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Critical assessment of Measures of Sustainability and their applicability in the Indian context

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ABSTRACT

The concept of sustainability emphasizes a shift in values, balancing competing technological and economic progress needs, and protecting the environment. To combat urbanization issues and promote sustainable development, sustainable cities have become an area of interest in research, education, policy-making, and businesses. There have been several frameworks directly measuring sustainability by international and national agencies. Additionally, related concepts, such as resilience and healthy cities, overlap with sustainability indicators. This paper argues that the success and failure of indicators in a context ridden by data unavailability and capacity challenges heavily depend on the process of formulation of indicators. Current Frameworks focus more on the outcomes and less on the process like identification and selection of indicators, consultation mechanisms and implementation and feedback process. Drawing from the example of sustainability indicators framed by NITI Aayog in India, the Urban Sustainability Assessment Framework of UN-Habitat, and the experience of the Smart Cities Mission launched in 2015, this paper highlights the challenges of measurement and applicability of these frameworks in an Indian context. Based on comparative analysis this paper reviews the stated processes as identified in these frameworks. It suggests a process oriented approach to identify explicit mechanism for deliberation and dialogue around value based choices, local level consultations and coordinated data management system.

KEYWORDS

Urbanization, Indian Smart Cities Mission, Sustainable development, Sustainability indicators, Policy-making, Measurement.

INTRODUCTION

The concept of sustainability emphasizes maintaining a fine line between competing needs to move forward technologically and economically and the need to protect the environment in which we live. Expanding on this concept, the Brundtland Commission defined 'sustainable development' as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Mason 2023).

Even though the consensus around the definition of sustainable development eludes scholars, the concept of 'sustainability' has become a desirable policy goal and the foundation for today's leading global framework - the 2030 Agenda for Sustainable Development and its

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Sustainable Development Goals (SDGs) (Cowell and Owens, 2006). The 2030 Agenda for Sustainable Development**,** which outlines the SDGs, emphasizes the pivotal role of the private sector and international private capital in achieving sustainable economic development (Evans, 1997). The 17 interlinked goals adopted by all United Nations member states in 2015 have 169 targets that countries have attempted to reach by 2030 (Development I. I., n.d.). Agenda 2030 is a "shared blueprint for peace and prosperity for people and the planet, now and into the future." Thus, all countries must implement economic and social development goals for sustainability (Brundtland Commission, 2015). Following the adoption of the Sustainable Development Goals (SDGs) under Agenda 2030 by the United Nations General Assembly (UNGA) in September 2015, focus has now turned to putting them into action (Persson, 2013).

The rapid pace of urbanization in developing countries and the high resource consumption per person in developed countries with consequent environmental damage have dramatically influenced the discourse on sustainability, with a specific focus on cities. The international community has recognized urbanization and city growth as a transformative force for development by formulating a stand-alone goal on cities (Goal 11), known as the 'urban SDG' – make cities and human settlements inclusive, safe, resilient, and sustainable (UN-Habitat, 2016). To combat urbanization issues and promote sustainable development, sustainable cities have become an area of interest in research, education, policy-making, and businesses. (Wangel 2014). However, as there is little agreement in defining sustainability, measurement, and operationalization of the concept, too poses its difficulties, as discussed in later sections. Evans (1997) argued that sustainability is more of a broader value, like freedom or justice, open to different interpretations rather than a specific and measurable policy goal.

There have been several frameworks directly measuring sustainability by international and national agencies. Sustainability measures include traditional measures, such as quality of life and the human development index. Drawing from the urban planning tradition, monitoring indicators devised as part of the planning process were also intended to balance needs through the equitable allocation of resources. This paper argues that the success and failure of indicators in a context ridden by data unavailability and capacity challenges heavily depend on the process of formulation of indicators.

Utilizing the example of sustainability indicators developed by NITI Aayog in India, the Urban Sustainability Assessment Framework of UN-Habitat, and insights from the Smart Cities Mission initiated in 2015, this study identifies the challenges associated with the measurement and applicability of these frameworks within the Indian context. The paper is grounded in a comparative review of key indicator frameworks specific to India, drawing from official documents available in the public domain. These documents, along with published literature on the subject, offer an understanding of the processes employed in the formulation of the indicators. To comprehend the challenges in operationalization, the study incorporates the first author's experiences as part of the Smart Cities Mission. Additionally, it draws on studio work "Planning for Sustainable Communities" coordinated by the second author in 2023 for postgraduate students for the small hill town of Chiliyanaula in the state of Uttarakhand. The studio conducted over a period of four months examined the feasibility of implementing the United Nations' urban sustainability framework for a small hill town. Furthermore, an example of hill town of Shimla in the state of Himachal Pradesh is taken to understand the operationalization of NITI Aayog indicators and their integration with the statutory plan at a local level [†].

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SUSTAINABLE DEVELOPMENT FRAMEWORKS AND ISSUES OF MEASURMENT

Sustainable Development Frameworks with their sets of indicators have become a dominant form of sustainability assessment. The popularity of indicators and such frameworks is due to the simplification of complex processes for easy comprehension by decision-makers and citizens.

