# NUA Monitoring Framework and related indicators

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# Background

With the adoption of the New Urban Agenda, Member States made transformative commitments which are grouped into the following three integrated and indivisible dimensions of sustainable development (NUA §24): (i) sustainable urban development for social inclusion and ending poverty; (ii) sustainable and inclusive urban prosperity for all; and (iii) environmentally sustainable and resilient development. The "Guidelines for Reporting on the Implementation of the New Urban Agenda" was prepared in order to facilitate the preparation of national reports on the progress of the implementation of the New Urban Agenda. The Guidelines proposed categories and subcategories under each dimension. However, the Guidelines did not specify the indicators that countries could utilize to monitor these dimensions of the sustainable urban development. The New Urban Agenda Monitoring Framework proposes indicators for those categories and subcategories that were listed in the "Guidelines for Reporting on the Implementation of the New Urban Agenda". Many of the transformative commitments are strongly aligned or are the same as some of the Targets of the Sustainable Development Goals (SDG). Hence, it is only appropriate that such Transformative Commitments are monitored utilizing the corresponding SDG indicators. Some of the transformative Commitments can be efficiently monitored with global indicators used to monitor the City Prosperity Index dimensions.

The New Urban Agenda Monitoring Framework is essential for tracking progress, assessing impact and assessing whether the New Urban Agenda's implementation is on track and well executed. At the local levels, the NUA indicator framework will assist cities or country local actors as a tool for checking progress and where applicable follow up with local and central governments on the commitments of New Urban Agenda (NUA §161) that might be off-track.

From 2000 to 2010, UN-Habitat developed the Urban Indicators Programme to track and assess progress on a core set of 42 urban indicators. With the SDG targets, a core set of 244 indicators were developed for tracking progress across the 169 targets, with a large set (60%) applicable at the urban level. For NUA, many SDGs indicators are used for monitoring, but an additional set of indicators to complete the coverage of the NUA targets is needed. Certainly, many SDG indicators focus on quantitative statistical measures, hence UN-Habitat have proposed various additional NUA measures to balance the integration of a range of qualitative and quantitative/spatial measures, which provides an important complement to the SDG indicators.

Under various articles of the NUA[1] such as 158, 159 and 160, member states committed to strengthen data and statistical capacities at national, subnational and local levels to effectively monitor progress achieved in the implementation of sustainable urban development policies and strategies and to inform decision-making and appropriate reviews. Data collection procedures for the implementation of follow-up to and review of the New Urban Agenda is to be primarily based on official national, subnational and local data sources, and other sources as appropriate, and be open, transparent and consistent with the purpose of respecting privacy rights and all human rights obligations and commitments. In this role there is need to develop useful tools, guides and enhance

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[1] http://habitat3.org/the-new-urban-agenda

the capacity of national, subnational and local governments in data collection, mapping, analysis and dissemination and in promoting evidence-based governance, building on a shared knowledge base using both globally comparable as well as locally generated data, including through censuses, household surveys, population registers, community based monitoring processes and other relevant sources, disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location and other characteristics relevant in national, subnational and local contexts.

The NUA indicator framework is developed in fulfillment of the reporting needs and will be facilitated with additional open, user-friendly and participatory data platforms to support transfer and sharing of knowledge among national, subnational and local governments and relevant stakeholders, including non-State actors and people, to enhance efficiency and transparency, and processing of geospatial information management.

The NUA monitoring framework was developed in line with the "Guidelines for Reporting on the Implementation of the New Urban Agenda" which were developed and shared with member states earlier. The key aspect of the indicator's framework is the provision of core indicators that member states and other actors will use to track the progress and implementation of the New Urban Agenda. A core set of indicators framework will ensure comparability among cities and countries in the overall performance and implementation of the NUA. The New Urban Agenda recognizes the effective linkages and synergies between monitoring of itself and the 2030 Agenda for Sustainable Development to ensure coherence in their implementation (NUA § 164). It is in that context that nearly 40% of the SDGs family indicators are part of the core indicators proposed for of the NUA Monitoring Framework. On the urban side, NUA monitoring will contribute directly to monitoring the urban dimensions of the SDG and *vice versa*.

Every four years, the Secretary General will submit to the UN General Assembly a report on the Progress of the implementation of the New Urban Agenda. The first was submitted in July 2018 and the next report is due in 2022. The release of the NUA indicator framework is timely to allow member states a period long enough to adjust well on the next phase of progress reporting on NUA. Through the proposed set of indicators, local and central governments will be in position to provide comparable indicator data for monitoring NUA for their own reports and for the Secretary General's quadrennial report on progress on implementation of NUA in all subsequent years (NUA §127, 128, 129).

**Fig 1: Review of Progress on NUA Implementation**
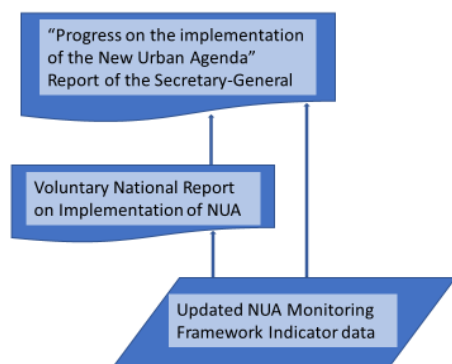


In the "Guidelines for Reporting on the Implementation of the New Urban Agenda", the transformative commitments are grouped by theme, for instance, all transformative commitments dealing with ending poverty are in the theme 1.1.1 "Social Inclusion and Ending Poverty" in category 1.1 "Sustainable Urban Development for Social Inclusion and Ending Poverty". Similarly, all transformative commitments related to housing fall under 1.1.2 "Access to Adequate Housing".

One of the three categories under the dimension "Sustainable Urban Development for Social Inclusion and Ending Poverty" is "Social Inclusion and Ending Poverty", it is further divided into four subcategories, which are (1) Eradicate poverty in all its forms; (2) Address inequality in urban areas by promoting equally shared opportunities and benefits; (3) Enhance social inclusion of vulnerable groups (women, youth, older persons, migrants and persons with disabilities); and (4) Ensure access to public spaces including streets, sidewalks and cycling lanes. In this New Urban Agenda Monitoring Framework, at least one indicator has been identified under each of the four subcategories for monitoring progress. For example, SDG-1.1.1 "Proportion of population below the international poverty line, by sex, age at national urban level", falls under (1) "Eradicate poverty in all its forms". In situations where the subcategory is the same or close to an SDG target, one of the SDG indicators for that target has been selected for monitoring that area. However, where there is no obvious SDG indicator, indicators are provided from the global urban indicators' family developed for monitoring the dimensions of the City Prosperity Index and other sources. To minimize the reporting burden on cities and Member States, most subcategories are monitored using only one or two representative indicators.

**Fig 2: The Structure of New Urban Agenda Monitoring Framework (NUAMF)**
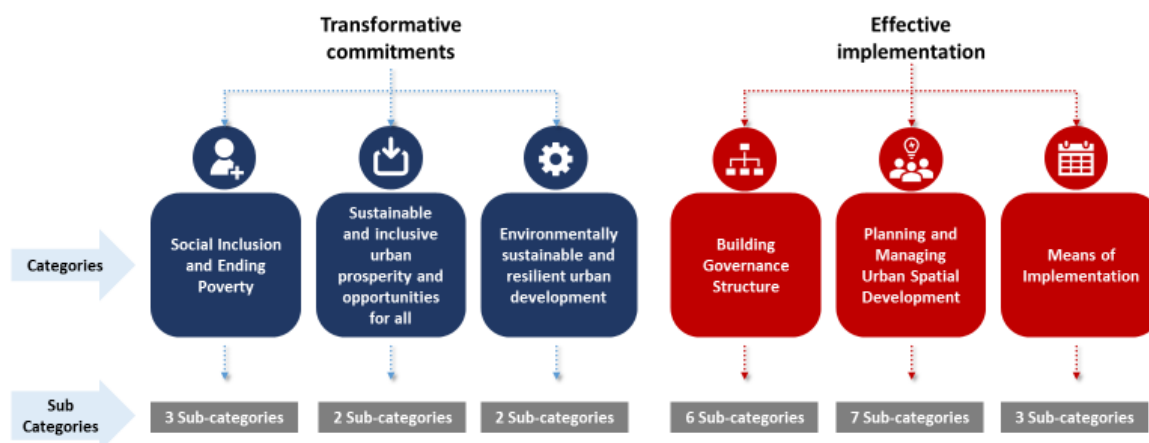


Regarding the numbering convention to be followed in this Framework, all indicators are provided with an accompanying metadata which provides the full descriptions of the definitions and mechanisms of how the data will be collected and reported. For the benchmark year (reference point) for each indicator, since the New Urban Agenda was adopted in October 2016, we recommend using 2016 as the baseline year for a majority of the indicators. In exceptional circumstances, member states will be able to use other reference years particularly for indicators that require longer periods to witness any significant changes. These includes indicators such as urban expansions. In such cases we recommend a +/- 2 years from the baseline year of 2016.

## Development of NUA Monitoring Framework and related indicators

UN-Habitat has worked closely in collaboration with United Nations system entities and the Statistics Division to develop this NUA framework which also complements the Sustainable Development Goal monitoring framework. In reference to the first NUA Quadrennial report[2], UN-Habitat has adopted an incremental approach to designing the reporting framework on the implementation of the New Urban Agenda by, building on the Sustainable Development Goals global monitoring framework and other efforts led by the Department of Economic and Social Affairs and the Statistics Division. This approach focuses on four interrelated elements:

(a) reinforcing systems to produce user-friendly and participatory data platforms;
(b) building on existing dynamic platforms for engagement, participation and partnership, integrating partners into the process to produce data, knowledge and reporting;

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(c) strengthening partnerships with relevant entities of the United Nations system through a United Nations system-wide coordination mechanisms  and;

(d) developing capacities to report on the effective implementation of the sustainable urban development agendas.

The multidimensional and abstract nature of monitoring urban dimensions and progress made in cities represents a methodological challenge for many statisticians and economists. One such challenge has been the need to monitor and track results at the city level, and report progress at the national level using the systems of cities. For countries with many cities, UN-Habitat has developed the national sample of cities as a solution for monitoring a representative set of cities that would allow reporting progress at the national level with limited selection bias[3]. Many of these innovative monitoring approaches have benefited from inputs from numerous scholars, academics, international agencies and organizations, and national governments– and have been tested at the national level and some at subnational levels.

The NUA Monitoring Framework is not only aligned with SDGs but equally aligned with "*Guidelines for Reporting on the Implementation of the New Urban Agenda*" and other various tools develop for SDG urban monitoring.

Explorations and initial consultations leading up to development of the NUA indicators included:

1) a reflection on the broader role and contribution of cities in sustainable development under the SDGs framework;
2) a review of NUA gaps not adequately covered by the SDGs framework;
3) review of recent methodologies and approaches to monitor the role of urban/cities to sustainable development;
4) analysis and reflection on the UN-Habitats' and other UN system's experience in implementing the previous set of the Habitat Agenda.

In the initial consultations, many partners[4] agreed on the importance of looking at the thematic urban indicators for NUA/SDGs at the national as well as urban/city level but also shared the concerns that a more detailed discussion on the indicators at the urban level is necessary.

It is in this context that over half of the currently proposed 77 indicators of the NUA Monitoring Framework reflect various levels of data disaggregation to ensure that no one and no place is left behind.

### Defining city boundaries for global monitoring purposes

The New Urban Agenda and the 2030 Agenda for Sustainable Development includes several targets and indicators that monitoring at the city's levels or for rural and urban areas levels. The broad array of different criteria applied in national definitions of rural and urban areas poses

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[3] https://unhabitat.org/wp-content/uploads/2019/02/National-Sample-of-Cities-UN-Habitat.pdf
[4] Thematic UN-Habitat teams and representatives from the UN Regional commissions.

serious challenges to cross-country comparisons. The Action Framework of the Implementation of the New Urban Agenda (UN-Habitat 2017) and the Global Strategy to improve Agricultural and Rural Statistics (IBRD-WB 2011) both highlight the need for a harmonized method to facilitate international comparisons and to improve the quality of rural and urban statistics in support of national policies and investment decisions.

Definitions of cities, metropolitan areas and urban agglomerations vary depending on legal, administrative, political, economic or cultural criteria in the respective countries and regions. In March 2020, the UN Statistical Commission endorsed a global definition of cities and metropolitan areas [5] to facilitate international comparison. This is referred to as the Degree of Urbanization method. This definition captures the full extent of a city, including the dense neighbourhoods beyond the boundary of the central municipality. As an example, it defines a metropolitan area as a city and its commuting zone, which consists of suburban, peri-urban and rural areas that are economically and socially linked to the city.

The Degree of Urbanization classifies the entire territory of a country along the urban-rural continuum. It combines population size and population density thresholds to capture the full settlement hierarchy. It is applied in a two-step process: First, 1 km$^2$ grid cells are classified based on population density, contiguity and population size. Subsequently, local units are classified based on the type of grid cells their population resides in. This method works best with small administrative or statistical units, such as municipalities or census enumeration areas. For NUA monitoring, we recommend countries to adopt and utilize this global method.

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[5] A recommendation on the method to delineate cities, urban and rural areas for international statistical comparisons. https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3j-Recommendation-E.pdf

## Indicators for monitoring the Transformative Commitments of the NUA

| Indicator | SDG |
|---|---|
| 1.Proportion of population below the international poverty line, by sex, age at national urban level (urban/rural) | 1.1.1 |
| 2. Proportion of total adult Population with secure tenure rights to land with (a) legally recognized documentation; and (b) who perceive their rights to land as secure, by sex and type of tenure | 1.4.2 |
| 3. Mortality rate attributed to household and ambient air pollution | 3.9.1 |
| 4. Presence of Women's recognized legal right to property inheritance and ownership | 5a.2 |
| 5.Proportion of population using safely managed drinking water services; | 6.1.1 |
| 6.Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | 6.2.1 |
| 7.Renewable energy share in the total final energy consumption | 7.2.1 |
| 8.  Annual growth rate of real GDP (per employed person) | 8.2.1 |
| 9.Proportion of informal employment in non-agriculture employment, by sex | 8.31 |
| 10.Unemployment rate by sex, age, persons with disabilities and by city | 8.5.2 |
| 11.Proportion of youth (aged 15-24 years) not in education, employment or training | 8.6.1 |
| 12: Manufacturing employment as a proportion of total employment**Error! Bookmark not defined.** | 9.2.2 |
| 13. Proportion of urban population living in slums, informal settlements or inadequate housing. | 11.1.1 |
| 14. Proportion of the population that has convenient access to public transport disaggregated by age group, sex, and persons with disabilities | 11.2.1 |
| 15.Ratio of land consumption rate to population growth rate. | 11.3.1 |
| 16.Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratic. | 11.3.2 |
| 17.Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage, level of government, type of expenditure and type of private funding | 11.4.1 |
| 18.Proportion of Municipal solid waste collected and managed in controlled facilities | 11.6.1 |
| 19.Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities | 11.7.1 |
| 20: Does your country have a National Urban Policy or Regional Development Plan that (a) responds to population dynamics, (b) ensures balanced territorial development, and (c) increase in local fiscal space. | 11a.1 |
| 21: Material Footprint, material footprint per capita, and material footprint per GDP | 12.2.1 |
| 22: Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP | 12.2.2 |
| 23: Recycling rate, tons of material recycled | 12.5.1 |
| 24: Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions | 16.7.1a |
| 25: Fixed Internet broadband subscriptions per 100 inhabitants, by speed | 17.6.1 |
| 26: Number of days to register a new business in the country | CPI |
| 27: Green Area Per Capita | CPI |
| 28: Population density | CPI |
| 29: Land-use mix | CPI |
| 30: Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted) | 11.6.2 |
| 31: Median amount of money spent on housing and transportation per household as a percentage of the median annual household income of tenants | UID |
| 32: Ratio of the median free-market price of a dwelling unit and the median annual household income | UID |
| 33.Gini coefficient at national/city/ urban levels | CPI |
| 34 Presence of national legislation forbidding discrimination in housing, access to public facilities and social services on the basis of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status | |
| 35 Percentage of road length that has dedicated bike lanes (excluding motorways). | |
| 36 Percentage of road length that has dedicated sidewalks (excluding motorways). | |
| 37 Mortgage debt relative to GDP | |
| 38: Percentage of people living in unaffordable housing | |
| 39  Proportion of cities with slum upgrading programmes | |
| 40: Number of cities having annual budget allocations addressing any of the 5 slum deprivations and inclusive public spaces in known slum areas | |
| 41 Percentage of cities that have integrated housing policies and regulations in their local development plans | |
| 42 Total investment in housing (in both formal and informal sectors in the urban area), as a percentage of gross domestic product. | |
| 43 Percentage of government expenditure dedicated to housing and community amenities | |
| 44 Percentage of commuters using public transport. | |
| 45.Small and medium-sized enterprises percentage share of GDP | |
| 46 Employment in cultural and creative industries of as proportion of total employment | |
| 47 Annual number of vocational and technical education individuals trained | |

**Deleted:**

| | |
|---|---|
| 48.Proportion of land under protected natural areas | |
| 49.Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies. | 11b.2 |
| 50.Percentage subnational/local government budgets dedicated to climate change mitigation and adaptation actions. | 11b.2 |
| 51 Percentage of cities with multi-hazard mapping | |
| 52 Does the country have a multi-hazard monitoring and forecasting system? | |
| 53 The number of cities that have / percentage of urban population that is covered by multi-hazard early warning systems | |
| 54 Existence of an enforced coastal and/or land management plan in the country | |
| 55 Percentage reduction in annual final energy consumption in homes using smart monitoring systems. | |
| 56  Share of street junction with traffic lights connected to traffic management systems | |
| 57. Do local authorities exercise their authority and fulfil their responsibilities in accordance with such procedures and in such cases as provided for by the constitution or by law | |
| 58 Percentage of the total budget that the local / sub-national government have discretion over to decide on priorities (financial autonomy) | |
| 59 Percentage of the local / sub-national government's financial resources generated from endogenous (internal) sources of revenue | |
| 60: Quality of law | |
| 61: Published performance delivery standards at the sub-national level | |
| 62 Number of countries, regional governments and cities in which plans and designs are publicly accessible to residents (on-line) and can be consulted at all times | |
| 63 Number and percent of new population "accommodated" in a plan or city extension. | |
| 64 Number of urban planners per 100,000 persons | |
| 65  Existence of national structure or office or committee for implementing the New Urban Agenda | |
| 66 Stable existence of "transfer formula" in the last 5 years, without major changes, meaning reductions of more than 10%. | |
| 67 Existence of at least one municipal finance or infrastructure fund available for local governments | |
| 68 Percentage of local/sub-national government's financial resources generated from financial intermediaries such as multilateral institutions, regional development banks, subnational and local development funds, or pooled financing mechanisms. | |
| 69 Number of cities participating in city-to-city partnerships programmes | |
| 70: Number of public water and sanitation utilities participating in institutional capacity development programmes | |
| 71 Percentage of cities and subnational governments with staff trained in formulation, and implementation of urban development policies | |
| 72 Size of budget of local government associations | |
| 73.Number of people who have been trained in the use of land-based revenue and financing tools | |
| 74.Percentage of cities/subnational staff trained in financial planning and management | |
| 75. Percentage of cities utilizing e-governance and citizen-centric digital governance tools | |
| 76.Percentage of cities utilizing geospatial information systems | |
| 77 Number of countries that have participated in capacity building workshops on New Urban Agenda indicators | |

