiency (p. 1).</p>	<p>Cities become more sustainable through ICTs, not by deliberating with citizens and responding to their demands.</p>
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			<p>Access to the Internet is also essential for citizens to participate in the digital economy and for cities to improve their overall sustainability and economic competitiveness (p. 2).</p>	<p>Highlights the role of ICTs such as Internet in providing economic benefits of citizens, and not political ones.</p>
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			<p>VR tools are giving citizens new ways to participate in urban development projects. Builders can provide a VR tour on the infrastructure that is going to be built and consult citizens for their concerns and opinions (p. 32).</p>	<p>Citizen participation is highlighted but they still can not participate meaningfully, with an opportunity to change the decisions of the power-holders. Residents are only consulted role which does not mean they actually meaningfully engage with the urban development project.</p>
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			<p>The concept of smart cities is aimed at effectively guiding relevant city stakeholders to drive sustainable urbanisation and improve the socio-economic and living standards of their citizens (p. 38).</p>	<p>Emphasises that the value of smart cities is in its abilities to help sustainability and other broadly defined issue areas. But does not mention political aspects at all.</p>
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<p><i>A UN initiative brochure (2020a)</i></p>	<p>U4SSC approaches ICTs and digital technologies not as an end in themselves, but rather as tools with which to make a meaningful contribution towards achieving the SDGs in the increasingly digitalized landscape (p. 5).</p>	<p>Ties implementing SDGs with ICTs: All SDGs can be resolved through technologies. But SDGs are diverse and can not always be solved entirely through an innovative technological solution.</p>	<p>The use of digital technologies and other means to improve quality of life, enhance the efficiency of urban operation and services, and competitiveness are now more needed than ever (p. 3).</p>	<p>Technologies are not said to be used to benefit residents participation or engagement in local decision-making.</p>
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<p><i>Report “Implementing Sustainable Development Goal 11 by connecting sustainability policies and urban- planning practices through ICTs” (2017b)</i></p>	<p>Before moving forward on the global smart and sustainable city aspirations within SDG 11 (and NUA), it is essential that an effective framework is in place. Such a framework will help boost the implementation of public policies through urban-planning actions, which will be executed as technology-based interventions and measured through KPIs (key performance indicators) (p. 2).</p>	<p>Cities improve through urban planning. Urban planning will be carried out via the ICTs. Firstly, this again follows technological solutionism logic. Secondly, this implies that democratic participation of citizens in policy-making is replaced by ICT-based solutions.</p>		
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	<p>These executions will be helped by embedded ICT technology, to introduce smartness into these sustainable urban-planning interventions, especially for the evaluation of the implementation procedure (p. 2).</p>	<p>Cities improve through urban planning. Urban planning will be carried out via the ICTs. Firstly, this again follows technological solutionism logic. Secondly, this implies that democratic participation of citizens in policy-making is replaced by ICT-based solutions.</p>	<p>The methodology in any planning process should include need-discovery workshops and other engaging activities to facilitate implementation and improve the uptake of the proposed master plan and the base plan. Moreover, decisions on future projects should be made collectively with all relevant stakeholders (p. 19).</p>	<p>This indicates that U4SSC recognises the importance of involving all stakeholders. However, it is still unclear whether citizens are considered important and relevant stakeholders.</p>
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			<p>We will foster the creation, promotion and enhancement of open, user-friendly and participatory data platforms using technological and social tools available to transfer and share knowledge among national, subnational and local governments and relevant stakeholders, including non-State actors and people, to enhance effective urban planning and management, efficiency and transparency through e-governance, approaches assisted by information and communications technologies, and geospatial information management (p. 21).</p>	<p>Shows that the initiative considers citizens relevant stakeholders and also emphasises the importance of collaboration between all actors involved in urban transformation and not only the power-holders.</p>
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<p><i>Concept note “Key performance indicators: A key element for cities wishing to achieve the Sustainable Development Goals” (2020)</i></p>	<p>The U4SSC serves as the global platform to advocate for public policy and to encourage the use of information and communication technologies (ICTs) and digital technologies to facilitate and ease the transition to smart sustainable cities (p. 1).</p>	<p>Technological solutionism as the core goal of U4SSC.</p>		
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<p>“United for Smart Sustainable Cities (U4SSC) initiative Fifth meeting of the United for Smart Sustainable Cities initiative Virtual meeting, 9 October 2020” (2020e)</p>	<p>Mr. Lee highlighted the role that ITU plays in working with its Member States, Sector Member and Academia Members along with other partners, to help cities improve urban infrastructures, leverage ICTs and emerging technologies including artificial intelligence (AI) and the Internet of Things (IoT) for responding to climate change, attaining the Sustainable Development Goals (SDGs), and other targets within the New Urban Agenda (NUA) (p. 2).</p>	<p>ICTs and emerging technologies including artificial intelligence (AI) and the Internet of Things (IoT) are promoted as solutions for climate change and SDGs in the speech of one of the U4SSC leaders.</p>		