Urban sustainability indicator frameworks (USIFs) are gaining increasing attention as cities work towards achieving their specific sustainable development goals. These frameworks provide a clear way to measure and evaluate sustainability (Michalina, D. et.al., 2021). To achieve the sustainable development goals, it is essential to create a system of indicators. These indicators and data should be gathered and reported at the sub-national level, with a focus on the specific territory (Alaimo and Maggino 2020).

However, the development of these indicators is not a politically neutral process. In a thought-provoking article, Bell and Morse (2011) consider indicators a "tyranny of methodology." Indicators are cultural artefacts and a reflection of the mind-set of a particular time, and not simply a tech-rational exercise. This process is inherently subjective because the selection of categories and indicators is influenced by the biases, shortcomings, intentions, and assumptions of those making the decisions (Michalina, 2021).

Similarly, Hamilton et al. (1996) argued that the underlying sustainability theory will determine sustainable development indicators. They talk about weak and strong sustainability. Indicators for strong sustainability operate on the belief in the non-substitutability of natural resources and focus on carrying capacities and resilience, which are often ignored. In contrast, indicators for weak sustainability consider natural resources as another form of capital that can be substituted, and its indicators can include interventions like green energy or carbon credits. The biggest flaw in this ideology is that technological change and resource substitution can fix economic growth.

In addition to the beliefs underpinning indicator-based frameworks, the design of indicators also has limitations. The unclear purpose or the level of detail needed, the attraction of producing an attractive report without assessing its efficacy, problems of aggregation, and the inability to assess policy efficacy are some of the challenges that plague the design of such frameworks (Innes & Booher, 2000).

No indicator sets exist that are universally recognized, supported by strong theoretical foundations, comprehensive data collection and analysis, or have a significant impact on policy. This is because sustainable development is inherently ambiguous, its objectives vary widely in terms of definition and measurement, and there is a lack of clarity surrounding terminology, data, and measurement methods (Parris, T. & Kates, R., 2003).

More critical challenges of these frameworks relate to their implementation. Sustainable development strategies have encountered difficulties owing to their practical execution. Despite the existence of these frameworks for several decades, the number of people suffering has increased, and environmental degradation is yet to slow down, compromising both existing and future generations. Even the United Nations recognized this when António Guterres, the UN Secretary-General, in 2022, remarks, "About halfway through the period for the SDGs, humanity is moving backward concerning the majority of the Sustainable Development Goals."

Some systemic bottlenecks in implementation include the unavailability and unreliability of data, lack of political will, weak capacity and technical knowledge, inadequate mechanisms and structures, and policy incoherence (Fischer, 2020). A disconnect between policymaking, implementation, monitoring and evaluation in cities results in unrelatable and impractical frameworks. Operationalisation of indicators require governance mechanisms which remain less focussed in most of these frameworks (Michalina, 2021). Urban Local Bodies (ULBs) will

require more resources to realize outcomes, given their relatively low capacity, and the implementation of projects will typically be at this level (Economy, 2016).

Therefore, it is necessary to analyse the challenges in measuring and applying sustainability framework in order to build sustainable and resilient cities. Despite these criticisms, indicator-based frameworks remain popular for measuring sustainable development. One of the common consensus among scholars, however, is that focusing on the process of formulation of indicators can improve the outcomes of these frameworks (Hamilton, 1996; Innes and Booher, 2000; Bell and Morse, 2011; Jaiyseini, 2016; Schmalzbaur, 2016). As Innes and Booher (2000) put it *"We believe that the sustainable community will be promoted where many players in different roles and with differing interests and values are all provided with a flow of meaningful information and where they have the opportunity for joint learning and innovative responses to this feedback from the environment and other changes*. (p.175)". Meaningful information, deliberative process around values and feedback and monitoring thus become important aspects for more effective operationalisation of SDGs.

SUSTAINABLE DEVELOPMENT FRAMEWORKS IN THE GLOBAL CONTEXT

Monitoring sustainable development is crucial to track progress and identify areas needing improvement. Various indicators and indices are essential for understanding how well Sustainable Development can be achieved across different dimensions like social, economic, and environmental factors. Organisations like OECD, the World Bank, UN Agencies utilize various data sets and indicators to monitor poverty, economic growth, inequality, environmental sustainability and sustainable economy. While there have been numerous urban sustainability indicator frameworks, there are some common dimensions across these indicators. Majority of the frameworks use environmental, economic and social dimensions (Michelina, 2021).

Some of the key sustainability indexes used globally are as follows:

Table 1: Key Sustainable Indexes used globally‡

Serial No.	Sustainability Indexes	Institution	Description
I	Human Development Index (HDI)	United Nations (UN)	Average achievement of a country based on key dimensions of human development
II	World Development Indicators (WDI)	World Bank	Most recent global development data with national, regional and global estimates
III	Eurostat SD indicators	Eurostat	Progress towards SD by member countries of the European Union
IV	Ecological Footprint (EF)	Global Footprint Network	Measures a nation's human impact on Earth's ecosystem using the ecological accounting system
V	Environmental Performance Index (EPI)	Yale University, Columbia University and World Economic Forum	Shows a country's overall progress towards environmental sustainability
VI	Sustainable Society Index (SSI)	Van de Kerk & Manuel	Shows nations sustainability progress, integrating human wellbeing and environmental well being