# Table 1: Matched Indicators with NUA commitments

| **Indicators for monitoring the Transformative Commitments of the NUA** | | |
|---|---|---|
| **1.1 Sustainable urban development for social inclusion and ending poverty** | **1.1.1 Social Inclusion and Ending Poverty** | |
| | **1.1.1.1 Eradicate poverty in all its forms** | 1. Proportion of population below the international poverty line, by sex, age at national urban level |
| | **1.1.1.2 Address inequality in urban areas by promoting equally shared opportunities and benefits** | 10: Unemployment rate by sex, age, persons with disabilities and by city |
| | | 33. Gini coefficient at national/ city /urban levels; |
| | **1.1.1.3 Enhance social inclusion of vulnerable groups (women, youth, older persons and persons with disabilities and migrants).** | 4 Women's recognized legal right to property inheritance and ownership |
| | | 34 Presence of national legislation forbidding discrimination in housing, access to public facilities and social services on the basis of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status |
| | | 19: Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities. |
| | **1.1.1.4 Ensure equal access to public spaces including streets, sidewalks, and cycling lanes** | 35: Percentage of road length that has dedicated bike lanes (excluding motorways). |
| | | 36: Percentage of road length that has dedicated sidewalks (excluding motorways). |
| | **1.1.2 Access to Adequate Housing:** | |
| | **1.1.2.1 Ensure access to adequate and affordable housing** | 31: Median amount of money spent on housing and transportation per household as a percentage of the median annual household income of tenants[1] |
| | | 32: Ratio of the median free-market price of a dwelling unit and the median annual household income[2] |
| | | 38 Percentage of people living in unaffordable housing |
| | **1.1.2.2 Provide access to sustainable housing finance options** | 37 Mortgage debt relative to GDP |
| | **1.1.2.3 Support security of tenure** | 2 Proportion of total adult population with secure tenure rights to land with (a) legally recognized documentation; and (b) who perceive their rights to land as secure, by sex and type of tenure |
| | | 39 Proportion of cities with slum upgrading programmes |
| | | 40 Number of cities having annual budget allocations addressing any of the 5 slum deprivations and inclusive public spaces in known slum areas. |
| | | 41 Percentage of cities that have integrated housing policies and regulations in their local development plans[3] |
| | **1.1.2.4 Establish slum upgrading programmes** | 42 Total investment in housing (in both formal and informal sectors in the urban area), as a percentage of gross domestic product.[4] |
| | **1.1.2.5 Integrate housing into urban development plans** | 43 Percentage of government expenditure dedicated to housing and community amenities |
| | **1.1.3 Access to Basic Services:** | |
| | **1.1.3.1 Access to safe drinking water, sanitation and solid waste disposal** | 5 Proportion of population using safely managed drinking water services; |
| | | 6 Proportion of population using safely managed sanitation services; |
| | | 18: Proportion of municipal solid waste collected and managed in controlled facilities out of total Municipal Solid Waste generated by cities; |
| | **1.1.3.2 Access to safe and efficient public transport system** | 44 Percentage of commuters using public transport. |
| | **1.1.3.3 Access to modern renewable energy** | 7 Renewable energy share in the total final energy consumption. |
| | **1.1.3.4 Access to Information Communication technology (ICT)** | 25: Fixed Internet broadband subscriptions per 100 inhabitants, by speed; |

| **Indicators for monitoring the Transformative Commitments of the NUA** | | |
|---|---|---|
| **1.2 Sustainable and inclusive urban prosperity and opportunities for all** | **1.2.1 Inclusive Urban Economy** | |
| | **1.2.1.1 Promote productive employment for all including youth employment** | 11: Proportion of youth (aged 15-24 years) not in education, employment or training |
| | | 8: Annual growth rate of real GDP per employed person |
| | **1.2.1.2 Support the informal economy** | 9: Proportion of informal employment in non-agriculture employment, by sex. |
| | **1.2.1.3 Support small and medium-sized enterprises** | 45 Small and medium-sized enterprises percentage share of GDP. |
| | **1.2.1.4 Promote an enabling, fair and responsible environment for business and innovation** | 26: Number of days to register a new business in the country |
| | **1.2.2 Sustainable Urban Prosperity** | |
| | **1.2.2.1 Support the diversification of the urban economy and promote cultural and creative industries** | 46 Employment in cultural and creative industries of as proportion of total employment |
| | | 12: Manufacturing employment as a proportion of total employment |
| | **1.2.2.2 Develop technical and entrepreneurial skills to thrive in a modern urban economy** | 47 Annual number of vocational and technical education individuals trained |
| | **1.2.2.3 Strengthen urban-rural linkages to maximize productivity** | 20: Does your country have a National Urban Policy or Regional Development Plan that (a) responds to population dynamics, (b) ensures balanced territorial development, and (c) increase in local fiscal space. [1] |
| | | |

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## Indicators for monitoring the Transformative Commitments of the NUA

| | | |
|---|---|---|
| **1.3 Environmentally sustainable and resilient urban development** | **1.3.1 Resilience, Mitigation, and Adaption of Cities and Human Settlements** | |
| | **1.3.1.1 Address urban sprawl and loss of biodiversity[1]** | 15: Ratio of land consumption rate to population growth rate. |
| | | 48: Proportion of land under protected natural areas. |
| | | |
| | **1.3.1.2 Climate change mitigation and adaptation actions** | 49: Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies. |
| | | 50: Percentage subnational/local government with budgets dedicated to climate change mitigation and adaptation actions. |
| | | 51: Percentage of cities with multi-hazard mapping |
| | | 30: Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted) |
| | | 3: Mortality rate attributed to household and ambient air pollution[2] |
| | **1.3.1.3 Develop systems to reduce the impact of natural and human-made disasters[3]** | 52: Does the country have a multi-hazard monitoring and forecasting system? |
| | | 53: The number of cities that have / percentage of urban population that is covered by multi-hazard early warning systems. |
| | **1.3.1.4 Build urban resilience through quality infrastructure and spatial planning** | 51 Percentage of cities with multi-hazard mapping |
| | | |
| | **1.3.2 Sustainable Management and use of natural resources** | |
| | **1.3.2.1 Strengthen the sustainable management of natural resources in urban areas[1]** | 21: Material footprint, material footprint per capita, and material footprint per GDP. |
| | | 22: Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP. |
| | | 27: Green Area per capita |
| | **1.3.2.2 Promote resource conservation and waste reduction, reuse, and recycling** | 23: Recycling rate, tons of material recycled. |
| | **1.3.2.3 Implement environmentally sound management of water resources and coastal areas** | 54 Existence of an enforced coastal and/or land management plan in the country. |
| | **1.3.2.4 Adopt a smart-city approach that leverages digitization, clean energy and technologies [2]** | 55: Percentage reduction in annual final energy consumption in homes using smart monitoring systems. |
| | | 56: Share of street junction with traffic lights connected to traffic management systems |

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| Indicators for monitoring Effective Implementation | | |
|---|---|---|
| **2.1 Building Governance Structure: Establishing a supportive Framework** | **2.1.1 Decentralization to enable subnational and local governments undertake their assigned responsibilities[1]** | 57: Do local authorities exercise their authority and fulfil their responsibilities in accordance with such procedures and in such cases as provided for by the constitution or by law? |
| | | 58: Percentage of the total budget that the local / sub-national government have discretion over to decide on priorities (financial autonomy) |
| | | 59: Percentage of the local / sub-national government's financial resources generated from endogenous (internal) sources of revenue |
| | **2.1.2 Linking urban policies to finance mechanisms and budgets** | 59: Percentage of the local / sub-national government's financial resources generated from endogenous (internal) sources of revenue |
| | **2.1.3 Legal and policy frameworks to enhance the ability of governments to implement urban policies** | 60: Quality of law |
| | **2.1.4 Strengthen the capacity of local and subnational governments to implement local and metropolitan multilevel governance** | 61: Published performance delivery standards at the sub-national level |
| | **2.1.5 Promote participatory, age- and gender-responsive approaches to urban policy and planning** | 16: Proportion of cities with a direct participation structure of civil society engagement in urban planning and management, which are regular and democratic. |
| | **2.1.6 Promote women's full participation in all fields and all levels of decision-making** | 24: Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions |
| **2.2 Planning and Managing Urban Spatial Development** | **2.2.1 Integrated and balanced territorial development policies** | 20: Does the country have a National Urban Policy or Regional Development Plan that (a) responds to population dynamics, (b) ensures balanced territorial development, and (c) increase in local fiscal space.[1] |
| | | 62: Number of countries, regional governments, and cities in which plans and designs are publicly accessible to residents (on-line) and can be consulted at all times |
| | **2.2.2 Integrate housing into urban development plans** | 13: Proportion of urban population living in slums, informal settlements or inadequate housing |
| | **2.2.3 Inclusion of culture as a priority component of urban planning** | 17: Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage, level of government, type of expenditure and type of private funding |
| | **2.2.4 Planned urban extensions and infill, urban renewal and regeneration of urban areas** | 28: Population Density |
| | | 29: Land-use mix |
| | | 63: Number and percent of new population "accommodated" in a plan or city extension |
| | **2.2.5 Improved capacity for urban planning and design, and training for urban planners at all levels of government** | 64: Number of urban planners per 100,000 persons |
| | **2.2.6 Strengthening the role of small and intermediate cities and towns** | 20: Does your country have a National Urban Policy or Regional Development Plan that (a) responds to population dynamics, (b) ensures balanced territorial development, and (c) increase in local fiscal space. |
| | **2.2.7 Promote sustainable multimodal public transport systems including non-motorized options** | 14: Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities |
| | | 35: Percentage of road length that has dedicated bike lanes (excluding motorways). |
| | | 36: Percentage of road length that has dedicated sidewalks (excluding motorways). |

| 2.3 Means of Implementation | 2.3.1 Mobilization of Financial Resources | |
|---|---|---|
| | **2.3.1.1 Develop financing frameworks for implementing the NUA at all levels of government** | 65 Existence of national structure or office or committee for implementing the New Urban Agenda |
| | **2.3.1.2 Mobilize endogenous (internal) sources of finance and expand the revenue base of subnational and local governments** | 58: Percentage of the total budget that the local / sub-national government have discretion over to decide on priorities (financial autonomy) |
| | | 59: Percentage of the local / sub-national government's financial resources generated from endogenous (internal) sources of revenue |
| | **2.3.1.3 Promote sound systems of financial transfers from national to subnational and local governments based on needs, priorities and functions** | 66: Stable existence of "transfer formula" in the last 5 years, without major changes, meaning reductions of more than 10%. |
| | **2.3.1.4 Mobilize and establish financial intermediaries (multilateral institutions, regional development banks, subnational and local development funds; pooled financing mechanisms etc.) for urban financing** | 67: Existence of at least one finance or infrastructure fund available for local / sub-national governments. |
| | | 68: Percentage of the local / sub-national government's financial resources generated from financial intermediaries such as multilateral institutions, regional development banks, subnational and local development funds, or pooled financing mechanisms. |
| | 2.3.2 Capacity Development | |
| | **2.3.2.1 Expand opportunities for city-to-city cooperation and fostering exchanges of urban solutions and mutual learning** | 69: Number of cities participating in city-to-city partnership programmes |
| | | 70: Number of public water and sanitation utilities participating in institutional capacity development programmes |
| | **2.3.2.2 Promote the capacity development as a multifaceted approach to formulate, implement, manage, monitor and evaluate urban development policies** | 71: Percentage of cities and subnational governments with staff trained in formulation, implementation, managing, monitoring and evaluation of urban development policies. |
| | **2.3.2.3 Strengthen the capacity of all levels of government to work with vulnerable groups to participate effectively in decision-making about urban and territorial development.** | 16: Proportion of cities with a direct participation structure of civil society engagement in urban planning and management, which are regular and democratic. |
| | **2.3.2.4 Support local government associations as promoters and providers of capacity development** | 72: Size of budget of local government associations |
| | **2.3.2.5 Promote capacity development programmes on the use of legal land-based revenue and financing tools** | 73: Number of people who have been trained in the use of land-based revenue and financing tools by UN-Habitat or other institutions |
| | **2.3.2.6 Promote capacity development programmes of subnational and local governments in financial planning and management** | 74: Percentage of cities/subnational staff trained in financial planning and management |
| | 2.3.3 Information Technology and Innovation | |
| | **2.3.3.1 Development of user-friendly, participatory data and digital platforms through e-governance and citizen-centric digital governance tools** | 75: Percentage of cities utilizing e-governance and citizen-centric digital governance tools |
| | **2.3.3.2 Use of digital tools, including geospatial information systems to improve urban and territorial planning, land administration and access to urban services** | 76: Percentage of cities utilizing geospatial information systems |
| | **2.3.3.3 Strengthen capacities at all levels of government to effectively monitor the implementation of urban development policies** | 71: Percentage of cities and subnational governments with staff trained in formulation and implementation of urban development policies |
| | **2.3.3.4 Support all levels of governments in the collection, disaggregation, and analysis of data** | 77: Number of countries that have participated in capacity building workshops on New Urban Agenda indicators |

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# Metadata for the various indicators.

**1.Proportion of population below the international poverty line, by sex, age at national urban level (urban/rural)**
Adaptation: From SDG indicator 1.1.1 developed by the World bank

**Definition:**

The indicator "Proportion of population below the international poverty line" is defined as the percentage of the population living on less than $1.90 a day at 2011 international prices. The 'international poverty line' is currently set at $1.90 a day at 2011 international prices (also called purchasing power parity).[6] The $1.90 is the extreme poverty line and represents the poverty line typical of the world's poorest countries. It is used to measure global poverty and compare poverty among less developed countries[7].
Poverty is state or condition of having little or no money/goods/means of support[8].

**Rationale:**

Monitoring poverty is important for both national and international economic planning purposes. The data is used to formulate poverty reduction policies. One of the major obstacles to sustainable development worldwide is the high proportion of populations in many countries that are enduring of multiple forms of poverty (NUA §3). The New Urban Agenda aims to end poverty and hunger in all its forms and dimensions (NUA §3). One way of ensuring the principle that no one is left behind is by ending poverty. In the New Urban Agenda, Member States are committed eradicating poverty in all its forms and dimensions, including extreme poverty (NUA §25).

**Computation Method:**

To measure poverty across countries consistently, the World Bank's international measures apply a common standard, anchored to what "poverty" means in the world's poorest countries. The original "$1-a-day" line was based on a compilation of national lines for only 22 developing countries, mostly from academic studies in the 1980s (Ravallion, et al., 1991). While this was the best that could be done at the time, the sample was hardly representative of developing countries even in the 1980s. Since then, national poverty lines have been developed for many other countries. Based on a new compilation of national lines for 75 developing countries, Ravallion, Chen and Sangraula (RCS) (2009) proposed a new international poverty line of $1.25 a day. This is the average poverty line for the poorest 15 countries in their data set.

The current extreme poverty line is set at $1.90 a day in 2011 PPP terms, which represents the mean of the national poverty lines found in the same poorest 15 countries ranked by per capita consumption. The new poverty line maintains the same standard for extreme poverty - the poverty line typical of the poorest countries in the world - but updates it using the latest information on the cost of living in developing countries.

When measuring international poverty of a country, the international poverty line at PPP is converted to local currencies in 2011 price and is then converted to the prices prevailing at the time of the relevant household survey using the best available Consumer Price Index (CPI). (Equivalently, the survey data on household consumption or income for the survey year are expressed in the prices of the ICP base year, and then converted to PPP $'s.) Then the poverty rate is calculated from that survey. All inter-temporal comparisons are real, as assessed using the country-specific CPI. Interpolation/extrapolation methods are used to line up the survey-based estimates with these reference years.[9]

**Data Sources and Frequency of Data Collection:**

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[6] For detailed definitions and methodology refer to https://unstats.un.org/sdgs/metadata/files/Metadata-01-01-01a.docx
[7] https://datahelpdesk.worldbank.org/knowledgebase/articles/193308-there-are-multiple-international-poverty-lines-wh
[8] UN-HABITAT, 2019, "Resilience General Glossary English"
[9] https://unstats.un.org/sdgs/metadata/files/Metadata-01-01-01a.docx

The main source of data is the national statistical offices (NSOs). After the poverty rate is computed, it should be reported to UNHABITAT. Data should be monitored annually.

**References:**
- https://unstats.un.org/sdgs/metadata/files/Metadata-01-01-01a.docx
- http://iresearch.worldbank.org/PovcalNet/index.htm
- For more information and methodology, please see PovcalNet (http://iresearch.worldbank.org/PovcalNet/index.htm).
- Also, consult: http://documents.worldbank.org/curated/en/2015/10/25114899/global-count-extreme-poor-2012-data-issues-methodology-initial-results
- For a short review see: http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq
- For a comprehensive link to related background papers, working papers and journal articles see:
- http://iresearch.worldbank.org/PovcalNet/index.htm?0,4
- A Measured Approach to Ending Poverty and Boosting Shared Prosperity: Concepts, Data, and the Twin Goals. (http://www.worldbank.org/en/research/publication/a-measured-approach-to-ending-poverty-and-boosting-shared-prosperity)

**2. Proportion of total adult Population with secure tenure rights to land with (a) legally recognized documentation; and (b) who perceive their rights to land as secure, by sex and type of tenure**
Adapted from SDG 1.4.2

**Definition:**
The Indicator measures the relevant part of Target 1.4 (ensure men and women have equal rights to economic resources, as well as access to ownership of and control over land and other forms of property, inheritance, natural resources) [10]. It measures the results of policies that aim to strengthen tenure security for all, including women and other vulnerable groups.

The Indicator covers (a) all types of land use (such as residential, commercial, agricultural, forestry, grazing, wetlands based on standard land-use classification) in both rural and urban areas; and (b) all land tenure types as recognized at the country level, such as freehold, leasehold, public land, customary land. An individual can hold land in his/her own name, jointly with other individuals, as a member of a household, or collectively as member of group, cooperative or other type of association[11].

**Rationale:**
Member States committed to promoting increased security of tenure for all, recognizing the plurality of tenure types, and to developing fit-for-purpose and age-, gender- and environment-responsive solutions within the continuum of land and property rights, with particular attention to security of land tenure for women as key to their empowerment, including through effective administrative systems (NUA §35). In addition, they committed to encourage the development of policies, tools, mechanisms and financing models that promote access to a wide range of affordable, sustainable housing options, including rental and other tenure options, as well as cooperative solutions such as co-housing, community land trusts and other forms of collective tenure, prevent segregation and arbitrary forced evictions and displacements and provide dignified and adequate New Urban Agenda reallocation (NUA §107).