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<p><i>Report “Enhancing innovation and participation in smart sustainable cities” (2017c)</i></p>	<p>Smart sustainable city solutions ultimately address and meet the needs of people living in a city (as consumers of solutions) and tend to have a fairly wide scope encompassing various economic, social and daily activities. Furthermore, these solutions are formulated and provided by people working in related public and private sector organizations (as providers of solutions). Hence, they are provided for the people and by the people (p. 108).</p>	<p>Explicitly states that citizens are consumers in the city. This is a clear notion of neoliberal citizenship.</p>		
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			<p>WG3 has explored the potential of ICT to improve public services and open data, as well as inclusive smart governance models. It has held numerous deliberations for ICT-related policy issues relevant to economic growth, smart financing, research and development (R&D) and innovation, with a focus on encouraging public-private collaboration in efforts to develop smart sustainable city projects. Various innovation ecosystems were investigated and associated initiatives capable of increasing urban societies' capacity for enhancing personal and</p>	<p>One of the working groups, named "Enhancing Innovation and Participation in Smart Sustainable Cities" does not actually deal with political participation but is focused on exploring the opportunities that ICTs have for economic side of the city.</p>
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			professional skills, entrepreneurship and creativity were discussed (p. 5).	
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			<p>The challenges and opportunities faced by cities entail significant innovation potential. Active participation of city stakeholders in smart sustainable city initiatives will catalyse and foster innovation capacity. Within this context, WG3 members reiterated that a well coordinated, cooperating governance, society and economy will better enable a transition to smart sustainable cities (p. 5).</p>	<p>Here participation is the means to achieve economic productivity but is not the end goal. Thus, it is only valuable as long as it helps achieve prosperity. Meaning that public participation can be easily omitted.</p>
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<p><i>Terms of references of the U4SSC initiative (2019a)</i></p>	<p>Goal of U4SSC is to foster discussions on the role of information and communication technologies (ICTs) and its applications, including, inter alia, Internet of Things (IoT), blockchain and artificial intelligence in facilitating the transition to SSC (p. 3).</p>	<p>Technological solutionism as the core goal of U4SSC.</p>		
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<p><i>Report “Simple ways to be smart” (2021)</i></p>	<p>In adopting this definition, it is important to recognise that smart interventions need not be technology-based but should be premised on evidence. These interventions should also pay careful attention to the target population whose needs are being addressed (p. iv).</p>	<p>Counter argument to technological solutionism. This quote recognises that technologies should be introduced based on local contexts.</p>	<p>Smart cities have also been criticised for serving the needs of the elite at the expense of the majority of city residents, thus increasing inequality in cities. However, if smart cities are developed based on needs, they can provide public services that are more efficient, effective and personalised (p. iv).</p>	<p>Here participation is the means to achieve more efficient service provision but is not the end goal. Thus, it is only valuable as long as it helps achieve prosperity. Meaning that public participation can be easily omitted.</p>
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	<p>City dwellers are both an important source of ideas, creativity, feedback, energy, skills and capabilities to bring the smart city into being and also the reason for the smart city to exist. So, the Smart City increasingly refers to the ability of smart people to devise interventions to solve urban problems and the mechanisms to facilitate that (p. 1).</p>	<p>The last sentence highlights that rights to intervene are not given but should be achieved or devised. This is one of the tenets of neoliberal citizenship.</p>		
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	<p>One way to ensure that smart interventions are simple is to focus only on well-defined technology solutions that have been implemented, reviewed and are already in the market with established deployment and support models. However, such “out the box” solutions, no matter how customizable, will only be simple to implement in contexts for which they were designed and where they have already been proven. Where such smart solutions have been successful in neighbouring cities, they</p>	<p>Counter argument to technological solutionism. This quote recognises that technologies should be introduced based on local contexts.</p>		
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	<p>are likely to be simple and smart. Otherwise, they need to be evaluated for contextual differences such as support, cultural norms, local practices and skill levels (p. 4).</p>			
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	People contribute to the economic life of cities, both through running businesses and as customers for those businesses (p. 27).	People are valuable as consumers, not as political creatures. This is a notion of neoliberal citizenship.		