‡ Authors

VII	Sustainable Development Framework	Asian Development Bank	Local government management and civic participation are significant focus areas for ADB's governance and capacity building

India's Sustainable Development Goals (SDG) Index serves as a tailored version of the global framework, integrating international benchmarks with national priorities and data sources. The indicators used—such as those in NITI Aayog's SDG India Index—are primarily shaped by global models, especially the United Nations' SDG indicator framework, while being adapted to suit India's specific context. Indicators in the Indian context are drawn from the global indices to align with availability of data, priority areas and also the governance structure. For example, India adopted elements from the *Human Development Index (HDI)* developed by the United Nations Development Programme (UNDP) especially the methodology to create state level indices and work as a complementary tool to existing SDG tracking mechanisms.

Similarly, with more than 1,400 indicators spanning domains such as the economy, health, education, infrastructure, environment, and governance, the World Bank's *World Development Indicators (WDI)* provides a comprehensive framework. ADB's *Sustainable Development Framework* emphasizes inclusive growth, enhancing environmental sustainability, strengthening governance, and adopting an integrated approach to policy. The study of these assessment tools shows that, even though they were made for different situations, they use similar sustainability indicators. This suggests there is a global agreement on the main categories and indicators to measure urban sustainability (Salati, et.al, 2022). This is also reflected in the Indicators frameworks in the Indian context.

SUSTAINABLE DEVELOPMENT FRAMEWORKS IN THE INDIAN CONTEXT

This section examines three frameworks developed and applied in the Indian context to understand the nature of the frameworks and the formulation process. An assessment was undertaken to study various global and national sustainable development frameworks as use cases. Out of the many, three frameworks have been discussed in detail in this section: a) Urban Sustainability Assessment Framework (USAF) developed by UN Habitat, b) Sustainable Development Goal (SDG) Index developed by NITI Aayog, and c) Ease of Living (EOL) under the India Smart Cities Mission. It focusses on what is being measured and how is it being measured. This section is based primarily on a review of public documents on these indicators.

About the frameworks

The Urban Sustainability Assessment Framework (USAF) is designed as part of the Sustainable Cities Integrated Approach Pilot (SCIAP) project, which GEF-6 funds for Indian cities. Currently, it is being piloted in five cities in India. It is envisaged to be a diagnostic and decision-support tool. UNIDO and UN-Habitat, in partnership with the Ministry of Housing and Urban Affairs (MoHUA) of the Government of India and state governments of pilot cities. To ensure integration among planning efforts and processes to evaluate their enforcement, the USAF brings together 12 sectors: governance and data management, finance and economy, housing and property, water, sanitation, waste management, clean energy, resilience, environment, public space-safety-urban form, transport, and social infrastructure. This framework has 131 indicators, with 235 data points across 12 sectors. One of the unique features of this framework is the spatialization of indicators (UN-Habitat, 2021). The USAF is based on four existing national and six international frameworks and indicators recommended by experts. The NITI Aayog (Sustainable Development Index) framework was the second framework examined. The world has targeted reaching the Sustainable Development Goals (SDGs) by 2030 and is now a critical moment in the journey towards it. Various countries

around the globe are investigating the progress made to date under the framework of SDGs and are trying to implement actions that will expedite the success of reaching the 2030 target. Acknowledging the difficulty in implementing 17 goals, 169 targets, and 306 national indicators given by the United Nations, the National Institution for Transforming India (NITI) Aayog, a national-level public policy think tank and nodal institution for implementing the SDGs, adopted the UN SDG Index for India. Since 2018, the SDG India Index has become the primary framework for measuring progress and providing inputs for data-enabling action towards achieving SDG targets.

In 2018, the first edition of the index was launched with 62 indicators under 39 targets across 13 SDGs. Some goals, such as 12, 13, 14, and 17, were not considered because of a lack of state-wise data under the specific indicators. In the second edition of the index, launched in 2019, all goals were covered along with 54 targets and 100 indicators. Of these, 68 were aligned with the National Indicator Framework (NIF).

The last index for this study is the Ease of Living Index (EoLI), published annually under the India Smart Cities Mission, which has sustainability as one of its pillars. The ease of Living Index (EoLI) is developed to evaluate the quality of life, and the impact of various initiatives for urban development EoLI is used as the assessment tool. Based on a city's quality of life, economic ability, sustainability, and resilience, this study provides a holistic analysis of 114 cities across India. One part of the assessment also includes citizens' views on civic services the Urban Local Bodies (ULBs) provide. The EoLI is organized around four pillars, namely the Quality of Life, Sustainability, Economic Ability, and Citizens Perception Survey, to evaluate the well-being of Indian cities across 111 cities. Based on these four pillars, the 49 indicators were categorized into 14 categories.