Land is one of the four factors of production that are needed to produce goods and services; the other three are labor, capital, and entrepreneurship. Land is closely linked to access to, use of and control of other resources. Land generates income by being rented or sold; or growing food or cash crops. Hence, land is key to poverty reduction. When owners of land have legally documented ownership and perceive that they have tenure security, then they can invest as well as use the land as collateral to get loans to invest on the land. Hence, land tenure can unlock access to capital that can be used to develop the land. Security of tenure should also apply to women since they should have the same rights as men.[12]
This indicator will enable governments to track progress on tenure rights and encourage them to improve their performance in terms of land governance. It will also provide information on implementation capacity as well as lead to equality of security of tenure for men and women. Women's land ownership improves their standard of living, equality, empowerment and their ability to influence intergenerational land transfer.

**Computation Method:**
The indicator is the proportion of adult population with recognized documentation to land and the proportion of adult population who perceive that their rights are secure. It measures the sex-disaggregated status of tenure security on all types of land in rural and urban areas.
For constructing sub-indicator (a) identify all tenure arrangements in the country and types of tenure documents (titles, leaseholds, rental etc.).

$$A = \left(\frac{\textit{Adult population with recognized documentation over land}}{\textit{Total Adult population}}\right) \times 100$$

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[10] Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
[11] https://unstats.un.org/sdgs/metadata/files/Metadata-01-04-02.docx.
[12] World Bank, FAO and UN-HABITAT, 2018, "**Measuring Individuals' Right to Land**: An Integrated Approach to Data Collection for SDG Indicators 1.4.2 and 5.a.1", Washington, DC: World Bank.© FAO, The World Bank, and UN-Habitat. License: CC BY-NC-SA 3.0 IGO

To construct sub-indicator (b), the perceptions of tenure security are based on possibility of involuntary loss of land within the next five years and the landholder's right to bequeath the land.

$$B = (\frac{Adult\ population\ who\ perceive\ their\ rights\ as\ secure}{Total\ Adult\ population}) \times 100$$

**Data Sources and Frequency of Data Collection:**
Questions on this indicator can be part of multi-topic household surveys, household income and expenditures surveys, population censuses conducted by national statistical offices. Additional data sources are land registries (cadasters). Data to be collected every two years. National Statistical Offices to report the data on the indicator to UNHABITAT.

**Reference:**

1. World Bank, FAO and UN-HABITAT, 2018, "**Measuring Individuals' Right to Land**: An Integrated Approach to Data Collection for SDG Indicators 1.4.2 and 5.a.1", Washington, DC: World Bank.© FAO, The World Bank, and UN-Habitat. License: CC BY-NC-SA 3.0 IGO
2. https://unstats.un.org/sdgs/metadata/files/Metadata-01-04-02.docx
3. Kilic, T., and Moylan, H. (2016). "Methodological experiment on measuring asset ownership from a gender perspective (MEXA): technical report." Washington, DC: World Bank
4. **Selected Land policy normative documents**
5. Africa Union, African Development bank and United Nations Economic Commission for Africa (1999). Land Policy in Africa: A Framework to Strengthen Land Rights, Enhance Productivity and Secure Livelihoods. Available at: https://www.uneca.org/publications/framework-and-guidelines-landpolicy-africa
6. Africa Union, African Development bank and United Nations Economic Commission for Africa (2014). Guiding Principles on Large-Scale Land-Based Investment in Africa. Nairobi. Available at: https://www.uneca.org/sites/default/files/PublicationFiles/guiding_principles_eng_rev_era_size.pdf
7. Food and Agriculture Organization of the United Nations (2012). Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Available at: http://www.fao.org/docrep/016/i2801e/i2801e.pdf
8. **Proceedings EGMs for SDG 1.4.2**
9. Expert Group Meetings on methodology development using survey data: https://gltn.net/home/download/international-expert-group-meeting-on-land-tenure-security-to-develop-a-set-of-household-survey-questions-for-monitoring-sdg-indicator-1-4-2/?wpdmdl=111
10. Expert Group Meetings on methodology development using administrative data (http://documents.worldbank.org/curated/en/482991505367111149/pdf/119691-WP-P095390-PUBLIC-SDGEGMproceedingsuseofadministrativedatalandagencies.pdf)
11. Consolidated essential questions land module for 1.4.2 and 5.a.1 (FAO, UN-Habitat, UN Women, World Bank). Module for individual interviewing under preparation; Version for household surveys with proxy respondents; available at: http://documents.worldbank.org/curated/en/812621505371556739/Land-tenure-module-essential-questions-for-data-collection-for-1-4-2-and-5-a-1).

### 3. Mortality rate attributed to household and ambient air pollution

Adapted from SDG Indicator 3.9.1: Mortality rate attributed to household and ambient air pollution.
https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-01.docx

**Definition:**

The early deaths attributable to the joint effects of household and ambient (outdoor) air pollution can be expressed as: Number of deaths and Death rate. Death rates are calculated by dividing the number of deaths by the total population (or indicated if a different population group is used, e.g. children under 5 years)[13].

Evidence from epidemiological studies have shown that exposure to air pollution is linked to the important diseases that are taken into account in this estimate, among others:
- Acute respiratory infections in young children (estimated under 5 years of age);
- Cerebrovascular diseases (stroke) in adults (estimated above 25 years);
- Ischaemic heart diseases (IHD) in adults (estimated above 25 years);
- Chronic obstructive pulmonary disease (COPD) in adults (estimated above 25 years); and
- Lung cancer in adults (estimated above 25 years).

**Rationale:**

As part of a broader project to assess major risk factors to health, the mortality resulting from exposure to ambient (outdoor) air pollution and household (indoor) air pollution from polluting fuel used for cooking was assessed. Ambient air pollution results from emissions from industrial activity, households, cars and trucks which are complex mixtures of air pollutants, many of which are harmful to health. Of all of these pollutants, fine particulate matter has the greatest effect on human health. Polluting fuels include wood, coal, animal dung, charcoal, crop wastes and kerosene. Air pollution is the biggest environmental risk to health. Most of the burden is borne by the populations in low and middle-income countries.

Member States committed themselves to improving household and ambient air quality in the New Urban Agenda (NUA §67).

*Comments and Limitations:*

An approximation of the combined effects of risk factors is possible if independence and little correlation between risk factors with impacts on the same diseases can be assumed (Ezzati et al, 2003). In the case of air pollution, however, there are some limitations to estimate the joint effects: limited knowledge on the distribution of the population exposed to both household and ambient air pollution, correlation of exposures at individual level as household air pollution is a contributor to ambient air pollution, and non-linear interactions (Lim et al, 2012; Smith et al, 2014). In several regions, household air pollution remains mainly a rural issue, while ambient air pollution is predominantly an urban problem. Also, in some continents, many countries are relatively unaffected by household air pollution, while ambient air pollution is a major concern. If assuming independence and little correlation, a rough estimate of the total impact can be calculated, which is less than the sum of the impact of the two risk factors.

**Computation Method**

Attributable mortality is calculated by first combining information on the increased (or relative) risk of a disease resulting from exposure, with information on how widespread the exposure is in the population (e.g. the annual mean concentration of particulate matter to which the population is exposed, proportion of population relying primarily on polluting fuels for cooking).

This allows calculation of the 'population attributable fraction' (PAF), which is the fraction of disease seen in a given population that can be attributed to the exposure (e.g. in that case of both the annual mean concentration of particulate matter and exposure to polluting fuels for cooking).

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[13] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-01.docx, but it has been shortened.

Applying this fraction to the total burden of disease (e.g. cardiopulmonary disease expressed as deaths) gives the total number of deaths that results from exposure to that particular risk factor (in the example given above, to ambient and household air pollution).

To estimate the combined effects of risk factors, a joint population attributable fraction is calculated, as described in Ezzati et al (2003).

The mortality associated with household and ambient air pollution was estimated based on the calculation of the joint population attributable fractions assuming independently distributed exposures and independent hazards as described in (Ezzati et al, 2003).

The joint population attributable fractions (PAF) were calculated using the following formula:
PAF=1-PRODUCT (1-PAFi)
where PAFi is PAF of individual risk factors.

The PAF for ambient air pollution and the PAF for household air pollution were assessed separately, based on the Comparative Risk Assessment (Ezzati et al, 2002) and expert groups for the Global Burden of Disease (GBD) 2010 study (Lim et al, 2012; Smith et al, 2014).

For exposure to ambient air pollution, annual mean estimates of particulate matter of a diameter of less than 2.5 um (PM2.5) were modelled as described in (WHO 2016), or for Indicator 11.6.2.

PAF=SUM(Pi(RR-1)/(SUM(RR-1)+1)

Where i is the level of PM2.5 in ug/m3, and Pi is the percentage of the population exposed to that level of air pollution, and RR is the relative risk.

The calculations for household air pollution are similar and are explained in detailed elsewhere (WHO 2014a).
Exposure: SDG Indicator 7.1.2 "Proportion of population with primary reliance on clean fuels and technology" was used as exposure indicator for household air pollution.

Annual mean concentration of particulate matter of less than 2.5 um was used as exposure indicator for ambient air pollution. The data is modelled according to methods described for SDG Indicator 11.6.2.

Exposure-risk function: The integrated exposure-response functions (IER) developed for the GBD 2010 (Burnett et al, 2014) and further updated for the GBD 2013 study (Forouzanfar et al, 2015) were used.
Health data: The total number of deaths by disease, country, sex and age group have been developed by the World Health Organization (WHO 2014b).

Disaggregate by sex, by disease, and by age.


**Data Sources and Frequency of Data Collection:**

Annual monitoring. Cities could request this data from ministry of health and ministry of environment.
Some data is available by country, sex, disease and age at WHO website. Data on this indicator should be reported to UNHABITAT.

**References:**

1. www.who.int/gho/phe
2. https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-01.docx
3. Bonjour et al (2013). Environ Health Perspect, doi:10.1289/ehp.1205987.
4. Burnett et al (2014). Environ Health Perspect, Vol 122, Issue 4.
5. Ezzati et al (2003). The Lancet, 362:271-80.

6.  Ezzati et al (2002). The Lancet. 360(9343):1347-60.
7.  Forouzanfar et al (2015). The Lancet, 386:2287-323.
8.  Lim et al (2012). The Lancet, 380(9859):2224-60.
9.  Smith et al (2014). Annu.Rev.Public Health, Vol 35.
10. WHO (2014a), Methods description for the burden of disease attributable to household air pollution. Access at : http://www.who.int/phe/health_topics/outdoorair/database/HAP_BoD_methods_March2014.pdf?ua=1
11. WHO (2014b), Global Health Estimates 2013: Deaths by Cause, Age and Sex, by Country, 2000-2012 (provisional estimates). Geneva, World Health Organization, 2014.
12. WHO (2016), Air pollution: a global assessment of exposure and burden of disease, WHO, Geneva.

## 4. Presence of Women's recognized legal right to property inheritance and ownership
Adapted from SDG-5.a.2.

**Definition:**
The indicator collects all existing national policy objectives, draft provisions, legal provisions and implementing legislation that reflect good practices in guaranteeing women's equal rights to land ownership and/or control. It is a de jure or process indicator, in that it monitors reforms in the legal and policy framework that support women's equal rights to economic resources, ownership and control over land, with a focus on the adoption of legal reforms to promote women's land rights. It covers both urban and rural land[14].

**Rationale:**
This indicator is a process indicator that monitors reforms in the legal and policy framework that support women's rights to land ownership and control in both urban and rural areas. In the New Urban Agenda, Member States committed themselves to promoting (at the appropriate level of government) increased security of tenure for all, permitting a continuum of land and property rights, and recognizing that security of land tenure for women as key to their empowerment, and setting up effective administrative systems (NUA §35).

The focus on land of this Indicator reflects the recognition that land is a key economic resource inextricably linked to access to, use of and control over other economic and productive resources. It is a key input for agricultural production; it can be used as collateral to access financial resources, extension services or to join producer organisations; and, it can generate income directly, if rented or sold. It also acknowledges that women's ownership of and/or control of land is critical for poverty reduction, food security, inclusiveness and overall sustainable development objectives. Finally, gender equality in land ownership and control is a human right. For example, Article 3 of the International Covenant on Civil and Political Rights (ICCPR) guarantees equality between women and men, and prohibits discrimination based on sex in Article 2. Article 26 of the treaty enshrines equality before the law, and can be applied to defend women's right to non-discrimination and equality, not only with respect to civil and political rights, but also with economic and social rights. Further, the Convention on the Elimination of Discrimination Against Women (CEDAW), emphasizes that discrimination against women "violates the principles of equality of rights and respect for human dignity".

**Computation Method:**
The indicator "measures" the level to which a country's legal framework supports women's land rights, it is not directly measurable, by testing that framework against six proxies drawn from international law and internationally accepted good practices, in particular the Convention on the Elimination of Discrimination Against Women (CEDAW) ratified by 189 countries, and the Voluntary Guidelines for the Responsible Governance of the Tenure of Land Fisheries and Forestry (VGGT) endorsed unanimously by Committee of Food Security (CFS) members in 2012[15]. [16]
• Proxy A: Is the joint registration of land compulsory or encouraged through economic incentives?
• Proxy B: Does the legal and policy framework require spousal consent for land transactions?
• Proxy C: Does the legal and policy framework support women's and girls' equal inheritance rights?
• Proxy D: Does the legal and policy framework provide for the allocation of financial resources to increase women's ownership and control over land?
• Proxy E: In legal systems that recognize customary land tenure, does the legal and policy framework explicitly protect the land rights of women?
• Proxy F: Does the legal and policy framework mandate women's participation in land management and administration institutions?

Collectively, these proxies will track progress under this indicator based on good practices included in national legal frameworks. These proxies will assist to tackle the main constraints and gender biases that women face to ensure the security of their land rights.
*Reporting process for indicator*

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[14] On the other hand, SDG-5.a.1 is a de facto or output indicator, presenting the actual women's and men's land rights and tenure security in a given country focusing on agricultural lands.
[15] More detail can be found at https://unstats.un.org/sdgs/metadata/files/Metadata-05-0A-02.docx
[16] Reference www.fao.org/3/I8785EN/i8785EN.pdf

1. National governments should identify a national entity and legal expert that will be responsible for collection of data, usually the Ministry of Land or national agencies responsible for land matters or the Ministry of Justice.
2. Identify a national legal expert to conduct legal assessment for indicator. The national expert should be knowledgeable in matters regarding property rights in his or her country and have good legal research skills.
3. The national legal expert should conduct a survey every two years to identify the legal and policy framework for each proxy is found providing appropriate reference for the legal and policy framework. The survey contains three forms:
   - **Form 1 "Checklist of policy and legal instruments."** This form provides a checklist of the relevant policy and legal instruments for each proxy.
   - **Form 2 "List of policy and legal instruments for reporting under indicator 5.a.2."** This form is where the details of instruments containing the proxy are provided and relevant provisions cited.
   - **Form 3 "Questionnaire on indicator."** This form summarizes the results of the assessment for each proxy.
4. The results of the assessment and computing will be checked and validated by the responsible entity. It is recommended that this is a transparent process, open to the participation of civil society and a cross-section of government institutions.

Statistical data on land ownership should be disaggregated by sex, to facilitate measurement of progress on effectiveness of the legal framework on women's equal rights to land.

**Data Sources and Frequency of Data Collection:**
Policies, Primary law, and secondary legislation. Any legal or policy provision must be publicly available. Data to be collected annually.

References

1. FAO, "Realizing women's rights to land in the law: A guide for reporting on SDG indicator 5.a.2", www.fao.org/3/I8785EN/i8785EN.pdf

2. https://unstats.un.org/sdgs/metadata/files/Metadata-05-0A-02.docx

## 5.Proportion of population using safely managed drinking water services;

**Definition:**
The percentage of the population that is using an improved drinking water source that is protected from chemical and faecal contamination. Improved drinking water sources include: piped water into dwelling, yard or plot; public taps or standpipes, boreholes or tube wells, protected dug wells, protected springs, bottled water, delivered water and rainwater.

**Rationale:**
The aim is to determine the portion of the population with "sustainable access" to "safe drinking water". The indicator also addresses dimensions accessibility, availability and quality. Water is essential for human life and well being. Safe water reduces the incidence of disease. Safe drinking water reduces the incidence of diarrhea and deaths due to diarrhea. In addition, the water has to be affordable to households, enough for every household member and available without too much physical exertion and time[17].

The New Urban Agenda envisions progressive realization of the right to adequate housing, a major part of which is universal access to safe and affordable drinking water (NUA §13). In this regard, they committed themselves to ensure universal and equitable access to safe and affordable drinking water for all (NUA §119).

**Computation Method:**
Household surveys and censuses currently provide information on types of basic drinking water sources listed above and indicate if sources are on premises. These data sources often have information on the availability of water and increasingly on the quality of water at the household level, through direct testing of drinking water for faecal or chemical contamination. These data will be combined with data on availability and compliance with drinking water quality standards (faecal and chemical) from administrative reporting or regulatory bodies.

The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) estimates access to basic services for each country, separately in urban and rural areas, by fitting a regression line to a series of data points from household surveys and censuses. This approach was used to report on use of 'improved water' sources for MDG monitoring. The JMP is evaluating the use of alternative statistical estimation methods as more data become available.

The JMP 2017 update and SDG baselines report describes in more detail how data on availability and quality from different sources can be combined with data on use of different types of supplies, as recorded in the current JMP database to compute the safely managed drinking water services indicator.

**Data Sources and Frequency of Data Collection:**

Data on drinking water sources is available from household surveys such as Demographic Health Survey, MICS etc. Estimates access to basic services for urban and rural areas separately.
UN-HABITAT encourages production of city level estimates to facilitate city level analysis and policy formulation. For purposes of monitoring the New Urban Agenda disaggregate by urban/rural and city level and income level if possible.
Data collection should be every other year.

**Reference:**
1. www.washdata.org
2. JMP website: www.washdata.org.

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[17] UN-HABITAT, "Urban Indicator Guidelines", July 2009

3. JMP 2017 update and SDG baselines
4. https://washdata.org/report/jmp-2017-report-final
5. Safely managed drinking water thematic report
6. https://washdata.org/report/jmp-2017-tr-smdw
7. WHO Guidelines for Drinking Water Quality:
8. http://www.who.int/water_sanitation_health/dwq/guidelines/en/
9. UN-HABITAT, "Urban Indicator Guidelines", July 2009

**6.Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water**
Adapted from Adapted from https://unstats.un.org/sdgs/metadata/files/Metadata-06-02-01.docx

**Definition:**

The Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water is the percentage of the population using a basic sanitation facility which is not shared with other households and where excreta is safely disposed in the original place or treated off-site. 'Improved' sanitation facilities include: flush or pour flush toilets to sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, pit latrines with a slab, and composting toilets[18].