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	<p>From cities, people expect services such as housing and access to power, water, healthcare and transportation. They also look for cities that offer them opportunities, such as education, employment, and recreational facilities (p. 27).</p>	<p>Here city as a marketplace that provides opportunities but no concrete political rights for citizens offered. This is a notion of neoliberal citizenship.</p>		
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			Government works best when people are directly engaged in public service delivery and the Swacch Survekshan allocates marks for resident feedback which includes feedback on the cleanliness of the public toilets (p. 32).	Civic engagement but not public participation.
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VIII. Appendix 2: Technological solutionism in KPIs.

Table.2 KPIs showcasing technological solutionism		
KPI name	Description	Analysis

<p>1. Dynamic transport information</p>	<p>The information reported for each stop must contain at least the arrival of the next vehicle/train/etc. It is also encouraged to provide travel times to other destinations. The information can be provided at the stop itself through screens or through other electronic means such as the official website or a mobile application. The information should be dynamic such that it is current and updated regularly rather than simply being posted as static timetable (p. 26).</p>	<p>Suggest official website and/or mobile application as a solutions for issues with congestion</p>
<p>2. Urban Development and Spatial Planning</p>	<p>should be <i>Smart</i>: This includes the existence of evidence-based and innovative methodology (including data innovations like spatial analytics, GIS, big data) to provide information on the urban plan outputs (p. 60).</p>	<p>Suggest data innovations as solutions for issues with redundant planning</p>

<p>3. Traffic monitoring</p>	<p>Monitoring of major streets can allow for the implementation of services to better manage traffic congestion and traffic flow. Monitoring can be done using in-road sensors or cameras (or a combination of the two) (p. 27).</p>	<p>Suggest sensors and cameras as a solution for congestion problems</p>
<p>4. Intersection control</p>	<p>Adaptive traffic control or prioritization includes measures such as embedded road sensors that change traffic signals based on actual vehicles flow or other similar sensors that provide the same function (p. 28).</p>	<p>Suggests road sensors as a solution to congestion problems</p>

<p>5. Low-carbon emission passenger vehicles</p>	<p>“Plug-in hybrids, sometimes called Plug-in Hybrid-Electric Vehicles (PHEVs), are hybrids with high-capacity batteries that can be charged by plugging them into an electrical outlet or charging station. They can store enough electricity to significantly reduce their fuel use under typical driving conditions.” (US Department of Energy) (p. 56).</p>	<p>Suggests low-carbon vehicles as solutions for issues with sustainable and environment-friendly transportation</p>
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<p>6. Integrated Building Management Systems in Public Buildings</p>	<p>Buildings with ICT systems have the capacity to provide citizens with a secure living and working environment by ensuring aspects like energy efficiency and water consumption are maintained at acceptable levels (p. 58).</p>	<p>Suggests “smart” houses as solutions for issues with energy efficiency and sustainable housing</p>
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