Table 2. A comparison of broad sectors between the three frameworks[§]

Serial No.	Urban Sustainability Assessment Framework (USAF)	Ease of Living Index (EoLI)	Sustainable Development Goal Index (SDGI)
I	Finance and Economy	Level of Economic Development, Economic Opportunities	Decent Work and Economic Growth
II	Governance and Data Management		Sustainable Cities and Communities
III	Disaster Risk Management	City Resilience	
IV	Clean Energy	Energy Consumption	Affordable and Clean Energy
V	Environment and Ecology	Environment, Green Space, and Buildings	Good Health and Well-being Climate Action
VI	Social Facilities and Services	Education, Health	Quality Education
VII	Transportation	Mobility	
VIII	Solid Waste Management		
IX	Sanitation	Water And Sanitation Hygiene (WASH) and Solid	
X	Water Supply		Clean Water and Sanitation

[§] Source: Compiled by Authors

		Waste Management (SWM)	
XI	Housing and Property	Housing and Shelter	Poverty
XII	Urban Form, Public Space, and Safety	Safety and Security, Recreation	
XIII			Hunger
XIV			Gender Equality
XV			Industry Innovation & Infrastructure
XVI			Reduced Inequalities
XVII			Responsible Consumption and Production
XVIII			Life Below Water
XIX			Life on Land
XX			Peace, Justice, and Strong Institutions
XXI			Partnerships for the Goals

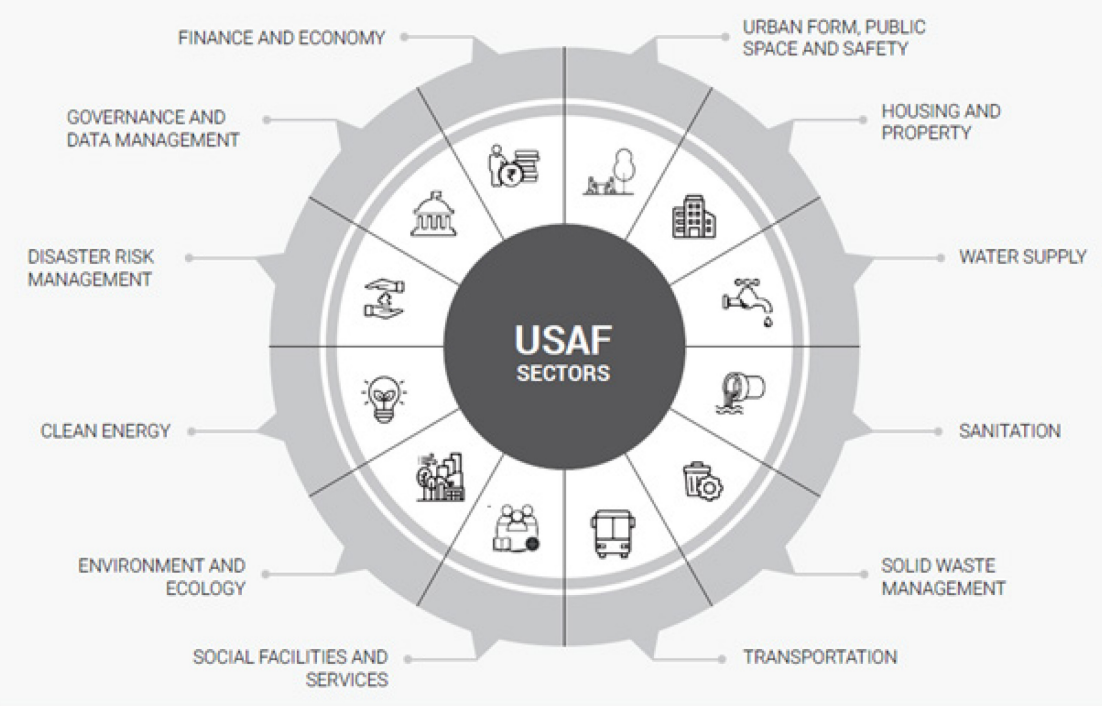
As one can see from Table 1 categorization of the USAF and EOL index is based more on functional aspects, with some aspects of resilience and clean energy covered. As the name suggests, SDG goals are categorized as more aspirational. However, most indicators under these aspects are outcome-oriented and make minimal attempts to capture the processes. Moreover, the categorization and focus on outputs suggest a weak sustainability approach that operates from a belief that clean energy interventions can justify continuous resource extraction. None of the frameworks focus on carrying capacities or the rate of resource extraction like water.

Methodology of the development of indicators

As per the USAF document, the framework was developed in various iteration phases. The first step was to undergo a detailed analysis of existing national and international frameworks, which were significant in examining the sustainability of cities. To create an easy-to-use and dynamic framework, the 131 indicators are categorized into 3 levels --- primary, secondary, and tertiary. Subsequently, each level is divided into sub-levels, allowing the cities to penetrate deeper into a sector of their interest or need. To emphasize the spatial aspect of these indicators, they are further categorized into spatial and non-spatial. Some hands are scored quantitatively ranging from very low to excellent performances. Therefore, a seven-point scale is used to measure the city's performance. Hence, a city should aspire for the "excellent" category being the highest of the levels. This scoring scale has been developed according to the national standards and global benchmarks wherever possible [*Figure 1*].

USAF is still at the drafting stage and has been designed to cover as many cities as possible and can be applied to any Class I town, i.e., a population of more than 1 lakh. The target audience of the framework is municipal corporations, planning development authorities, Civil Society Organisations (CSOs), and private sector players.