**Rationale:**

The aim is to determine the portion of the population with "sustainable access" to "basic sanitation". Improved sanitation facilities make human contact with excreta unlikely and substantially reduces the incidence of diarrhoea. In May 2017, the World Health Organization estimated that each year each year there were nearly 1.7 billion cases of diarrhoea among children under five and approximately 525 000 cases were fatal. A significant proportion of diarrhoeal disease can be prevented through safe drinking-water, adequate sanitation and hygiene[19]. The indicator also addresses dimensions of accessibility, availability and quality. The indicator takes into account safe management of faecal waste and discharge of untreated wastewater. Hand washing is an important factor in reducing the spread of diseases. During surveys enumerators should watch for availability of water and soap at handwashing locations.

The New Urban Agenda envisages progressive realization of the right to adequate housing, one of the criteria for which is access to improved sanitation (NUA §13). In this regard, Member States committed themselves to promoting adequate investments in protective, accessible and sustainable infrastructure and service provision systems for sanitation (NUA §119).

**Computation Method:**

Method of computation: Household surveys and censuses provide data on use of types of basic sanitation facilities listed above, as well as the presence of handwashing materials in the home.

The percentage of the population using safely managed sanitation services is calculated by combining data on the proportion of the population using different types of basic sanitation facilities with estimates of the proportion of faecal waste which is safely disposed in situ or treated off-site.

The JMP estimates use of basic sanitation facilities for each country, separately in urban and rural areas, by fitting a regression model to a series of data points from household surveys and censuses. This approach was used to report on use of 'improved sanitation' facilities for MDG monitoring. The JMP is evaluating the use of alternative statistical estimation methods as more data become available.

The JMP 2017 update and SDG baselines report describes in more detail how estimates of the proportion of household wastewater that is safely disposed of in situ or treated off-site have been combined with data on use of different types of sanitation facilities, as recorded in the JMP global database.

**Data Sources and Frequency of Data Collection:**

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[18] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-06-02-01.docx, but it has been shortened.

[19] https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

Data on sanitation is available from household surveys such as Demographic Health Survey, MICS etc. WHO/UNICEF Joint Monitoring Program (JMP) collects data from countries which is available at www.washdata.org. JMP estimates access to basic services for urban and rural areas separately for each country. Sometimes JMP estimates differ from national estimates due to differences in indicator descriptions. Data to be collected every even year and published the following year.

For purposes of monitoring the New Urban Agenda disaggregate by urban/rural and city level and income level if possible. UN-HABITAT encourages production of city level estimates to facilitate city level analysis and policy formulation.

**References:**

1. WHO, "Diarrhoeal disease", https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease
2. JMP website: www.washdata.org.
3. JMP 2017 update and SDG baselines
4. https://washdata.org/report/jmp-2017-report-final
5. Ram, P., Practical Guidance for Measuring Handwashing Behaviour: 2013 update, World Bank Water Supply and Sanitation Programme, 2013.
6. http://www.wsp.org/sites/wsp.org/files/publications/WSP-Practical-Guidance-Measuring-Handwashing-Behavior-2013-Update.pdf"

## 7.Renewable energy share in the total final energy consumption

**Adapted from** https://unstats.un.org/sdgs/metadata/files/Metadata-07-02-01.docx

**Definition:**

Renewable energy includes electricity power generated using wind, sunlight, wind, hydropower, tides, waves and geothermal heat. The renewable energy share in total final consumption is the percentage of final consumption of energy that is derived from renewable resources[20].

**Rationale:**

This indicator will monitor progress under the "Guidelines for Implementing the New Urban Agenda" theme "Access to basic services" and the category 1.1.3.3 "Access to modern renewable energy". Member States committed to ensuring universal access to affordable, reliable and modern energy services by promoting energy efficiency, sustainable renewable energy; as well as supporting subnational and local efforts to utilize renewable energy in public buildings and advancing its use in residential buildings by mandating installation in building codes (NUA §121).

The target "By 2036, increase the share of renewable energy in the global energy mix substantially" impacts all three dimensions of sustainable development. Renewable energy technologies represent a major element in strategies for greening economies everywhere in the world and for tackling the critical global problem of climate change. A number of definitions of renewable energy exist; what they have in common is highlighting all forms of energy that their consumption does not deplete their availability in the future as renewable. These include solar, wind, ocean, hydropower, geothermal resources, and bioenergy (in the case of bioenergy, which can be depleted, sources of bioenergy can be replaced within a short to medium-term frame). Importantly, this indicator focuses on the amount of renewable energy actually consumed. Rather than focusing on the capacity for renewable energy production, which cannot always be fully utilized. By focusing on consumption by the end user, it avoids the distortions caused by the fact that conventional energy sources are subject to significant energy losses along the production chain. In the case of the New Urban Agenda the timeframe for this indicator is up to 2036.

*Concepts*:

Renewable energy consumption includes consumption of energy derived from: hydro, solid biofuels, wind, solar, liquid biofuels, biogas, geothermal, marine and waste. Total final energy consumption is calculated from national balances and statistics as total final consumption minus non-energy use.

Comments with regard to specific renewable energy resources:
* Solar energy consumption includes solar PV and solar thermal
* Liquid biofuel energy consumption includes biogasoline, biodiesels and other liquid biofuels
* Solid biofuel consumption includes fuelwood, animal waste, vegetable waste, black liquor, bagasse and charcoal
* Waste energy covers energy from renewable municipal waste

*Comments and Limitations:*

* A limitation with existing renewable energy statistics is that they are not able to distinguish whether renewable energy is being sustainably produced. For example, a substantial share of today's renewable energy consumption comes from the use of wood and charcoal by households in the developing world, which sometimes may be associated with unsustainable forestry practices. There are efforts underway to improve the ability to measure the sustainability of bio-energy, although this remains a significant challenge.

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[20] The source of the metadata for SDG-7.2.1 at https://unstats.un.org/sdgs/metadata/files/Metadata-07-02-01.docx, but it has been shortened.

- Off-grid renewables data are limited and not sufficiently captured in the energy statistics
- The method of allocation of renewable energy consumption from electricity and heat output assumes that the share of transmission and distribution losses are the same between all technologies. However, this is not always true because renewables are usually located in more remote areas from consumption centers and may incur larger losses.
- Likewise, imports and exports of electricity and heat are assumed to follow the share of renewability of electricity and heat generation, respectively. This is a simplification that in many cases will not affect the indicator too much, but that might affect the indicator in some cases. For example, when a country only generates electricity from fossil fuels but imports a great share of the electricity it uses from a neighboring country's hydroelectric power plant.
- Methodological challenges associated with defining and measuring renewable energy are more fully described the Global Tracking Framework (IEA and World Bank, 2013) Chapter 4, Section 1, page 194-200. Data for traditional use of solid biofuels are generally scarce globally, and developing capacity in tracking such energy use, including developing national level surveys, is essential for sound global energy tracking.

**Computation Method:**

This indicator is based on the development of comprehensive energy statistics across supply and demand for all energy sources – statistics used to produce a national energy balance. Internationally agreed methodologies for energy statistics are described in the "International Recommendations on Energy Statistics" (IRES), adopted by the UN Statistical Commission, available at: https://unstats.un.org/unsd/energy/ires/.

Once a national energy balance is developed, the indicator can be calculated by dividing final energy consumption from all renewable sources by total final energy consumption. Renewable energy consumption is derived from three tables of the IEA world energy statistics and balances: total final consumption, electricity output and heat output. All volumes reported in the total final consumption table are taken as reported. Since volumes for electricity and heat in the final consumption table are not broken down by technology; electricity and heat output tables are used instead to break down final consumption of electricity and heat by technology. The allocation by technology is done by deriving the share of technology in electricity and heat output tables and multiplying that share by final energy consumption of electricity and heat, respectively. For instance, if total final consumption table reports 150 TJ for biogas energy, while total final consumption of electricity is 400 TJ and heat 100 TJ; and the share of biogas in total electricity output is 10 percent and 5 percent in heat; the total reported number for biogas consumption will be 195 TJ (150 TJ+400TJ*10%+100TJ*5%). The Global Tracking Framework Report (IEA and World Bank, 2013) provides more details on the suggested methodology for defining and measuring renewable energy (Chapter 4, Section 1, page 201-202). UNSD follows the same methodology to compute the indicators, though information may come from different tables.

Disaggregation of the data on consumption of renewable energy, e.g. by resource and end-use sector, could provide insights into other dimensions of the goal, such as affordability and reliability. For solar energy, it may also be of interest to disaggregate between grid and off-grid capacity.

**Data Sources and Frequency of Data Collection**

Data on renewable energy consumption are available through national Energy Balances compiled based on data collected by the International Energy Agency (for around 150 countries) and the United Nations Statistics Division (UNSD) for all countries. The energy balances make it possible to trace all the different sources and uses of energy at the national level.

Some technical assistance may be needed to improve these statistics, particularly in the case of renewable energy sources. Specialized industry surveys (e.g. on bioenergy use) or household surveys (in combination with the measurement of other indicators) would be feasible approaches to filling in data gaps (e.g. for use of firewood, off-grid solar energy).

Between the various existing data sources, primarily the IEA Energy Balances and the UN Energy Statistics Database, annual total and renewable energy consumption for every country and area can be collected. The *Tracking SDG7: The Energy Progress Report* (formerly *Sustainable Energy for All Global Tracking Framework*) is reporting this indicator at a global level between 2010 and 2030.

Time series are available from 1990 to date.
Data is collected on an annual basis.

National administrations, as described in documentation on sources for IEA and UNSD:
http://wds.iea.org/wds/pdf/WORLDBAL_Documentation.pdf
https://unstats.un.org/unsd/energy/edbase.htm

The International Energy Agency (IEA) and the United Nations Statistics Division (UNSD) are the primary compilers of national energy statistics and develop internationally comparable energy balances based on internationally agreed methodologies.  Aggregates are based on analysis merging of IEA and UNSD data.

**References:**

1. IEA Energy Balances and Statistics
2. http://www.iea.org/statistics/

3. UN Energy Statistics Database
   unstats.un.org/unsd/energystats/data (description) and data.un.org/Explorer.aspx?d=EDATA (data)

4. IEA SDG 7 webpage: http://www.iea.org/sdg
5. International Recommendations for Energy Statistics (IRES)
   unstats.un.org/unsd/energystats/methodology/ires
6. International Energy Agency (IEA), International Renewable Energy Agency (IRENA), United Nations Statistics Division (UNSD), the World Bank, World Health Organization (WHO). 2019. "Tracking SDG7: The Energy Progress Report 2019".  trackingsdg7.esmap.org/
7. International Energy Agency (IEA), International Renewable Energy Agency (IRENA), United Nations Statistics Division (UNSD), the World Bank, World Health Organization (WHO). 2018. "Tracking SDG7: The Energy Progress Report 2018".  trackingsdg7.esmap.org/
8. International Energy Agency (IEA) and the World Bank. 2017. "Global Tracking Framework 2017— Progress toward Sustainable Energy". World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO
9. International Energy Agency (IEA) and the World Bank. 2015. "Global Tracking Framework 2015— Progress Toward Sustainable Energy", World Bank, Washington, DC. Doi: 10.1596/978-1-4648 -0690-2 License: Creative Commons Attribution CC BY 3.0 IGO
10. International Energy Agency (IEA) and the World Bank. 2013. "Global Tracking Framework 2013"

11. IRENA Renewable Energy Database
12. http://resourceirena.irena.org/gateway/dashboard.

## 8: Annual growth rate of real GDP (per employed person)

Adapted from: SDG 8.2.1 Annual Growth Rate of Real GDP (Per Employed Person)
https://unstats.un.org/sdgs/metadata/files/Metadata-08-02-01.docx

**Definition:**
GDP is the sum of gross value added of all resident producer units plus taxes on products, minus subsidies on products, which is not included in the valuation of output[21]. Real GDP is GDP at constant prices, utilizing prices of a reference year. Annual growth rate of real GDP per employed person conveys the annual percentage change in real Gross Domestic Product per employed person.

**Rationale:**

Member States highlighted the need to take advantage of the opportunities presented by urbanization as an engine of sustained and inclusive economic growth, social and cultural development, and environmental protection, and of its potential contributions to the achievement of transformative and sustainable development (NUA §4). The New Urban Agenda readdresses the way cities and human settlements are planned, designed, financed, developed, governed and managed which contribute to end poverty and hunger in all its forms and dimensions; reduce inequalities; promote sustained, inclusive and sustainable economic growth (NUA §5).

The real GDP per employed person being a measure of labour productivity, this indicator represents a measure of labour productivity growth, thus providing information on the evolution, efficiency and quality of human capital in the production process.

Economic growth in a country can be ascribed either to increased employment or to more effective work by those who are employed. This indicator casts light on the latter effect, therefore being a key measure of economic performance. Labour productivity and growth estimates can support the formulation of labour market policies and monitor their effects. They can also contribute to the understanding of how labour market performance affects living standards.

*Comments and Limitations:*
Output measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy. However, despite common principles that are mostly based on the United Nations System of National Accounts, there are still significant problems in international consistency of national accounts estimates, based on factors such as differences in the treatment of output in services sectors, differences in methods used to correct output measures for price changes (in particular, the use of different weighting systems to obtain deflators) and differences in the degree of coverage of informal economic activities.

Data on employment used in the denominator of this indicator refer, as much as possible, to the average number of persons with one or more paid jobs during the year. That is, the reliability of the employment data is also dependent on the degree of coverage of informal activities by the statistical source used.

**Computation Method**

$$\text{Real GDP per employed person} = \frac{\text{GDP at constant prices}}{\text{Total employment}}$$

The numerator and denominator of the equation above should refer to the same reference period. For example, the same calendar year.

If we call the real GDP per employed person "LabProd", then the annual growth rate of real GDP per employed person is calculated as follows:

$$\text{Annual growth rate of real GDP per employed person} = \frac{(\text{LabProd in year n}) - (\text{LabProd in year n} - 1)}{(\text{LabProd in year n} - 1)} \times 100$$

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[21] System of national Accounts 2008, 2.138

Disaggregate by city/urban level

Output measures used in the numerator of this indicator (Gross Domestic Product) are best obtained from the production side of national accounts and represent, as much as possible, GDP at market prices for the aggregate economy (adjusted for inflation, in constant prices).

Employment data used in the denominator are preferably derived from labour force or other household surveys with an employment module. In the absence of a household survey, establishment surveys, administrative records or official estimates based on reliable sources can be used, as well as population censuses. However, it is important to note that employment data from establishment surveys will capture the number of jobs and not the number of persons employed as preferred for the denominator. In many cases, establishment surveys cover the formal sector - employers and employees only, not accounting for the whole economy.

When calculating this indicator, it is important to ensure that the coverage of the employment data is consistent with that of the national accounts.

**Data Sources Frequency of Data Collection:**

For the purposes of reporting on this indicator, utilize country-level estimates of GDP in constant USD and country-level estimates on employment from household surveys to calculate levels and growth rates of labour productivity at the country level. Data to be collected annually.

Data is available from National Statistical Offices and, in some cases, Labour Ministries or other related agencies.

**References**

1. Estimates and projections of labour market indicators (http://www.ilo.org/empelm/projects/WCMS_114246/lang--en/index.htm)
2. ILO Manual – Decent Work Indicators, Concepts and Definitions – Chapter 1, Economic and social context for decent work http://www.ilo.org/integration/resources/pubs/WCMS_229374/lang--en/index.htm (second version, page 214)
3. Resolution concerning statistics of work, employment and labour underutilization http://www.ilo.ch/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
4. System of National Accounts 2008 http://unstats.un.org/unsd/nationalaccount/sna2008.asp
5. https://unstats.un.org/sdgs/metadata/files/Metadata-08-02-01.docx
6. Trends Econometric Models: A Review of Methodology http://www.ilo.org/empelm/pubs/WCMS_120382/lang--en/index.htm
7. ILOSTAT Database (www.ilo.org/ilostat)
8. ILOSTAT Database – Metadata – Indicator Descriptions (Labour productivity, at: http://www.ilo.org/ilostat-files/Documents/description_PRODY_EN.pdf).
9. ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm).

### 9. Proportion of informal employment in non-agriculture employment, by sex.
Adapted from: SDG 8.3.1 https://unstats.un.org/sdgs/metadata/files/Metadata-08-03-01.docx

**Definition:**
This indicator presents the share of non-agricultural employment that is informal[22].
Informal employment comprises:
- own-account workers and employers employed in their own informal sector enterprises;
- Contributing family workers, irrespective of whether they work in formal or informal sector enterprises;
- Employees holding informal jobs, whether employed by formal sector enterprises, informal sector enterprises;
- Members of informal producers' cooperatives;
- Own-account workers engaged in the production of goods exclusively for own final use by their household.

**Rationale:**

This indicator will monitor progress under the theme "Inclusive Urban Economy" in the Guidelines for Implementing the New Urban Agenda" under the category 1.2.1.2 "Support the informal Economy". One of the commitments in the New Urban Agenda was to recognize the contribution of the working poor in the informal economy, particularly women, as well as gradually transition workers and economic units from the informal to the formal economy by combining incentives and compliance measures, while ensuring preservation and improvement of existing livelihoods (NUA §59).

In contexts where social protection coverage is limited, social security benefits (such as unemployment insurance) are insufficient or even non-existent, and/or where wages and pensions are low; individuals may have to take up informal employment to ensure their livelihood. In these situations, indicators such as the unemployment rate would provide a very incomplete picture of the labour market situation, overlooking major deficits in the quality of employment. Statistics on informality are key to assessing the quality of employment in an economy, and are relevant to developing and developed countries alike (ILOSTAT indicator description for informality, available at http://www.ilo.org/ilostatfiles/Documents/description_IFL_EN.pdf).

*Concepts:*
Employment comprises all persons of working age who during a specified brief period, such as one week or one day, performed work for others in exchange for pay or profit.

Informal employment is comprised of persons who, in their main or secondary jobs, were in one of the following categories:
- Own-account workers, employers and members of producers' cooperatives employed in their own informal sector enterprises (the characteristics of the enterprise determine the informal nature of their jobs);
- Own-account workers engaged in the production of goods exclusively for own final use by their household (e.g. subsistence farming);
- Contributing family workers, regardless of whether they work in formal or informal sector enterprises (they usually do not have explicit, written contracts of employment, and are not subject to labour legislation, social security regulations, collective agreements, etc., which determines the informal nature of their jobs);
- Employees holding informal jobs, whether employed by formal sector enterprises, informal sector enterprises, or as paid domestic workers by households (employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits).

An enterprise belongs to the informal sector if it fulfils the three following conditions:

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[22] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-08-03-01.docx, but it has been shortened.

- It is an unincorporated enterprise (it is not constituted as a legal entity separate from its owners, and it is owned and controlled by one or more members of one or more households, and it is not a quasi-corporation: it does not have a complete set of accounts, including balance sheets);
- It is a market enterprise (it sells at least some of the goods or services it produces);
- The enterprise is not registered
- The employees of the enterprise are not registered
- The number of persons engaged on a continuous basis is below a threshold determined by the country.

*Comments and Limitations:*
The considerable heterogeneity of definitions and operational criteria used by countries to measure informal employment greatly hinders the international comparability of statistics on informality.
In addition, the scope of this indicator is limited to non-agriculture. However, to have a comprehensive picture of the importance of informality in the economy and to better understand its patterns, statistics on informal employment should be produced and analysed for both agricultural and non-agricultural activities.