Figure 1:



Indicator Performance						
0	1	2	3	4	5	6
Very low performance	Low performance	Lower medium performance	Medium performance	Upper medium performance	High performance	Excellent performance

Sectors of the Urban Sector Assessment Framework and Scoring Scale**

Mixing of outcome and input indicators, lack of focus on process indicators and its continuity are some of the issues that the framework has to address. For example, the framework for functional sectors like housing, social infrastructure, etc., mainly uses outcome indicators like the availability of schools within a 500m distance. However, for aspects like governance, it uses input indicators like expenditure. The framework has very little focus on processes like decision-making, leadership etc. As it is meant to be a diagnostic tool, its main objective is to provide spatially organized information to decision-makers. However, if it remains only a onetime exercise, its advantage is minimal as it will be unable to capture change.

In addition to the above, the framework promotes weak sustainability discourse rather than a fundamental shift in approach. It therefore misses out on some key indicators like accessibility and carrying capacity. As part of the studio exercise (2023) on Planning for Sustainable Communities, students reviewed the applicability of the framework for a small hill town Chiliyanaula in Uttarakhand, India. Their work revealed a breach of carrying capacity for a small town of less than 5,000 population given their resources and current usage. Similarly, for schools currently the framework measures it through proximal distance criteria. Proximity criteria give a sense of the availability of a facility, its relevance in the Indian context is highly limited as students don't need to be admitted to neighbourhood schools. It has to be supplemented with accessibility criteria. In Chiliyanaula while there was a school available

** Source: Draft Urban Sustainability Assessment Framework, 2022

nearby it was a very expensive school and not at all accessible to the local population. Therefore, indicators focussing primarily on the proximal distance of facilities like schools in the Indian context fail to capture the accessibility of such facilities for diverse groups, resulting in misleading assessments. The indicators in their present form thus reflect a bias towards quantifiable indicators.

The SDG Index by NITI Aayog offers insights into social, economic, and environmental status and the States/UTs' journey towards achieving the SDGs.

Figure 2: Methodology adopted by the SDG Index††

Out of the 115 indicators in the current index, 75 are expected from the previous index, i.e., Index 2.0. The values of 57 out of these 75 have been updated. Furthermore, 76 out of 115 indicators are entirely aligned with NIF, 31 are derived from NIF, and 8 are constructed in engagement with the line ministries. For assigning any weightage in the index estimation, the missing cells were considered "Null" due to the unavailability of data under those indicators for all States / UTs *[Figure 2]*.

The indicator development process and its operationalization were through the involvement of the Ministry of Statistics and Programme Implementation, 38 central ministries and 36 state governments and Union Territories, and experts *[Figure 3]*. There have been attempts by the government to involve the next tier and the local bodies. As part of the SDG Index, all state governments must set these targets for 2030.

Thus, while there is an awareness of the idea of sustainability through these indicators unless the process of its operationalization does not include a discussion on the form and direction of such development, the real estate interests will continue to prevail in cities contrary to the purpose for which indicators are being formulated.

The Ease of Living Index (EoLI) with four pillars, i.e., quality of life, sustainability, economic ability, and citizens' perception survey, make up the EoLI evaluating the well-being of the Indian cities across 111 cities. Under these four pillars, 49 indicators were categorized into 14 categories. The different aspects contributing to a decent urban life in a city fall under the first pillar of "Quality of Life," which holds a weightage of 35% in the final index score. The level of economic development and inequalities an individual encounter in a city falls under the "Economic Ability" pillar and holds 15% weightage in

†† Source: SDG India Index & Dashboard, 2020-21

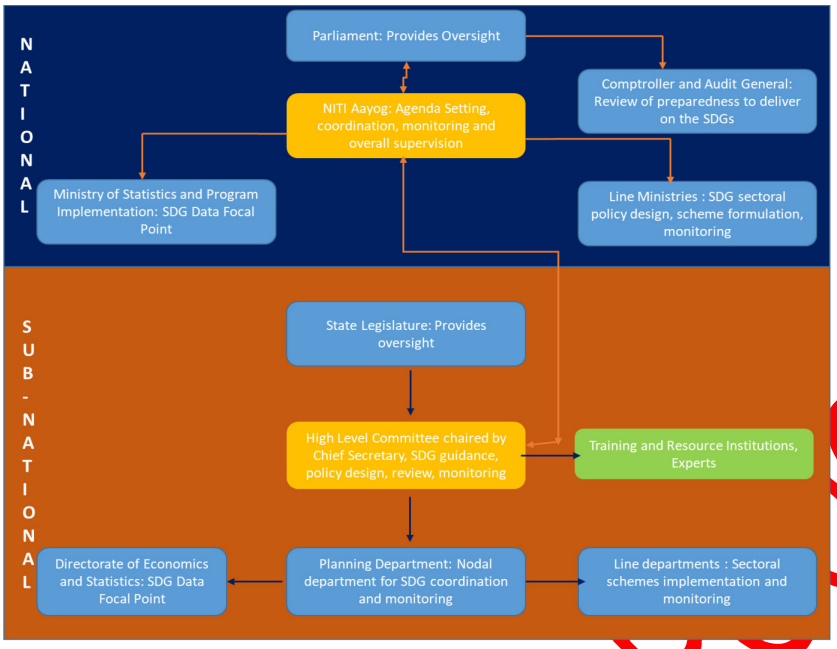


Figure 3: Institutional Structures at Various Levels in India for SDGs[‡‡]

the index score. "Sustainability" is the third pillar and comprises the availability of green spaces, green buildings, energy consumption, air quality, water quality, and the city's capability to withstand natural disasters, and a weightage of 20%. The fourth pillar, i.e., the "Citizen Perception Survey," was conducted to strengthen the index further with 30% weightage.

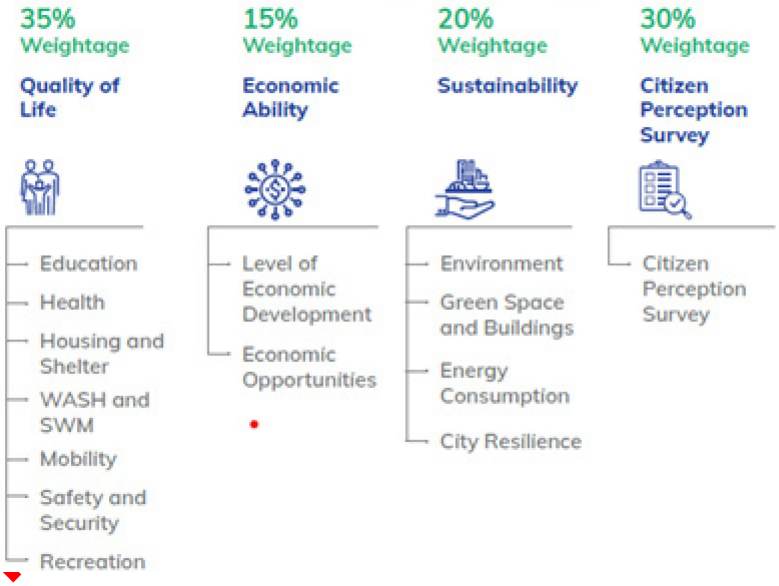


Figure 4: Four Pillars of EoLI[§§]

A thorough analysis was done of the cities with a population of greater than 1 million as per the projected population till 2019, and all cities covered under the India Smart Cities Mission (regardless of their population size). Therefore, 111 cities were selected for evaluation in the Ease of Living Index. The data collected for the 49 indicators across the Index had been obtained in various units like Percentage, Ratio, and Binary Marking.

The India Smart Cities Mission has undertaken multiple performance evaluation initiatives like EoLI, MPI, Climate Smart Cities Assessment Framework (CSCAF), and Data Maturity Assessment Framework (DMAF). The primary purpose behind these indices is to assess the

[‡‡] Source: Compilation by Authors
[§§] Source: Ease of Living Index, 2020

cities across varied sectors that impact the nature of growth in the cities. Previously data has been collected through various frameworks at different times and cycles, thus having issues like overlapping, duplicity, and more time and effort being expended in the exercise. Therefore, through the Urban Outcomes Framework, data across 14 sectors have been streamlined so that there is an increased focus on data collection, and disaggregated data can be analysed and used for ranking by domain experts. This also provides the opportunity for creating an ecosystem to create new frameworks based on open data. This exercise aims to shift focus from indices to data with a comprehensive list of indicators. The cities will regularly update the datasets, and data points will be accessible in the public domain for the consumption of researchers, academics, and public audits.

The process of formulation of indicators included first set of indicators being prepared by the mission unit of the Ministry of Housing and Urban Affairs at the national level. Four one-day national level consultations were organised where city data officers were invited to give their inputs. Based on these consultations, indicators are finalised, and city level data collected. Feedback mechanism is only through consultation.

DISCUSSION

Meaningful Information and Consultation Process

The biggest challenge in implementing responsive planning decisions and evaluating their output is the inadequate, reliable, verified, and up-to-date data at a regional level. ULBs are the biggest custodians of granular data and are responsible for verifying and submitting data as per the indicators. In the current version of the SDG India Index 3 (2020–21), out of the 115 indicators, 26 are from 2020–21, 31 from 2019–20, 34 from 2018–19, 6 from 2017–18, 9 from 2016–17, 7 from 2015–16, and 2 from 2011–12. Since old data from 2011–12 to 2018–19 are used, the composite index ignores the state's current performance level in those domains. The conditions may have progressed very differently concerning these indicators. For example, the latest data regarding the population below the poverty line is as old as 2011. In addition to unavailability of real time contextual data, this has to be organised as meaningful information for any effective participation to happen. In the absence of meaningful information combined with absence of consultation at the local level, ownership of SDGs at the local level remains disjointed.

Consultation workshops were conducted with sector experts in the USAF framework formulation process. These domain experts gave inputs to the indicators as per existing national and international guidelines. In case of sustainability indicators by NITI Aayog as well as EOL indicators too, there has been limited consultation with the State government and municipal officials. The states are expected to improve their performance in these areas, and there is no coordination between all the stakeholders on the indicators, their data flow, and aggregation formula among all stakeholders before such an exercise is undertaken. Consulting the state and ULB officials would help evaluate their performance and reach the target level. Otherwise, it might pose challenges for methodical validation on state-level data flows. A state may disagree with the indicator value for politically sensitive barriers. It is, therefore, essential to develop systematic data flow and validation mechanisms at the state level and to build the capacity of states for proper reporting and monitoring of SDGs.