**Computation Method**

$$\text{Proportion of informal employment in non agricultural employment} = \frac{\text{Informal employment in non agricultural activities}}{\text{Total employment in non agricultural activities}} \times 100$$

Data should be disaggregated by sex, by city and urban levels.
In order to produce this indicator, employment statistics disaggregated by formal / informal employment and by economic activity (agriculture / industry / services) are needed.

*Methods and guidance available to countries for the compilation of the data at the national level:*
- ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm)
- Resolution concerning statistics of employment in the informal sector, adopted by the Fifteenth
International Conference of Labour Statisticians (January 1993), available at
http://ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-byinternational-conferences-of-labour-statisticians/WCMS_087484/lang--en/index.htm
- Guidelines concerning a statistical definition of informal employment, adopted by the Seventieth
International Conference of Labour Statisticians (November-December 2003) available at
http://ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-byinternational-conferences-of-labour-statisticians/WCMS_087622/lang--en/index.htm
- ILO manual Measuring informality: A statistical manual on the informal sector and informal employment available at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_222979.pdf

**Data Sources and Frequency of Data Collection**
The preferred source of data for this indicator is a labour force survey, with sufficient questions to determine the informal nature of jobs and whether the establishment where the person works in belongs to the formal or the informal sector.
Data is available from National Statistical Offices and for purposes of monitoring the New Urban Agenda disaggregate by urban/rural and city level if possible. Collect data annually and report it to UNHABITAT.

**References**

1. ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm )

2. Resolution concerning statistics of employment in the informal sector, adopted by the Fifteenth International Conference of Labour Statisticians (January 1993), available at http://ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-byinternational-conferences-of-labour-statisticians/WCMS_087484/lang--en/index.htm

3. Guidelines concerning a statistical definition of informal employment, adopted by the Seventieth International Conference of Labour Statisticians (November-December 2003) available at http://ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-byinternational-conferences-of-labour-statisticians/WCMS_087622/lang--en/index.htm

4. ILO manual Measuring informality: A statistical manual on the informal sector and informal employment, available at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/--- publ/documents/publication/wcms_222979.pdf

5. ILOSTAT's indicator description on informality, at http://www.ilo.org/ilostatfiles/Documents/description_IFL_EN.pdf

6. Resolution concerning statistics of work, employment and labour underutilization adopted by the Nineteenth International Conference of Labour Statisticians (October 2013), available at http://ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-byinternational-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm

7. International Standard Industrial Classification of All Economic Activities (ISIC Rev.4) https://unstats.un.org/unsd/cr/registry/isic-4.asp

8. https://unstats.un.org/sdgs/metadata/files/Metadata-08-03-01.docx

## 10. Unemployment rate by sex, age, persons with disabilities and by city

Adapted from SDG indicator 8.5.2  https://unstats.un.org/sdgs/metadata/files/Metadata-08-05-02.docx

**Definition:**
The unemployment rate conveys the percentage of persons in the labour force who are unemployed. A person is unemployment if he or she is without a job, seeking employment and available for employment.

**Rationale:**

Member States recognized that sustained, inclusive and sustainable economic growth, with full and productive employment and decent work for all, is a key element of sustainable urban and territorial development and that cities and human settlements should be places of equal opportunities (NUA §43).

The unemployment rate is a useful measure of the underutilization of the labour supply. It reflects the inability of an economy to generate employment for those persons who want to work but are not doing so, even though they are available for employment and actively seeking work. Thus, it is seen as an indicator of the efficiency and effectiveness of an economy to absorb its labour force and of the performance of the labour market. Short-term time series of the unemployment rate can be used to signal changes in the business cycle; upward movements in the indicator often coincide with recessionary periods or in some cases with the beginning of an expansionary period as persons previously not in the labour market begin to test conditions through an active job search.

*Comments and Limitations:*

Even though the unemployment rate continues to prove its usefulness as an important indicator of labour market performance in most developed countries as a key measure of labour underutilization; in many developing countries, the significance and meaning of the unemployment rate could be questioned. In the absence of unemployment insurance systems or social safety nets, persons of working age must avoid unemployment, resorting to engaging in some form of economic activity, however insignificant or inadequate. Thus, in this context, other measures should supplement the unemployment rate to comprehensively assess labour underutilization.

**Computation Method:**

$$\text{Unemployment rate} = \frac{\text{Total unemployment}}{\text{Total labour force}} \times 100$$

Data should be disaggregated by sex, by age group, by disability status and city/urban level.

*Methods and guidance available to countries for the compilation of the data at the national level:*
In order to calculate this indicator (according to the ILO definitions of unemployment and unemployment rate), data is needed on both the labour force and the unemployed, by sex and age (and eventually disability status). This data is collected at the national level mainly through labour force surveys (or other types of household surveys with an employment module). For the methodology of each national household survey, one must refer to the most comprehensive survey report or to the methodological publications of the national statistical office in question.
- Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators, available at https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm
- ILO Manual – Decent Work Indicators, Concepts and Definitions – Chapter 1, Employment opportunities http://www.ilo.org/integration/resources/pubs/WCMS_229374/lang--en/index.htm (second version, pages 34 and 49)
- Resolution concerning statistics of work, employment and labour underutilization http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
- ILOSTAT (www.ilo.org/ilostat)

- ILOSTAT Metadata – Indicator descriptions (http://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf)

*Quality Assurance*
Conduct data consistency and quality checks regularly for validation of the data before dissemination.

**Data Sources and Frequency of Data Collection:**

The preferred official national data source for this indicator is a household-based labour force survey.
In the absence of a labour force survey, a population census and/or other type of household surveys with an appropriate employment module may also be used to obtain the required data.
It is important to note that unemployment data derived from employment office records or unemployment registers would not refer to unemployment (as defined for the purposes of this indicator, using the three-criteria of being without a job, seeking employment and available for employment) but to registered unemployment, and thus, it would not be comparable with this indicator.

The indicator is widely available based on real observations provided by countries and derived from national labour force surveys, other types of household surveys or population census. Data should be collected annually if possible. However, disaggregation by disability is not widely available. It is increasingly reported but coverage is still very low. Data is available from National Statistical Offices and in some cases Labour Ministries or other related agencies, at the country-level. In some cases, regional or international statistical offices can also act as data providers.

**References**

1. Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators, available at https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm
2. ILOSTAT database: www.ilo.org/ilostat
3. ILOSTAT Metadata – Indicator Descriptions (http://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf)
4. Decent Work Indicators Manual: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_223121.pdf
5. Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS in 2013: http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
6. Trends Econometric Models: A Review of Methodology: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/---trends/documents/publication/wcms_120382.pdf
7. https://unstats.un.org/sdgs/metadata/files/Metadata-08-05-02.docx

## 11.Proportion of youth (aged 15-24 years) not in education, employment or training

**Adapted from SDG 8.6.1:** https://unstats.un.org/sdgs/metadata/files/Metadata-08-06-01.docx

**Definition:**
This indicator measures the proportion of youth (aged 15-24 years) who are neither attending school nor college nor in employment nor undergoing any form of training.

**Rationale:**
Member States committed themselves to increasing economic productivity by providing the labour force with access to income-earning opportunities, knowledge, skills and educational facilities that contribute to an innovative and competitive urban economy. They also committed themselves to increasing economic productivity through the promotion of full and productive employment and decent work and livelihood opportunities in cities and human settlements (NUA §56). They also committed themselves to harnessing the urban demographic dividend and to promoting access for youth to education, skills development and employment to achieve increased productivity and shared prosperity in cities and human settlements (NUA §61).

The share of youth not in employment, education or training (youth NEET rate) provides a measure of youth who are outside the educational system, not in training and not in employment. Thus, it serves as a broader measure of potential youth labour market entrants than youth unemployment. It includes discouraged worker youth as well as those who are outside the labour force due to disability and engagement in household chores, among other reasons. NEET is also a better measure of the current universe of potential youth labour market entrants as compared with the youth inactivity rate, as the latter includes those youth who are outside the labour force and are in education, and thus are furthering their skills and qualifications.

*Comments and Limitations:*
The calculation of this indicator requires having reliable information on both the labour market status and the participation in education or training of young persons. The quality of such information is heavily dependent on the questionnaire design, the sample size and design and the accuracy of respondents' answers.
In terms of the analysis of the indicator, in order to avoid misinterpreting it, it is important to bear in mind that it is composed of two different sub-groups (unemployed youth not in education or training and youth outside the labour force not in education or training). The prevalence and composition of each sub-group would have policy implications and should also be considered when analysing the NEET rate.

**Computation Method:**

$$\text{Youth NEET rate} = \frac{Youth - (Youth\ in\ employment + Youth\ not\ in\ employment\ but\ in\ education\ or\ training)}{Youth} \times 100$$

It is important to note here that youth simultaneously in employment and education or training should not be double counted when subtracted from the total number of youths.
The formula can also be expressed as:

$$\text{Youth NEET rate} = \frac{(Unemployed\ youth + Youth\ outside\ LF) - (Unemployed\ youth\ in\ education\ or\ training + YOLFEDTR)}{Youth}$$
$$\times 100$$

Where LF stands for labour force
YOLFEDTR stands for Youth outside the labourforce in education or training
Disaggregate by sex and by city/urban level.

*Methods and guidance available to countries for the compilation of the data at the national level:*

In order to calculate this indicator reliable data is needed on both the labour market situation and the participation in the educational system of the youth. This data is collected at the national level mainly through labour force surveys (or other types of household surveys with an employment module). For the methodology of each national household survey, one must refer to the most comprehensive survey report or to the methodological publications of the national statistical office in question. Other reference documents include:

- ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm )
- ILO Manual – Decent Work Indicators, Concepts and Definitions – Chapter 1, Employment opportunities http://www.ilo.org/integration/resources/pubs/WCMS_229374/lang--en/index.htm (second version, page 38)
- Resolution concerning statistics of work, employment and labour underutilization http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
- International Standard Classification of Education 2011 (ISCED-2011) http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx
- ILOSTAT Metadata – Indicator Descriptions – Youth NEET rate http://www.ilo.org/ilostat-files/Documents/description_NEET_EN.pdf
- ILOSTAT (www.ilo.org/ilostat)


**Data Sources and Frequency of Data Collection:**

The preferred official national data source for this indicator is a household-based labour force survey. In the absence of a labour force survey, a population census and/or other type of household surveys with an appropriate employment module may also be used to obtain the required data. Data consistency and quality checks should be regularly conducted before dissemination.

Data is available from National Statistical Offices and in some cases Labour Ministries or other related agencies, at the country-level. Collect data annually data if possible.

**References:**

1. ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm )
2. Decent Work Indicators Manual: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_223121.pdf
3. Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS in 2013: http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
4. International Standard Classification of Education (ISCED) developed by UNESCO: http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx
- What does NEETs mean and why is the concept so easily misinterpreted? (ILO, W4Y, Technical brief n°1): http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_343153.pdf
- ILOSTAT database: www.ilo.org/ilostat
- ILOSTAT Metadata – Indicator Descriptions (http://www.ilo.org/ilostat-files/Documents/description_NEET_EN.pdf)
5. https://unstats.un.org/sdgs/metadata/files/Metadata-08-06-01.docx

**Definition:**

The indicator is the share of manufacturing employment in total employment. Manufacturing activities are listed in Section C of the International Standard Industrial Classification (ISIC) revision 4[23].

**Rationale:**

Member States committed themselves to increasing economic productivity by providing the labour force with access to income-earning opportunities, knowledge, skills and educational facilities that contribute to an innovative and competitive urban economy (NUA §56).

This indicator conveys the contribution of manufacturing in total employment. It measures the ability of the manufacturing sector to absorb surplus labour forces from agricultural and other traditional sectors towards production labour with higher wages, when monitored over time. However, in developed countries an opposite trend is expected where emphasis has shifted to reduction in labor in manufacturing as part of cost-cutting measures, to promote more capital-intensive industries.

*Concepts:*

Employment comprises all persons of working age who during a short reference period (one week), were engaged in any activity to produce goods or provide services for pay or profit. The working-age population is usually defined as all persons aged 15 and above. For further clarification, see: Resolution concerning statistics of work, employment and labour underutilization (2013), available from http://ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm. No distinction is made between persons employed full time and those working less than full time.

Manufacturing sector is defined according to the International Standard Industrial Classification of all Economic Activities (ISIC) revision 4 (2008, the latest) or revision 3 (1990). It refers to industries belonging to sector C in revision 4 or sector D in revision 3.

*Comments and Limitations:*

The characteristics of the data source impact the international comparability of the data, especially in cases where the coverage of the source is less than comprehensive (either in terms of country territory or economic activities). In the absence of a labour force survey (the preferred source of data for this indicator), some countries may use an establishment survey to derive this indicator, but these usually have a minimum establishment size cut-off point and small units which are not officially registered (whether in manufacturing or not) and would not be included in the survey. Consequently, employment data may be underestimated. Discrepancies can also be caused by differences in the definition of employment or the working–age population.

**Computation Method**

The share of manufacturing employment in total employment equals

$$\frac{\text{Total employment in manufacturing activities}}{\text{Total employment in all economic activities}} \times 100$$

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[23] https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf

-Disaggregate by sex and by city/urban level.

**Data Sources and Frequency of Data Collection:**

The preferred official national data source for this indicator is a household-based labour force survey. In the absence of a labour force survey, a population census and/or other type of household survey with an appropriate employment module may also be used to obtain the required data.

Where no household survey exists, establishment surveys or some types of administrative records may be used to derive the required data, taking into account the limitations of these sources in their coverage. Specifically, these sources may exclude some types of establishments, establishments of certain sizes, some economic activities or some geographical areas.

The indicator should be monitored annually.

Data is available at national statistical offices and in some cases labour ministries or other related agencies, at the country-level. In some cases, regional or international statistical offices can also act as data providers.

**References**

*URL:*
https://unstats.un.org/sdgs/metadata/files/Metadata-09-02-02.docx
www.ilo.org/ilostat
http://www.ilo.org/ilostat-files/Documents/description_ECO_EN.pdf
www.unido.org/statistics
https://stat.unido.org/

*References:*

1. ILO Guidebook - Decent Work and the Sustainable Development Goals: A Guidebook on SDG Labour Market Indicators (https://www.ilo.org/stat/Publications/WCMS_647109/lang--en/index.htm )
2. Decent Work Indicators Manual: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_223121.pdf
3. Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS in 2013: http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm
4. ILOSTAT database: www.ilo.org/ilostat
5. ILOSTAT Metadata – Indicator Descriptions (http://www.ilo.org/ilostat-files/Documents/description_ECO_EN.pdf)
6. International Standard Industrial Classification of All Economic Activities 2008 (https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf)

## 13. Proportion of urban population living in slums, informal settlements or inadequate housing.

**Adapted:** SDGs 11.1.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-01-01.docx

**Definition:**
One of the commitments of member states in the New Urban Agenda was to support the progressive realization of the right to adequate housing for all. One way to measure progress towards achieving this commitment is by monitoring the percentage of the population that live in slums or informal settlements or in inadequate housing[24].

This indicator will have three components[25]:
  a. Percentage of people in slum and informal settlements households;
  b. Percentage of people in slum households;
  c. Percentage of people in inadequate housing;

**Rationale:**

Article 25 of the Human Rights Declaration gives everyone the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services[26]. With the adoption of the New Urban Agenda in October 2016 in Quito, Member States committed themselves to promoting national, subnational and local housing policies that achieve adequate housing for all as a component of the right to an adequate standard of living, one of the rights in the Human Rights Declaration. This indicator measures the percentage of population that has inadequate housing, including those that live in slums or informal settlements. It is a measure of how far a country is from achieving adequate housing for all, one of the key commitments in the New Urban Agenda (NUA §31).

The rationale for this indicator is that when people have adequate housing, they are more likely to be healthy, and they are in a better position to have more education and skills training and hence improve their skills.[27] Housing expenditures, in the form of new buildings or renovations, has a multiplier effect throughout the economy. Stimulating industries that supply housing construction supplies, leading to more employment and output.

A key aspect of adequate housing is that it should be affordable, because if housing is unaffordable for the household, then it does not have enough money for other needs including food, clothing, medical care and cost of commuting. Hence, the household does not have an adequate standard of living.

*Concepts:*
The international definition for a slum household is one which has one or more of the following household deprivations:
  1. Lack of access to improved water source;
  2. Lack of access to improved sanitation facilities;
  3. Lack of sufficient living area;
  4. Lack of housing durability; and
  5. Lack of security of tenure.

Improved water sources include: piped water into dwelling, yard or plot; public tap/standpipe serving no more than 5 households; protected spring; rainwater collection; bottled water (if secondary source is also improved); bore hole/tube well; and protected dug well. A household has enough water for every member if it has access to at least 20 liters per day per person.

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[24] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-11-01-01.docx, but it has been shortened and adapted to NUA monitoring.
[25] Three components in the context of the New Urban Agenda Monitoring Framework.
[26] United Nations, The Universal Declaration of Human Rights, Article 25, https://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf
[27] UN-HABITAT, 2017, "Measuring the SDG Target 11.1's Indicator – Background concept note", page 8

The proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water is the percentage of the population using a basic sanitation facility which is not shared with other households and where excreta is safely disposed in the original place or treated off-site. 'Improved' sanitation facilities include: flush or pour flush toilets to sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, pit latrines with a slab, and composting toilets.

A household has sufficient living area if no more than 3 people share a habitable room that is at least four square meters[28].

Durable housing must meet the following criteria, built on a location where there is no risk of flooding or other hazards, its walls, roof and floor must be made from permanent building material, and comply with building codes and be in good state of repair.

A household has secure tenure when it has evidence of documentation proving that it has secure tenure status or perceived protection from forced evictions.

*Informal Settlements:*

In the context of indicator 13, Informal settlements can be defined as lack of basic services (improved water and improved sanitation) or lack a durable housing or lack of security of tenure. Both rich and poor urban residents live in informal settlements. It is important to monitor the number of households living in informal settlements; this facilitates computation of percentage change in the number of households living in informal settlements, an indicator that can be used to monitor the impact of programmes.

*Inadequate Housing:*

A household has inadequate housing if it does not meet one of the following criteria: legal security of tenure; availability of basic services and infrastructure; affordability (if its cost is too high for the household); habitability; accessibility; location; and cultural adequacy. Habitability refers to whether housing lets in dampness, cold, rain or is structurally unsound. Accessibility refers to whether it is accessible to vulnerable groups such as those with disabilities. Location refers to whether the housing is within easy commuting distance to places of work, healthcare facilities and schools or is near dangerous sites.

*Cultural adequacy:*

Housing is not adequate if it does not respect and take into account the expression of cultural identity[29].

*Affordability:*

Households that spend 30 percent or more of their income on housing costs are considered to live in unaffordable housing, which is one of the criteria for determining "Percentage of people in inadequate housing households (IHH)".