Moreover, while there is some form of parliamentary oversight, the consultations rarely focus on values underpinning the indicators. Most of the discussion focusses on feasibility of indicators. The consultation process thus has to deliberately include discussion around values and value conflicts. Absence of indicators related to carrying capacities, distribution of land resource and accessibility aspects reflect a weak sustainability approach. The documents do not reflect any value dilemmas and the approach thus the process of consultation remains very instrumental in nature.

Design of Indicators

Design of indicators reflect relationship between the outcome and its measure. It would include a process of selection and inclusion, decisions around the level at which this should be measured and choice of measurement scale. As mentioned earlier, expert consultations around selection and measurement is part of the process. However, the option of localising these indicators is minimal.

Some of the indicators in the USAF frameworks are on a seven-point scale ranging from very poor to excellent performance. This scale is qualitative, considering the perception of an individual based on the data inputs submitted by the cities. This means as per one individual; the rating might be medium; however, for another individual, it might be upper-medium performance.

Similarly, in case of NITI aayog, 17 SDGs must be measured in combinations of different dimensions, comprising several socio-economic outcomes like poverty, health, education, inequality, environment, quality of life, and infrastructure development. This means NITI Aayog uses a composite index score to represent the progress made by the States in India under the SDGs. However, using a composite index has been questioned multiple times for combining various dimensions in one number. In the SDG Index, each indicator is normalized, after which the arithmetic mean of the indicator values is used to arrive at the composite score. Hence this means equal weight for every hand, and as a result, it is a compromise between the loss of information and being able to communicate transparently. Therefore, a partial-compensatory composite index like the geometric mean is more suitable for the SDG India Index, provided there will be no indicator with a "null" score value.

Introduction of new indicators and changes in measures of indicators makes it difficult to undertake temporal comparison. A state that ranked better in a particular goal in the previous edition of the index could become a worse performer as new indicators are introduced. Such abrupt and unexpected changes in the state's rank may create misinterpretation and affect the integrity of the SDG monitoring process. Thus, it is crucial to consolidate the list of specific indicators through the consensus of all the state officials to measure particular goals that may be used to assess performance.

A huge disincentive for states is due to the capping of the normalized score when the performance is above the target. Capping the score to the target value, that is 100, when the state achieves a score beyond the mark, e.g., 120, makes the states demoralized, which can improve their performance beyond the target.

Subjectivity in measurement as well as combining complex set of concepts in single indicator and city rank is convenient and simple. However, this encourages more focus on improving the rank (which is quick and amenable to manipulation) rather than changing processes (which is slow), hampering its efficacy in effective policy interventions. The indicators related to process are not given as much weightage and importance as the outcome indicators.

Implementation and feedback process

As mentioned earlier, national level SDGs get translated by each state with targets for the year 2030. Most of the states in India have set these targets for 2030. However, institutional capacities, top-down target setting and interdepartmental coordination makes their implementation an uphill task. Here we would briefly like to discuss an example of a small hill state of Himachal Pradesh in India. Himachal Pradesh, a hill state in India, has set SDG 2030 targets at state level (Government of Himachal Pradesh, 2015). The state has assigned responsibility to various departments and organisations for implementation of targets. Most organisations have a staff crunch to be able to effectively work on these targets.

One of the indicators requires urban plans to be prepared for all towns in the state of Himachal Pradesh, India. This is the responsibility of the town planning department. The

department currently has a director of town planning who is a bureaucrat along with a district town planner and assistant planner. None of them have a degree in planning. The current development plan for the city was prepared by private consultants from Ahmedabad, Gujarat (Prakash, 2023).

Being statutory in nature, development plans can be a strong instrument for implementing sustainable goals. However, environmental protection and sustainable development are not the stated goals of the plan. Similarly, the plan, while developing population scenarios for population projection, does not consider sustainability as a criterion (Government of Himachal Pradesh 2023).

One reason for the limited focus on the sustainable development approach can be attributed to the process through which such indicators are formulated. In a top-down approach, the list of indicators is handed over to the staff in different departments. However, its purpose and significance gets rarely discussed. Discussions on the allocation of both financial and human resources are usually absent at the local level. Data is hurriedly collated without focusing on institutional learning or systemic change. Moreover, real estate private interests prevail much more than sustainability goals in plan formulation. With limited capacities and larger private interests, SDG indicators become another task and fulfilment of a formality rather than a substantive shift at local level.

The Shimla Development Plan, a statutory plan, thus became quite controversial for not adhering to sustainable development principles. The National Green Tribunal (apex body for the effective resolution of legal cases on environmental protection) placed a stay on the development plan project because it promoted unsustainable development. In one of its earlier orders in the matter of *CWPIL NO 13/2021, Kusum Bali vs. State of HP* (Himachal Pradesh) and others dated 13.01.2023, it stated:

"The State, as a trustee, has a legal duty to protect the natural resources and the environment and prevent its degradation under the 'Public Trust Doctrine.' Moreover, there has been non-observance of principles of 'sustainable development' as well as 'precautionary principle" by the State, which envisages that if there is the risk of severe damage to humans and the environment, absence of incontrovertible conclusive or definite scientific proof would not be a reason for inaction."

As can be seen from the discussion above, existing frameworks focus more on the outcome and less on the process. Required database systems in towns and cities are currently non-existent. Thus a lot of time is spent generating data for different frameworks in different formats. Many aspects, like housing and water supply, do not capture existing capacities to supply or provide housing there, leading to incorrect diagnoses. Lack of real time data, temptation to improve rank and low ownership of SDGs at local level affects the monitoring and feedback process. For example, while many of the towns report themselves as open defaecation free, lack of basic sanitation still eludes most of the towns.

TOWARDS PROCESS ORIENTED APPROACH

The Sustainable Development Goals (SDGs) mainly follow the Millennium Development Goals (MDGs) and develop on the work already implemented by the MDGs. The main idea of sustainable development is the balancing of environmental and development decision-making. For it to become a systemic change and not become purely a marketing gimmick, requires a process orientation.

To set a balance between present and future needs, sustainable development indicators are a useful instrument. These indicators become pointers for implementing sustainable interventions and can lead to more effective decision-making. The top-down approach can trigger system-level changes only when processes are institutionalised at local level. However, current top-down sustainability approach does not result in long-term shifts and therefore the

success of formulating the indicators requires its adaption and implementation to be more context specific and deliberative.

The consultation process currently is focusses on the appropriateness of the indicator. The talk around the values underpinning such indicators and how to balance economic, social, and environmental aspects for sustainable development must precede the application of indicators. While there have been efforts at the localization of indicators, the dominant paradigm of sustainability propagated by international agencies continue to prevail, thereby limiting the discourses which might emerge at the local level in diverse contexts.

Some pointers towards process-oriented approach would include a) explicit mechanism for deliberation and dialogue around value based choices in selection of approach and criteria b) supplementing national level discussions with local level consultations c) articulation of resources and capacity requirements and, d) coordinated data management system.

Most importantly, it requires a much greater process of dialogue where community and decision makers take ownership of indicators and their implementation. Top-down interventions can generate awareness and incentive systems. However, local level implementation requires a behavioural shift through focus on process of dialogue around formulation of indicators rather than the indicator itself.

Some specific actions around which dialogue should be initiated can include:

- Identification of main trends in priority sectors
- Reporting the state of sustainable development
- Assessment of fulfilment of governmental goals and targets, and revision of these goals and targets
- Facilitate the preparation and monitoring of plans
- Adaptation of national frameworks to context specific measures

The most significant criticism of SDG is that it is highly bureaucratic and ignores the on-ground challenges. "One-size solution" in sustainable development does not fit and cannot be implemented in every Indian city, considering the local challenges and resources available. The indicators in a sustainable development framework should always be formulated to balance the regional context and the central level.

The practical application of the indicators in a sustainable development framework depends on coordination between the goals of behavioural changes from the bottom-up approach and implementing the best strategies to influence these changes through policy interventions or the top-down approach. To achieve the envisaged targets of the SDGs, goals need to be localized as per their context.

One of the missing links is the opportunity to synchronize SDGs and statutory plans as can be seen from the example of Shimla town. The Urban Local Bodies / cities in India in developing master plans and urban mission-linked development plans must synchronize with the SDGs.

CONCLUSION

This paper has critically examined various sustainability measures and their applicability in the Indian context, highlighting both their potential and inherent limitations. While global frameworks like the Sustainable Development Goals (SDGs), Ecological Footprint, and Environmental Performance Index provide useful benchmarks and have influenced Indian sustainability frameworks, they often fail to capture India's unique socio-economic realities, regional disparities, and developmental priorities.

This paper through the example of SDG frameworks in an Indian context argues for a more process oriented and localised approach to SDG frameworks. These frameworks in Indian context can be strengthened with greater deliberation around value choices and priorities. Urban local bodies (ULB) have the constitutional powers, however, implementation and

decentralisation of these powers are still a long way. SDG frameworks require a multi-scale assessment to articulate processes at different spatial scales.

Effective national planning is required as each developing nation face a myriad of challenges, have different level of resources. Therefore, SDG targets need to be aligned with national plans and strategies. Critical areas need to be identified where they can make the most impact, considering their specific socio-economic, political, and environmental context. This will ensure that the SDGs are integrated across sectors and into key policies, budgets, and programs.

Customisation of SDG indicators must reflect local needs and realities which will result in national progress. Robust data collection systems must be developed that can accurately monitor and evaluate SDG progress over time. Therefore, in devising and formulating indicators, the processes must be more explicit for deeper involvement of ULBs. Paradoxically, in our rush to achieve outcomes, the long-term institutionalisation of processes is compromised. In this regard, collaborating and co-creating with stakeholders for a lasting participative approach will be important.

The study contributes to the current discussion on more effective operationalisation of SDGs by shifting the focus on the value conflicts and processes underpinning the indicators in addition to the existing focus on improving the indicators themselves. As the paper is based primarily on the review of official documents in public domain, the more nuanced decision-making processes, role of leadership, and participatory processes are not part of the study. More empirical data from different parts of the country can further sharpen the approach.

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