*Summary:*

The criteria for classifying slums or informal settlements or in inadequate housing can be summarized as[30]:

**Table 8. Criteria defining slums, informal settlements and inadequate housing**

|  | Slums | Informal Settlements | Inadequate Housing |
|---|---|---|---|
| Access to water | X | X | X |
| Access to sanitation | X | X | X |
| Sufficient living area, overcrowding | X |  | X |
| Structural quality, durability and location | X | X | X |
| Security of tenure | X | X | X |
| Affordability |  |  | X |
| Accessibility |  |  | X |
| Cultural adequacy |  |  | X |

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[28] Same definition/criterion as under MDGs http://mdgs.un.org/unsd/mdg/Metadata.aspx
[29] UNHCHR and UNHABITAT, "The Right to Adequate Housing", https://www.ohchr.org/documents/publications/fs21_rev_1_housing_en.pdf , page 4
[30] https://unstats.un.org/sdgs/metadata/

**Computation method:**
The national focal point for this indicator can obtain this data from the national statistical office. A national statistical office can compute percentages of population living in slums, informal settlements, inadequate housing and unaffordable housing utilizing household surveys such as Demographic Health Surveys (DHS), MICS and population and housing census data as well as household income and expenditure survey. The five components of this indicator are computed as follows:

(a) Percentage of people in slum and informal settlements households (SISH) =

$$100 \times [\frac{\text{Number of of people living in SISH households}}{\text{City population}}]$$

(b) Percentage of people in slum households = $100 \times [\frac{\text{Number of of people living in slum households}}{\text{City population}}]$

(c) Percentage of people in inadequate housing = $100 \times [\frac{\text{Number of of people living in IHH}}{\text{City population}}]$

Data to be provided at national urban and city level; and when possible, disaggregated by income group, age of household members, disability of household members, as well as sex, race, ethnicity, religion and migration status of the head of the household.

**Data Sources and Frequency of Data Collection:**
This indicator will be monitored at 3 – 5 year intervals until 2036.
The main data source is the national statistical office.

**References:**
1. New Urban Agenda, page 12, http://habitat3.org/wp-content/uploads/NUA-English.pdf
2. The source of the metadata is https://unstats.un.org/sdgs/metadata/, but it has been shortened and adapted to NUA monitoring.
3. United Nations, The Universal Declaration of Human Rights, Article 25, https://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf
4. UN-HABITAT, 2017, "Measuring the SDG Target 11.1's Indicator – Background concept note", page 8
5. UN-HABITAT, 2016, "The Fundamentals of Urbanization Evidence Base for Policy Making", https://unhabitat.org/wpdm-package/the-fundamentals-of-urbanization-evidence-base-for-policy-making/, pages 61-62.

**14. Proportion of the population that has convenient access to public transport disaggregated by age group, sex, and persons with disabilities**

**Adapted:** SDGs 11.2.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-02-01.docx

1. **Definition and method of computations**

This indicator aims to successfully monitor the use and access of public transportation systems and move towards reducing the reliance on the private means of transportation. This includes improving the access to areas with a high proportion of transport-disadvantaged groups such as the elderly citizens, physically challenged individuals, and low-income earners - and reducing the need for mobility by decreasing the number of trips and the distances travelled. The accessibility-based urban mobility paradigm also critically needs good, high-capacity public transport systems that are well-integrated in a multi-modal arrangement with public transport access points located within comfortable walking or cycling distances from homes and jobs for all.

Since most public transport users walk from their trip origins to public transport stops and from public transport stops to their trip destination, local spatial availability and accessibility to these stops is often evaluated in terms of pedestrian (walk) access, as opposed to cycle access, park and ride or transfers. Hence, this metadata proposes the access to public transport to be *convenient* when a stop is in walking distance of 500 m from a reference point such as a home, school, work place, or market to a low capacity public transport system (e.g. bus, Bus Rapid Transit) and 1 km to a high capacity system (e.g. rail, metro, ferry). Additional criteria for defining public transport that is **convenient** can include:
  a. Public transport is accessible to all special-needs customers, including those who are physically, visually, and/or hearing-impaired, as well as those with temporary disabilities, the elderly, children and other people in vulnerable situations.
  b. Public transport with frequent service during peak travel times
  c. Stops present a safe and comfortable station environment

The following definitions are required to define and measure convenient access to public transport.

*Public transport* is defined as a shared passenger transport service that is available to the general public and is provided for the public good. It may include cars, buses, trolleys, trams, trains, subways, and ferries that are shared by strangers without prior arrangement. It may also include informal modes of transport (para-transit) - but it is noted that these are often lacking in designated routes or stops.

For a city to understand the nature of their transport system and in turn make the necessary planning and investment decisions, it is recommended that each city should do an inventory of its public transport modes and their major characteristics. For cities where a mix of formal and informal transport systems exist, it is also recommended to compute the indicator at the two levels, which is critical for decision-making processes. Recent data has shown that many cities in developing regions may lack a formal public transport system, but residents still enjoy a high level of access to public transport driven by a comprehensive paratransit network which does not necessarily have designated stops. A mapping of the transport routes where these paratransit networks can stop is thus recommended, and countries are encouraged to document each type of transport mode.

*Street Network* may be defined as a system of interconnected lines that represent a system of streets or roads for a given area. A street network provides the foundation for network analysis that will help to measure the pedestrian access/ walking distance of 500 m or 1 km to a public transport stop; or the network along which random informal transport modes can be accessed. Some cities have detailed data on street network, type, street design (e.g. availability of a safe walking path) or topological structure of the network. However, if such data is not available, it is proposed to use OpenStreetMap and other sources such as GORADS, ESRI Streets, etc as a baseline and fill missing gaps through digitizing of missing lines from satellite imagery (e.g. Google Earth). The major assumption in the use of these data sources is that all streets are walkable and on the same elevation level.

*Service Area* is defined as the area served by public transport within 500 m walking distance to a low capacity system or 1 km to a high capacity system based on the street network.

**Rationale**

Member States committed themselves to the generation and use of renewable and affordable energy and sustainable and efficient transport infrastructure and services, achieving the benefits of connectivity and reducing the financial, environmental and public health costs of inefficient mobility, congestion, air pollution, urban heat island effects and noise. They also committed themselves to giving particular attention to the energy and transport needs of all people, particularly the poor and those living in informal settlements (NUA §54).

Equity and inclusivity should be at the heart of this Indicator. This objective accounts for distributional considerations and places a minimum value on everyone's travel needs, providing all, including the vulnerable, women, young, old, and disabled with at least some basic level of access through transport services and leaving "no one behind." The ability of all individuals to access markets, employment opportunities, and service centers such as schools and hospitals, is critical to urban economic development.

To achieve the goal of "convenient access" for all, urban transport systems and services need to be upgraded - and in some cases planned from scratch - in an integrated way, that ensures the balanced access of urban residents regardless of income, mode of travel, gender, race or disability status. Urban mobility should foster and enable cities to flourish, without creating over-dependence on any particular mode of travel. The concept of convenient accessibility to jobs, services and markets also allows policymakers, citizens and businesses to discuss the state of the transport system in a comprehensible, goal-oriented way – while enhancing the understanding of recommended actions to further improve the transport system in a city.

Thus, the "convenient access" SDG indicator addresses a significant gap that was never addressed by the Millennium Development Goals (MDGs): directly addressing transport as a critical enabler of economic activities and social inclusion. By focusing on access to transit, this can also be aligned with sustainability goals such as reducing greenhouse gas emissions, pollutant emissions, traffic congestion, and road fatalities and injuries - since increased use of transit aligns with these goals.

Broadening the basic access concept to reaching destinations (with associated services, goods, social, education, health and other opportunities associated with these destinations) for all as the ultimate goal, the full value can be achieved; though measuring this "opportunity access" is difficult, as described above. In any case, adopting a goal of convenient access tends to align with a broad objective of making cities more compact, with shorter trips and greater focus on transit, cycling and walking through better planning and the integration of land-use planning with transport planning.

**Method of Computation – Core Indicator**

This core indicator is computed based on the following criteria.

*The identification of service areas* is typically achieved using the Network Analysis operation (in Geographic Information System - GIS) by constructing lines of proximity around each public transport stop. Countries should first identify the size of the coverage area by the network distance of 500 m or 1 km (instead of using a mere buffer of 500m - equal proximity) around the transport stop.

Hence, for the core indicator, public transport is considered "convenient" for those living within a 500 m walkable distance of the nearest low capacity stop and 1 km to the nearest high capacity stop. Using network distance (the walking distance computed using the street network to reach a public transport feature) will help to realistically reflect the configuration of the street network and to recognize the presence of any barriers preventing direct access to public transport features. While the service area for each stop should be created separately, all areas should be merged to create a continuous service area for all public transport modes. Countries are encouraged to disaggregate the analysis by the two types of public transport carriers (low and high capacity), since this will help them understand the prevailing public transport strengths and limitations, and in turn the identification of the required actions and investments. Countries are furthermore encouraged to distinguish between formal and informal public transport systems in the dataset, as service quality features may vary greatly and need to be taken into consideration for planning and investment decisions.

In addition to using the above-mentioned distance measures, others have suggested the use of travel time to public transport features as a measure of proximity to places of opportunity. Using travel time has the advantage of potentially accounting for pedestrian-unfriendly factors such as steep terrains. However, because of the additional data requirements and the amount of processing effort involved, travel time measures are more difficult to use in practice. For this core indicator, the recommendation is therefore to use network distance to the public transport stop to develop the service area – but provide the option to consider travel time as a sub-indicator.

_The identification of the population served:_ Once a service area is created, the next step is to overlay the area onto other polygons, such as census/enumeration tracts or zones, for which population data is available. Gridded population, which disaggregates population data from the different sized enumeration areas or other data release units into uniformly sized grids is becoming popular with many countries and is a good source of the socio-demographic attributes for this indicator. For demonstration purposes, we will refer to these population data polygons (whether individual housing units, census tracts, population grid or other units) as the population zones. Typically, a service area (denoted as i) intersects, either fully or partially, with more than one population zone j (j=1…..J). The population served by the public transport service in area i, $P_i$, is thus equal to the sum of the population of all the population zones that intersect with the created service areas, $P_{ij}$ . Hence

$$Pi = \sum_{j=1}^{J} Pij$$

For this indicator, higher spatial resolution of the population zones is recommended to reduce over-estimation of the population with access to public transport which may result from units that are too big. Where possible, population data from individual buildings that is collected by national statistical offices is recommended. Noting the complexities surrounding the use of such data in many countries, census tract level data or gridded population datasets are good alternatives.

Finally, the population with access to public transport out of the entire city population will be computed as;

$$\% \, with \, access \, to \, Public \, transport \; = 100 \times \frac{population \, with \, convenient \, access \, to \, Public \, transport}{City \, Population}$$

**_Additional methodological comments:_**

The method to estimate the proportion of the population that has convenient access to public transport is based on **five** steps (core indicator):
- a) Delimitation of the urban area/ or city which will act as the spatial analysis scope
- b) Inventory of the public transport stops in the city or the service area;
- c) Network analysis based on street network to measure walkable distance of 500 m (or 1 km) to nearest transport stop ("service area");
- d) Estimation of population within the walkable distance to public transport;
- e) Estimation of the proportion of the population with convenient access out of the total population of the city.

_a. Delimitation of the urban area/ or city which will act as the spatial analysis scope:_ Delimit the urban area of the city and calculate the total area (square kilometers). Area of delimitation should be aligned with census enumeration areas to match with demographic data. Having a systematic way of defining the spatial analysis scope (urban area or city) is key not only to producing consistent values for this indicator, but also enabling comparisons of data from different urban areas within the same country as well as between countries. For this indicator, it is recommended to use the harmonized approach to city and urban areas definition adopted by the Statistical Commission in May 2020 (https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3j-Recommendation-E.pdf).

_b. Inventory of public transport stops:_ Data and information on types of public transport available in each urban area/ city, as well as the location of public transport stops can be obtained from city administration or transport service providers. In many cases, however, this information is lacking, incomplete, outdated or difficult to access (especially

where strong inter-agency collaboration is lacking). In these cases, alternative sources which have proven to be useful include open data sources (e.g. OpenStreetMap, Google and the General Transit Feed Specification - GTFS feeds), volunteered geospatial data, paratransit mapping, community-based maps, and point mapping using global positioning systems (GPS) or from high to very high resolution satellite imagery (e.g. Google Earth). When information is available, characteristics of the quality, universal accessibility for people with disabilities, safety, and frequency of the service can be 'assigned' to the public transport stops' inventory for detailed analysis and further disaggregation according to the statistical capacities of countries and cities.

*c. Network analysis based on street network to measure walkable distance of 500 m or 1 km meters to nearest transport stop ("service area"):* To calculate the walking distance to each stop, data on a well-defined street network (by City Authorities or from Open Sources such as OpenStreetMap) is required. The Network Analyst tool (in GIS) can be used to identify service areas around any location on a network. A network service area is a region that encompasses all accessible areas via the streets network within a specified impedance/distance. The distance in each direction (and in turn the shape of the surface area) varies depending on, among other things, existence of streets, presence of barriers along each route (e.g. lack of footbridges and turns) or availability of pedestrian walkways along each street section. In the absence of detailed information on barriers and walkability along each street network, the major assumption in creating the service areas is that all streets are walkable. Since the analysis is done at the city and national level, local knowledge can be used to exclude streets which are not walkable. The recommendation is to run the service area analysis for each public transport stop per applicable walking distance thresholds (500m or 1km), and then merge all individual service areas to create a continuous service area polygon.

In urban areas where paratransit is the main mode of public transport, the use of street networks along which the carriers stop should be used in place of the designated stops. Cities and countries are encouraged to provide notes on their type of public transport system (whether formal, informal paratransit or a mix).

*d. Estimation of population within the walkable distance to public transport:* The combined service area of 500m walking distance to the low capacity stops and 1km to the high capacity stops generated in (c) above  is overlaid in GIS with high resolution demographic data. The best source of population data for the analysis is individual dwelling or block level total population which is collected by National Statistical Offices through censuses and other surveys. Where this level of population data is not available, or where data is released at large population units, countries are encouraged to create population grids, which can help disaggregate the data from large and different sized census/ population data release units to smaller uniform sized grids. For more details on the available methods for creation of population grids explore the links provided under the references section on "Some population gridding approaches". A generic description of the different sources of population data for the indicator computation is also provided in the detailed Indicator 11.2.1 training module (see link in references section).  Once the appropriate source of population data is acquired, the total population with convenient access to public transport in the city will be equal to the population encompassed within the combined service area for all public transport modes.

*e. Estimation of the proportion of the population with convenient access to public transport out of the total population of the city or urban area.* Estimate the proportion of population with access to public transport within 500 m and 1 km walking distance out of the total population of the city or urban area. Countries and cities are encouraged to disaggregate the data on access to public transport by the capacity of the carriers - that is between low capacity and high capacity systems. Where applicable, countries and cities are also encouraged to disaggregate the data by type of carrier – whether formal or informal paratransit. The disaggregation is directly relevant in understanding the entire public transport system and  also identifying the weaknesses and opportunities in the system which are relevant in making policy and investment decisions.

*Recommended secondary indicators*
While the core indicator provides a good measurement that will help cities and urban areas identify their public transport situation, it does not cover the entire spectrum of information required to comprehensively analyze "convenient access" to public transport and to in turn inform policy and investments. Here, we recommend some secondary indicators which can be used to measure "convenient access" to public transport, and which may provide a useful complement to the core indicator of spatial distance to stations. Several are identified here, but there may be others. It should however be noted that these secondary indicators may require more data inputs and sometimes field-based surveys, and that their collection may vary significantly across jurisdictions making comparisons difficult.

Despite this, these indicators provide critical information that can help cities and urban areas improve their public transport systems and ensure the needs of all urban dwellers are catered for. The suggested secondary indicators include:

- *Alternative metrics of "spatial access":* In some cities, alternative modes to reach a public transport stop exist - such as safe cycling lanes, bike share systems or other forms of micro-mobility. In these contexts, experts in the transport sector have suggested that a cycling distance of 2km can be included in the creation of service areas to each public transport stop.

- *Obstacles to reaching stations:* Distance to stations may be adjusted by taking into account factors that create obstacles and make accessing the station difficult, at least for some travelers. An obvious example is the presence of walkways along the street network and the need to take stairs or steep ramps to reach a station, making it difficult for elderly or people with disabilities. Alternative routes would need to be identified, or stations indicated as not providing convenient access for some population groups. To identify the prevailing limitations, field observations will be required, which should capture, among other information, availability of safe walkways along the street network and existence of ramps or elevators ("universal access"), and special seating areas for the elderly and disabled.

- *Transit system performance:* The methodology described above for monitoring the core indicator covers public transport service solely based on spatial access to stops and does not address the performance of the system, such as frequency of service, capacity, comfort, etc. We note that performance aspects of public transport are important because a service within walking distance is not necessarily considered as accessible if waiting times are long, frequency of service is low or if conditions are unsafe/insecure. These are not included in the core indicator, but countries are encouraged to collect and report this information as a secondary indicator. Transport stakeholders participating in Expert Group Meeting held in Berlin on 19 -20 October 2017 recommended the use of 20 minutes average waiting time during peak hours (from 5 am to 9 pm) to assess the frequency of the service. This data can be acquired from public transport timetables for some cities, from public transport service providers or through surveys. This measurement may however be limited in cities where paratransit modes are prevalent since they often do not operate according to fixed schedules.

- *Affordability:* This can be used to further explain the indicator since access is only convenient for those who can afford the transport services. Affordability is often measured as the percentage of household income spent on transport of the poorest quintile of the population. Data can be obtained from surveys. The recommended indicator for affordability is that the poorest quintile should not spend more than 5% of their net household income on transport.

- *Safety/security:* This parameter may be difficult to measure but could be quantitatively captured in part from accident and crime statistics near stations and on the transit systems themselves. For example, safety of the public transport can be measured by the share or number of crimes within the public transport system to the total crimes in the city. In addition, it is recommended to include a question on the perception of safety of public transport in the national crime surveys, or in transport user surveys.

- *Comfort & Access to Information:* An additional feature of "convenient access" may be the presence of information systems such as real-time electronic schedule displays or other user information systems (e.g. apps), while comfort may also relate to features on the system and typical crowding or load factor levels.

- *Modal shift to sustainable transport:* It is important to continuously monitor the modal share (percentage of travelers using a particular type of transportation incl. private cars, taxis, Non-motorised Transport, Public Transport, etc.), as well as passenger-km travelled on electric vehicles as percentage of total passenger-km travelled in the urban area from city mobility surveys. This parameter is important to understand the city's overall mobility mix, monitor the modal shift towards more sustainable transport over time, and provide actionable recommendations to move towards low-carbon, shared, high capacity mobility systems in the future. The data on this secondary indicator is largely available for many cities. UN-Habitat thus requests for such information in the country reporting template every year to understand the transitions in the modal share.

*Achieving a higher level of "convenient access" – Access to opportunities*

Beyond the secondary indicators for measuring "convenient access" to public transport lies another approach that understands *Transportation* as a *means, not an end*. This is based on the purpose of 'transportation' to gain access to destinations, activities, services and goods. Ultimately, we do not wish to access transit stations, we wish to access destinations, and even access non-physical objectives such as "opportunities".

Operationally, access to "opportunities" means the ability of individuals to reach desired final destinations in a reasonable amount of time, for a reasonable cost, with adequate safety/security/ comfort, etc. For example, this may be measured as a maximum one hour travel time between any origins and destinations (O-Ds) within a city, or at least those O-D combinations used (or desired to be used) by individuals.

While measuring "access to opportunities" is superior to measuring "access to transit stations", it is more difficult and data intensive, so it is not proposed as the core indicator. Though, as data systems improve and cities become more able to collect the needed data, it may eventually make sense to shift to this as a core indicator. We note here that there are three basic types of data needed to construct this indicator:

- Data on the residential locations of individuals
- Data on the desired destinations of individuals (such as job, shopping, school, hospital locations)
- Data on the available travel options and travel times linking the origins to the destinations.

In fact, the first and third of these are very similar to what is needed to construct the core indicator, since residential locations and transit data are needed. The main additional data requirement is on the destinations, and there may be some additional complexities in putting the three types of data together.

Overall, while there is considerable effort ongoing to try to operationalize this approach and help cities beginning to collect the needed data, it appears to be too complex to consider as the core indicator at this point in time.

**Data sources and Frequency of collection**

The actual and recommended data sources for the core indicator are the following:

- *Location of public transport stops:* typically available from city administration or transport service providers, General Transit Feed Specification (GTFS) feeds, OpenStreetMap, Google (if not available at all, for instance in cities with informal paratransit services, innovative technologies/ apps and stakeholder consultations could assist the cities to map out the routes and stops)
- *Street Network:* Ideally available from city administration but could also come from OpenStreetMap, the Global Roads Open Access Data Set (gROADS) and other open source streets data providers
- *Population data:* typically from Census or other demographic surveys, GIS data, mostly available per enumeration zones, but ideally broken down to grids or dwelling units
- *Number of residents per dwelling unit:* Census/household survey
- *Demographic data for disaggregation:* typically from household surveys that collect information both on household/individual characteristics and travel patterns. Must also provide information on the location of the respondent. These surveys could also be used to collect information about the perceived quality of the service, such as time to reach taking into account obstacles, typical wait times, safety etc. Note that such household surveys are often not easily available and rarely updated on a frequent (e.g. every 2-3 years) basis.

National Focal points, as designated by respective Governments, underpin the governance framework for monitoring the Transport Target. Such focal points could be the ministries themselves, National Statistical Offices (NSOs), academic or research institutions, Civil Society Organizations, transport operators or a combination of these working

under an agreement facilitated by the National Government. UN-Habitat will be working with its partner organizations to support countries in their data collection efforts, by providing capacity building and quality assurance support. UN-Habitat and partners will also ensure the exchange of knowledge and experience between participating countries. Specific agreements will be drawn up with respective countries and cities for collaboration in the monitoring - as well as with partner organizations involved in transport data collection incl. the International Association of Public Transport (UITP), the Institute for Transport and Development Policy (ITDP), the World Bank, the International Transport Forum (ITF), the Partnership on Sustainable, Low Carbon Transport (SLoCaT), the Wuppertal Institute of Climate, Energy and Environment, the German Aerospace Center (DLR) and others. Comprehensive reporting will be undertaken on a biennial basis. Reports will be published in the public domain with data available in the UN-Habitat global databases.

*Data collection:*
The monitoring of the "access to public transport" indicator can be conducted fairly frequently, with updates of transit maps and spatial information on presence of population/ dwellings. These would not be expected to change much each year, so a 3-year reporting cycle is recommended. Monitoring at such time intervals will allow us to determine whether the proportion of the population with **convenient access to public transport** is increasing significantly over time, as well as monitor what is the share of the global urban population with convenient access to public transport. It will also help to track a modal shift towards more sustainable modes of transport incl. public transport integrated with walking and cycling.

UN-Habitat has developed the below template to collect city level data which will be send to countries on an annual basis for reporting. This reporting template is expected to be used until 2030, but slight changes may be effected as data on more aspects becomes available.

Template for compilation of SDG in

*Data release:*
A three year window will be applied.

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**15. Ratio of land consumption rate to population growth rate.**
**Adapted:** SDGs 11.3.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-03-01.docx

**Definition:**

The indicator is the ratio of land consumption rate to population growth rate.

This indicator requires defining the two components of population growth and land consumption rate. Computing the population growth rate is more straightforward and more readily available, while land consumption rate is slightly challenging, and requires the use of new techniques. In estimating the land consumption rate, one needs to define what constitutes "consumption" of land since this may cover aspects of "consumed" or "preserved" or available for "development" for cases such as land occupied by wetlands. Secondly, there is not one unequivocal measure of whether land that is being developed is truly "newly-developed" (or vacant) land, or if it is at least partially "redeveloped". As a result, the percentage of current total urban land that was newly developed (consumed) will be used as a measure of the land consumption rate. The fully developed area is also sometimes referred to as built up area.

**Rationale**:

Member States committed themselves to preserving and promoting the ecological and social function of land, including coastal areas that support cities and human settlements, and to fostering ecosystem based solutions to ensure sustainable consumption and production patterns, so that the ecosystem's regenerative capacity is not exceeded. They also committed themselves to promoting sustainable land use, combining urban extensions with adequate densities and compactness to prevent and contain urban sprawl (NUA §69).

Globally, land cover today is altered principally by direct human use: by agriculture and livestock raising, forest harvesting and management and urban and suburban construction and development. A defining feature of many of the world's cities is an outward expansion far beyond formal administrative boundaries, largely propelled by the use of the automobile, poor urban and regional planning and land speculation. A large proportion of cities both from developed and developing countries have high consuming suburban expansion patterns, which often extend to even further peripheries. A global study on 120 cities shows that urban land cover has, on average, grown more than three times as much as the urban population [1]; in some cases similar studies at national level showed a difference that was three to five times fold. [3]. In order to effectively monitor land consumption growth, it is not only necessary to have the information on existing land use cover but also the capability to monitor the dynamics of land use resulting out of both changing demands of increasing population and forces of nature acting to shape the landscape.

Cities require an orderly urban expansion that makes the land use more efficient. They need to plan for future internal population growth and city growth resulting from migrations. They also need to accommodate new and thriving urban functions such as transportation routes, etc., as they expand. However, frequently the physical growth of urban areas is disproportionate in relation to population growth, and these results in land use that is less efficient in many forms. This type of growth turns out to violate every premise of sustainability that an urban area could be judged by including impacting on the environment and causing other negative social and economic consequences such as increasing spatial inequalities and lessening of economies of agglomeration.

*Concepts*:

Population growth rate (PGR) is the change of a population in a defined area (country, city, etc) during a period, usually one year, expressed as a percentage of the population at the start of that period. It reflects the number of births and deaths during a period and the number of people migrating to and from the focus area. In SDG 11.3.1, this is computed at the area defined as urban/city.

Land consumption within the context of indicator 11.3.1 is defined as the uptake of land by urbanized land uses, which often involves conversion of land from non-urban to urban functions.

Land consumption rate is the rate at which urbanized land or land occupied by a city/urban area changes during a period of time (usually one year), expressed as a percentage of the land occupied by the city/urban area at the start of that time.

Comments and limitations:
The major limitation for this indicator lies in its interpretation. In each human settlement structure, there are many factors at play, that make it more difficult to generalize the implication of a single LCRPGR value to sustainable urbanization. For example, while a value less than 1 could be a good indicator of urban compactness and its associated benefits, intra-city analysis may reveal high levels of congestion and poor living environments, which is against the principles of sustainable development. On the other hand, a value of one may not mean an optimal balance between spatial growth of urban areas and their populations, since it would imply new developments with every unit increase in population. To help explain the values of the indicator, two secondary indicators have been proposed, which use the same inputs as the core indicator: built up area per capita and total change in built up area.

Another limitation in the indicator is where zero or negative growth get reported, such as where population over the analysis period decreases or a natural disaster results in lose of the built-up area mass. Without looking at the land consumption and population growth rates separately, it is difficult to correctly interpret the indicator and its meaning. To address this, it is recommended to understand the individual rates, and also use the proposed secondary indicators to explain the trends.

Aggregating the indicator values for more than one city may also make the interpretation ambiguous. For example, an average value for a country with two cities might be between 0 and 1 if both cities are record values within this range, or if one has a value above 1 and the other a value below 0. The use of the national sample of cities approach, which produces a representative sample for each country will help resolve this challenge.

In the absence of the GIS layers, this indicator may not be computed as defined. As a result, more alternative measures for land that is developed or consumed per year can be adequately used. Alternatively, one can monitor the efficient use of urban land by measuring how well we are achieving the densities in residential zones that any city plans or international guidance call for. Comparing achieved to planned densities is very useful at the city level. However, planned densities vary greatly from country to country, and at times from city to city. At the sub-regional or city levels, it is more appropriate to compare average densities achieved currently to those achieved in the recent past. While building more densely does use land more efficiently, high density neighborhoods, especially in and around urban centers, have a number of other advantages. They support more frequent public transportation, and more local stores and shops; they encourage pedestrian activity to and from local establishments; and they create lively (and sometimes safer) street life.

## Methodology

Computation Method:
The method to compute ratio of land consumption rate to population growth rate follows five broad steps
Deciding on the analysis period/years
Delimitation of the urban area or city which will act as the geographical scope for the analysis
Spatial analysis and computation of the land consumption rate
Spatial analysis and computation of the population growth rate
Computation of the ratio of land consumption rate to population growth rate
Computation of recommended secondary indicators

Deciding on the analysis period/years
This step involves selecting the time period during which the measurement of the indicator will be undertaken. Since this indicator considers historical growth of urban areas, analysis can be done annually, in 5 year cycles or 10 year cycles. Cycles of 5 or 10 years are commended, especially where use of mid-to-high resolution satellite imagery is used to extract data on built up areas, which is used to compute the land consumption rate component of the indicator. UN-Habitat and partners have been creating a repository of some data on this indicator using 1990 as the baseline year. Countries can however compute the indicator as far as back as satellite imagery is available (1975 for Landsat free imagery) and can maintain the current/most recent year as the final reporting year.

Delimitation of the urban area or city which will act as the spatial analysis scope
Urban areas and cities grow in different ways, the most common of which include infill (new developments within existing urban areas resulting in densification), extension (new developments at the edge of existing urban areas), leapfrogging (new urban threshold developments which are not attached to the urban area but which are functionally linked) and inclusion (engulfing of outlying urban clusters or leapfrog developments into the urban area, often forming urban conurbations). Key to note also is that growth of urban areas is not always positive. Sometimes, negative growth can be recorded, such as where disasters (e.gs floods, earthquakes) result in collapse of buildings and/or reduction in the built-up area mass.
Understanding the spatial growth of urban areas requires two important pre-requisites: a) delimitation of an appropriate spatial analysis scope which captures the entire urban fabric (as opposed to just the administratively defined boundaries), and b) use of a growth tracking measurement that helps understand when both positive and negative growth happen. For the former, a harmonized urban area/city definition approach which allows for consistent analysis is recommended, while the use of built up areas is recommended for the latter since it allows for measurement of both positive and negative urban growth.
Following consultations with 86 member states, the United Nations Statistical Commission in its 51st Session (March 2020) endorsed the Degree of Urbanisation (DEGURBA) as a workable method to delineate cities, urban and rural areas for international statistical comparisons. Countries are thus encouraged to adopt this approach, which will help them produce data that is comparable across urban areas within their territories, as well as with urban areas and cities in other countries.

Spatial analysis and computation of the land consumption rate
Using the urban boundaries defined in step (b), spatial analysis is undertaken to determine the rate of land consumption rate. To implement this, the three steps below are followed
From satellite imagery, extract data on built up areas for each analysis year
Calculate the total area covered by the built-up areas for each of the analysis years
Compute the (annual) land consumption rate using the formula:

Land consumption rate i.e. $\mathbf{LCR} = \dfrac{\mathbf{LN(Urb_{t+n}/Urb_t)}}{\mathbf{(y)}}$

Where

LN  is the natural algorithm value

$Urb_t$ is the total area of all built-up areas within the urban area/city in the past/initial year

$Urb_{t+n}$ is the total area of all built-up areas within the urban area/city in the current year

y is the number of years between the two measurement periods

Spatial analysis and computation of the population growth rate

Using the urban boundaries defined in step (b), calculate the total population within the urban area in each of the analysis years where the land consumption rate is computed. Population data collected by National Statistical Offices through censuses and other surveys should be used for this analysis. Where this type of population data is not available, or where data is released at large population units which exceed the defined urban area, countries are encouraged to create population grids, which can help disaggregate the data from large and different sized census/ population data release units to smaller uniform sized grids.

The (annual) population growth rate is calculated using the total population within the urban area for the analysis period using the formula below

Population Growth rate i.e. $\mathbf{PGR} = \dfrac{\mathbf{LN(Pop_{t+n}/Pop_t)}}{\mathbf{(y)}}$

Where

LN is the natural algorithm value

$Pop_t$ is the total population within the urban area/city in the past/initial year

$Pop_{t+n}$    is the total population within the urban area/city in the current/final year

y        is the number of years between the two measurement periods

Computation of the ratio of land consumption rate to population growth rate

The ratio of land consumption rate (LCRPGR) to population rate is calculated using the formula:

$$\mathbf{LCRPGR} = \left( \frac{\mathbf{Land\ Consumption\ rate}}{\mathbf{Population\ growth\ rate}} \right)$$

The overall formula can be summarized as:

$$\mathbf{LCRPGR} = \left( \frac{\mathbf{LN\left(\dfrac{Urb_{t+n}}{Urb_t}\right)}}{\mathbf{y}} \right) \Bigg/ \left( \frac{\mathbf{LN\left(\dfrac{Pop_{t+n}}{Pop_t}\right)}}{\mathbf{y}} \right)$$

The analysis years for both the land consumption rate and the population growth rate should be the same.

Computation of recommended secondary indicators

There are two important secondary indicators which both explain the LCRPGR value and also help better the nature of urban growth in each urban area. Both indicators use the same input data as the LCRPGR and will thus not require additional work by countries. These are:

Built-up area per capita – which is a measure of the average amount of built-up area available to each person in an urban area during each analysis year.  This indicator can help identify when urban areas become too dense and/or when they become too sparsely populated. It is computed by dividing the total built up area by the total urban population within the urban area/city at a given year, using the formula below;

$$\mathbf{Built-up\ area\ per\ capita\ (m2/person)} = \left( \frac{\mathbf{UrBU_t}}{\mathbf{Pop_t}} \right)$$

Where

$UrBU_t$ is the total built-up area/city in the urban area in time t (in square meters)

$Pop_t$ is the population in the urban area in time t

Total change in built up area – which is a measure of the total increase in built up areas within the urban area over time. When applied to a small part of an urban area, such as the core city (or old part of the urban area), this indicator can be used to understand densification trends in urban areas. It is measured using the same inputs as the land consumption rate for the different analysis years, based on the below formula:

$$\mathbf{Total\ change\ in\ built\ up\ area\ (\%)} = \frac{\mathbf{(UrBU_{t+n} - \ UrBU_t)}}{\mathbf{UrBU_t}}$$

Where
$UrBU_{t+n}$ is the total built-up area in the urban area/city in time the current year
$UrBU_t$ is the total built-up area in the urban area/city in time the previous year

Detailed steps for computation of the core indicator and the secondary indicators are available in the detailed training module for indicator 11.3.1: on the secondary indicators https://unhabitat.org/sites/default/files/2020/07/indicator_11.3.1_training_module_land_use_efficiency_french.pdf

At country level  and at regional and global levels

All countries are expected to fully report on this indicator more consistently starting in 2020  with few challenges where missing values will be reported due to missing base map files. Only limited cases of missing values are anticipated, which can emanate from situations  where population growth figures are unavailable or where land consumption rates are inestimable due to lack or poor quality of multi-temporal coverage of satellite imagery. Because the values will be aggregated at the national levels from a national sample of cities, missing values will be less observed at national and global levels

Regional aggregates:

Data at the global/regional levels will be estimated from national figures derived from national sample of cities. Regional estimates will incorporate national representations using a weighting by population sizes. Global monitoring will be led by UN-Habitat with the support of other partners and regional commissions.

Data Sources

Description:

Population data required for this indicator is available from National Statistical Offices, UNDESA as well as through newly emerging multi-temporal gridded population datasets for the world. Historical built-up area data can also be generated for most countries and cities using mid-to-high resolution satellite imagery from the Landsat and Sentinel missions.  Higher resolution data is available for several countries which have a rich repository of earth observation missions or partnerships with commercial providers of high to very high resolution imagery.  Other sources of data for this indicator include urban planning authorities and multi-temporal analytical databases on built up area at the global level produced by organizations working in the earth observation field.
The production of data for this indicator requires some level of understanding of geospatial analysis techniques at the country level. Several tools have been developed to help with the indicator computation, including systems that allow for on-the-cloud analysis, but users still require some good level of understanding of the process and geospatial analysis to efficiently utilize these tools. Equally, access to internet is needed either to download the free satellite imagery or undertake analysis using existing cloud-based architecture.

Collection process:

National level capacity building initiatives will aim to balance the knowledge and understanding of the analysis, compilation and reporting of this indicator. Global reporting will rely on the estimates that come from the national statistical agencies, who should work collaboratively with mapping agencies and city data producers.. With uniform standards in computation at the national level, few errors of omission or bias will be observed at the global/regional level. A rigorous analysis routine will be used to re-assess the quality and accuracy of the data at the regional and global levels. This will involve cross-comparisons with expected ranges of the values reported for cities.

UN-Habitat has developed a simple reporting template that allows countries to input data on the intermediate products (built-up area and population) then get the computed values for each analysis city and period. The template, which will be send to countries every year to report any new data is appended to this metadata

Template for
compilation of SDG in

Data collection:

The monitoring of the indicator can be repeated at regular intervals of 5 years, allowing for three reporting points until the year 2030. Since this indicator considers historical growth trends of urban areas, analysis can date as far back as data allows.

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**16.Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratic.**

**Adapted:** SDGs 11.3.2: https://unstats.un.org/sdgs/metadata/files/Metadata-11-03-02.docx

**Definition:**

This indicator measures the availability of structures for participation and civic engagement of National Urban programmes with particular attention to project/programme beneficiaries and vulnerable children, adolescent girls and boys. Therefore, local and national governments should strive to: a) facilitate and protect people's participation and civic engagement through independent civil society organizations that can be from diverse backgrounds - local, national, and international; b) promote civic and human rights education and training programmes to make urban residents aware of their rights and the changing roles of diverse children; adolescent girls and boys; women, men, and young women and men in urban settings; c) remove the barriers that block participation of socially marginalized groups and promote non-discrimination and the full and equal participation of children; adolescent girls and boys; women, young men and women and marginalized groups.

Participation is an informed process of engagement with stakeholders, where key groups actively participate in defining the process and content of policymaking. [SOURCE: UNISDR, 2017 and ISO 22300:2018 (en), 3.187][31]

**Rationale:**

Member States committed themselves to creating inclusive platforms for meaningful participation by all stakeholders including civil society in decision-making, planning and implementation of the New Urban Agenda. They also agreed to promote effective participation and collaboration among relevant stakeholders, including local government; the private sector and civil society; women; organizations representing youth in the identification and addressing of existing and emerging challenges and spotting opportunities for urban economic development (NUA §41 & 48).

*Concepts:*

*Democratic participation:* Structures allow and encourage participation of civil society representing a cross-section of society that allows for equal representation of all members of the community.

*Direct participation:* Structures allow and encourage civil society accessing and actively engaging in decision-making, without intermediaries, at every stage of the urban planning and management process.

*Regular participation:* Structures allow and encourage civil society participation at every stage of the urban planning and management process, and at least every six months.

*Marginalized groups:* Groups of people that are not traditionally given equal voice in governance processes. These include, but are not limited to: children, adolescent girls and boys, women, young men and women, low-income communities, ethnic minorities, religious minorities, people with disabilities, the elderly, sexual and gender identity minorities and migrants.

*Structures:* Any formal platform that allows for participation of civil society. This can include, but is not limited to: national or local legislation, policy, town council meetings, websites, elections, suggestion boxes, appeals processes, notice period for planning proposals etc.

*Civil Society:* These are any combination of private organizations that are not conventionally for profit operating independently of the government and not part of any government, including but not limited to non-governmental organizations, community groups, religious-based organizations, community-based organizations, regional representative groups, unions, research institutes, think tanks, professional bodies, non-profit sports and cultural groups, and any other groups that conduct its activities to advocate and champion for promotion of the interests and wills of the members and wider community in the pursuit of relief of suffering, interests of the poor and vulnerable groups, and promotion of community development.

*Urban Management:* The officials, including elected officials and public servants, that are responsible for city management. Across all sectors, such as roads, water, sanitation, energy, public space, land title etc.

*Urban Budget decision making:* The process by which money is allocated to various sectors of urban management, including roads, roads, water, sanitation, energy, public space, land title etc.

*Urban Planning, including Design and Agreements:* The technical and political process that concerns the development and use of land, how the natural environment is used, etc. Design includes overarching and specific design of public space, as well as zoning

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[31] UN-HABITAT, 2019, "Resilience General Glossary English"

and land use definitions. Agreements refer to specific contract/arrangements made with various groups in regard to their land, e.g. Indigenous groups, protected natural environments, etc.

*Outstanding/anticipated issues for this indicator:*

The indicator measures the availability of structures for civil society participation in urban planning and management, which is a reflection of structures for citizen voices/participation. The fact that informed evaluators conduct the evaluation can introduce biases. These biases and discrepancies have been examined in the pilot phases and so far, the experiences are that the marginal differences are not as large as was expected.

Overall, the evaluator's assessments sometimes do not reflect a full analysis of the effectiveness or accessibility of these structures in its totality but gives a local idea of how these evaluators view the inclusiveness and openness on these structures to accommodate the participation of citizens and civil society. Changes in data will be examined for intra-city differences and within country differences over time to understand more sources for variations and internal consistencies.

Within the civic society landscape, there are numerous players including civil societies led by individuals, community groups, advocates, corporations and foundations. Similarly, there are many different views about the relevance and importance of civil society participation particularly, perhaps, among traditionally marginalised groups listed above. These varying structures at the urban level may either be available for involvement.

Finally, civic society engagement in urban planning and management involves overlapping pathways and goals, including a mix of planned and unpredicted elements. Advancing toward a measurement frame is intended to help sort out theories and pathways – not to set hard boundary lines, but rather to help both urban managers and communities better understand what they are trying to achieve, and how they are getting there.

**Computation Method**

To measure existence of direct participation structures of civil society in urban planning and management at the country or city level, a scorecard approach will be used to evaluate the available structures for civil society participation in urban planning and management; as evaluated by five (5) local experts from government, academia, civil society and international organizations. The identifications and selection of these 5 local evaluators/experts will be guided by local urban observatories teams that are available in many cities. In the pilot exercises, these urban observatories as local custodians of urban data at the city level are able to coordinate the assessments and check for consistencies and relevant local references that guide the decisions and scores of the evaluators.

A questionnaire with a 4-point Likert scale (strongly disagree, disagree, agree, and strongly agree) will be used to measure and test the existence of structures for civil society participation in urban governance and management. These structures are examined through four core elements and should be assessed as follows:

1. Are there structures for civil society participation in urban planning, including design and agreements that are direct, regular and democratic?

2. Are there structures for civil society participation in local urban budget decision-making that are direct, regular and democratic?

3. Are there structures for civil society evaluation and feedback on the performance of urban management that are direct, regular and democratic?

4. Do these structures promote the participation of children, women, young men and women, and/or other marginalized groups?

The evaluators will score each of the questions on the Likert Scale, as below.

1 - Strongly disagree, 2 - Disagree, 3 - Agree, 4 - Strongly agree

| | Strongly Disagree (1) | Disagree (2) | Agree (3) | Strongly Agree (4) |
|---|---|---|---|---|
| Are there structures for civil society participation in urban planning, including design and agreements that are direct, regular and democratic? | | | | |
| Are there structures for civil society participation in urban budget decision making, that are direct, regular and democratic? | | | | |

| | | | | |
|---|---|---|---|---|
| Are there structures for civil society evaluation and feedback on the performance of urban management that are direct, regular and democratic? | | | | |
| Do the structures promote the participation of children, adolescent girls and boys, women, young men and women, and/or other marginalized groups? | | | | |

Once each of the five (5) categories is evaluated as shown in the table above, the scored will be averaged to have a final score per evaluator. These will then be averaged to get a final score per city.

The Likert Scale will use the following guidance:

*Strongly Disagree:* There are no structures in place *or* available structures do not allow civil society participation that is direct, regular or democratic.

*Disagree:* Structures exist that allow civil society participation, but they are only partially direct, regular and democratic; or they are only one of direct, regular or democratic.

*Agree:* Structures exist that allow and encourage civil society participation that is direct and/or regular and/or democratic, but not all three.

*Strongly Agree:* Structures exist that allow and encourage civil society participation that is fully direct, regular and democratic.

To determine the proportion of cities with a direct participation structure of civil society in urban planning and management that operates regularly and democratically, a midpoint on the Likert scale of 2.5 will be used. The value of the indicator is the proportion of cities with overall score that is greater than the mid-point.

As a result, if we have N cities selected for the evaluation in a given country, and n is the number of cities with scores that are higher than the mid-point, the value of the indicator will be calculated as:

*Value of Indicator* $= \frac{n}{N}$ *(to be expressed as a percentage)*

Notably, the number of cities in which the evaluation will be conducted may be determined using the National Sample of Cities approach. The approach will help draw a sample of cities using sound statistical and scientific methodologies based on several relevant city-specific criteria/characteristics that capture the specific contexts of countries, ensuring that the sample is representative of a given country's territory, geography, size, history, etc.

The unit of measure is percentage.

*Calculation of achievement rate:*
Evaluators examine structures at the city and country level, including (for example) legislation, rules and regulations, policies and practice. Data is collected from Evaluators reports and scores who are attached to local urban observatories in various cities.

Disaggregate by Male/Female, Disability, Urban/Rural, Geography, Wealth, Disability, Humanitarian/Non-humanitarian situation, Age

Disaggregate by city characteristics, regularity of participation, nature, and typology of existing structures

**Data Sources and Frequency of collection**
Monitoring will be bi-annual until 2036. Some data can come from the cities directly.

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**17.Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage, level of government, type of expenditure and type of private funding**
**Adapted:** SDGs 11.4.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-04-01.docx

**Definition:**

Total funding from government (central, regional, local/city-level), private sources (household, corporate & sponsorship and international sources) in the preservation, protection and conservation of cultural and/or natural heritage for a given year per capita. The results should be express in Purchasing Power Parities (PPP) in constant $.[32]

**Rationale:**

This indicator measures the per capita expenditure (public and private) in the preservation, protection and conservation of cultural and/or natural heritage over time. To monitor change over time of national efforts for the protection and safeguard of cultural and/or natural heritage. It illustrates how financial efforts/actions made by public authorities, both at the local, national and international levels, alone or in partnership with civil society organizations (CSO) and the private sector, to protect and safeguard the world's cultural and natural heritage has a direct impact in making cities and human settlements more sustainable. This means that cultural resources and assets are safeguarded to keep attracting people (inhabitants, workers, tourists, etc.) and financial investments, to ultimately enhance the total amount of expenditure. This indicator is a proxy to measure the target.

This indicator would allow insight into whether or not countries are strengthening their efforts into safeguarding their cultural and natural heritage. It will help to identify areas that require more attention for policy purposes.

Expressing the indicator in PPP$ allows for comparison between countries and using constant values when looking at time-series is necessary to evaluate how real (eliminating the effects of inflation) resources are evolving over time.

In the New Urban Agenda, Member States committed themselves to the sustainable leveraging of natural and cultural heritage in cities and human settlements through integrated urban and territorial policies and adequate investments at the national, subnational and local levels, to safeguard and promote cultural infrastructures and sites, museums, indigenous cultures and languages. This includes fostering an enabling environment for businesses and innovation and creation of decent and productive jobs through the promotion of cultural and creative industries, sustainable tourism, performing arts and heritage conservation activities (NUA §38, 45, 60 and 97).

*Concepts:*

*Cultural heritage* is the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations[33]. Examples include: a) monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features which are of outstanding value from the point of view of history, art or science; b) groups of buildings: groups of separate or connected buildings, which because of their architecture, their homogeneity or their place in the landscape, are of outstanding value from the point of view of history, art or science; c) sites: works of man or the combined works of nature and man, and areas including archaeological sites, which are of outstanding value from the historical, aesthetic, ethnological or anthropological point of view[34].

*Natural heritage* includes natural features, geological and physiographical formations and delineated areas that constitute the habitat of threatened species of animals and plants and natural sites of value from the point of view of science, conservation or natural beauty. It also includes nature parks and reserves, zoos, aquaria and botanical gardens[35].

*Preservation:* The aim of preservation is to obviate damage liable to be caused by environmental or accidental factors, which pose a threat in the immediate surroundings of the object to be conserved. Accordingly, preventive methods and measures are not usually applied directly but are designed to control the microclimatic conditions of the environment with the aim of eradicating harmful agents or elements, which may have a temporary or permanent influence on the deterioration of the object[36].

*World Heritage Centre designation* refers to properties on the UNESCO World Heritage List. It encompasses the sites or properties inscribed in the list of UNESCO world heritage sites recognizing the universal values of these sites. http://whc.unesco.org/en/list/

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[32] https://unstats.un.org/sdgs/metadata/files/Metadata-11-04-01.docx
[33] http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage/
[34] UNESCO CULTURE FOR DEVELOPMENT INDICATORS page 132, https://en.unesco.org/creativity/sites/creativity/files/digital-library/CDIS%20Methodology%20Manual_0.pdf
[35] http://uis.unesco.org/en/glossary-term/natural-heritage
[36] UNESCO, Traditional Restoration Techniques: A RAMP Study, 1988.

**Computation Method**

The indicator is calculated by dividing total public funding in heritage (i.e. including transfers paid but excluding transfers received) from government (central, regional, local) and the total of private funding from households, other private sources such as donations, sponsorships or international sources in a given year by the number of inhabitants and by the PPP$ conversion factor.

HCExp per capita $\frac{\sum Exp_{pu} + Exp_{pr}}{Population} * PPP$

HCExp per capita   = Expenditure per inhabitant in heritage in constant PPP$

HC Exp = Expenditure on Preservation, Protection and Conservation of all cultural and/or natural heritage

$Exp_{pu}$= Sum of public expenditure by all levels of government on the preservation, protection and conservation of cultural and/or natural heritage

$Exp_{pr}$ =  Sum of all types of private expenditure on the preservation, protection and conservation of cultural and/or natural heritage

**Data Sources and frequency of collection**

Data of public expenditure and the percentage at different levels of government can be obtained from the public authorities themselves. At national level, ministries of finance, and/or ministries of culture, environment financial management systems are the source of government expenditure on culture. Data on expenditure by lower levels of government can be centralized or collected directly from local authorities. The Ministry selected by the government as the focal point for this indicator should collect the data from the relevant ministries.

Household expenditure on culture is collected through general consumption expenditure surveys or dedicated cultural participation and consumption surveys.

Data on private sources of funding for heritage such (e.g. corporate sponsorship and philanthropy; private donations) are rarely collected systematically and would often require additional surveys proceeded by significant analytical, preparatory and advocacy work.

The monitoring of the indicator will be annual until 2036.

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  http://www.statcan.gc.ca/pub/87f0001x/2012001/t012-eng.htm

- https://unstats.un.org/sdgs/metadata/files/Metadata-11-04-01.docx

**18.Proportion of Municipal solid waste collected and managed in controlled facilities;**
Adapted from SDG 11.6.1 https://unstats.un.org/sdgs/metadata/files/Metadata-11-06-01.docx

**Definition**:
SDG 11.6 targets an improved environmental performance of cities and SDG indicator 11.6.1 measures the progress of the performance of a city's municipal solid waste management. It quantifies the parameters listed below, which are essential for planning and implementing sustainable Municipal Solid Waste (MSW). In most cases, these variables are generally compatible with those collected through the UNSD/UNEP Questionnaire on Environment Statistics (waste section).
Total MSW generated in the city (tonnes/day)
Total MSW collected in the city (tonnes/day)
Proportion of population with access to basic MSW collection services in the city (%)
Total MSW managed in controlled facilities in the city (tonnes/day)
MSW composition
It is important to realize that part (b) total MSW collected and (c) proportion of the population with access to basic MSW collection services are two different concepts. While part (b) refers to amounts of waste reaching waste management facilities, part (c) considers the population who receive waste collection services. In some cities it is common to dump waste 'collected' from households into the surrounding areas instead of transporting it to a disposal or recovery facility. In this case the household has waste collection services, but the collected waste is polluting the environment. Therefore, it is possible that a city has a high proportion of population with access to basic waste collection services, but the amount of MSW collected and transported to waste management facilities is low.
Although part (c) is covered by SDG 1 ("End poverty in all its forms everywhere"), under target 1.4 and SDG indicator 1.4.1 which focuses on universal access to basic services, with a particular emphasis on poor and vulnerable groups, this document provides guidelines, quality ladders and household questionnaires to measure the proportion of the population with access to 'basic' MSW collection services. The household questionnaire can be integrated into the national census or global household survey mechanism such as Demographic and Health Survey or UNICEF's Multiple Indicator Cluster Surveys. Due to the lack of standardized concepts and definitions that differentiate these two concepts, many cities report the proportion of collected MSW in their own terms. Therefore, this metadata distinguishes clearly between part (b) and (c) and offers introduction to the approaches to monitor and report on part (c).

**Rationale**:

In the New Urban Agenda, Member States committed themselves to strengthening the sustainable management of resources, including land, water (oceans, seas and freshwater), environmentally sound management and minimization of all waste. They committed to substantially reducing waste generation by reducing, reusing and recycling waste, minimizing landfills and converting waste to energy. In this context, they noted the need to promote adequate investments in protective, accessible and sustainable infrastructure and service provision systems for water, sanitation and hygiene, sewage, solid waste management, urban drainage, reduction of air pollution and storm water management. They also committed to ensure universal access to affordable disposal of waste and sanitation (NUA §71, 74, 119 and 121).

Urban households and businesses produce substantial amounts of solid waste that must be collected regularly, recycled or treated and disposed properly in order to maintain healthy and sanitary living conditions. Many cities are increasingly facing solid waste management challenges due to rapid urbanization, lack of technical and financial capacity or low policy priority. In addition, the higher the income level of a city, the greater the amount of the solid waste produced. Therefore, the economic growth to be experienced in the developing and emerging countries will pose greater challenges in solid waste management to local governments in the next decades.

Adverse environmental impact of uncollected waste in a city is significant. Uncollected solid waste can end up in drains leading to blocked drainages and cause unsanitary conditions that have a direct health impact on residents. Open burning of uncollected waste produces pollutants that are highly damaging locally and globally. Vectors such as mosquitos usually breed in blocked drainages and blocked drainage contributes to the cause of flooding. In 2015, the Global Waste Management Outlook estimated that at least 2 billion people do not have access to regular waste collection. This is particularly worse in informal settlements and the UN-Habitat's report Solid Waste Management in World Cities published in 2010 estimated only 5% of waste in squatter areas is regularly collected.

The global scale of urbanization and economic growth are creating a potential "time-bomb" regarding the waste we generate in the world. If not addressed now, the significant negative impact on human health and the environment will be felt by nations at all levels of development. An estimated 2 billion tonnes of municipal solid waste (MSW) were generated in 2016, and this number is expected to grow to 3.4 billion tonnes by 2050 under a business-as-usual scenario (Worldbank, 2018). Uncontrolled disposal sites are already a major source of Green House Gases (GHG), and if we continue on the current path the waste sector, particularly food waste, is predicted to account for 8-10% of global anthropogenic GHG emission by 2025. Additionally, every year at least 8 million tonnes of plastic find its way into the world's oceans (Jambeck et al., 2015).

There is a need for SDG indicator 11.6.1 monitoring as it provides critical information for cities and countries to establish better waste and resource management strategies. Reliable data and information on MSW generation and management is limited globally, especially in low- and middle-income country settings where waste data is often produced based on international estimates, without having been validated in the local context.

Many developing and transitional country cities still have an active informal sector and micro-enterprise recycling, reuse and repair; often achieve recycling and recovery rates comparable to those in developed countries, resulting in savings to the waste management budget of the cities. There is a major opportunity for the city to build on these existing recycling systems, reducing some unsustainable practices and enhancing them to protect and develop people's livelihoods, and to reduce still further the costs to the city of managing the residual wastes. The formal and informal sectors need to work together, for the benefit of both. Promoting this indicator also can help formalization of the informal sector in the process of increasing the portion of 'solid waste with adequate discharge'.

A global data collection and publication system through the UNSD/UNEP Questionnaire on Environment Statistics has collected data on MSW collection and treatment for about 20 years. The Questionnaire has been sent to more than 160 countries, covering both national and city levels. However, the response rate for the UNSD/UNEP questionnaire is around 50% and data completeness and quality remain a challenge, especially for developing countries. While efforts will continue to collect data from National Statistical Offices and Ministries of Environment at the national level, it is also critical to improve the availability and accessibility of waste statistics and increase training for collection of data and capacity development at the national and sub-national levels.

This paucity of evidence-based data hinders the development of waste management strategies and constrains investment decision-making in infrastructure and service expansion, leading to many countries having insufficient or absent MSW management services. Poor MSW collection and management trigger severe threats to public health and pollute air and water. Furthermore, uncollected and mismanaged waste is the main source of marine plastic pollution.

The indicator 11.6.1 will also promote Integrated Solid Waste Management (ISWM). An integrated solid waste management system is strongly connected to three dimensions: urban environmental health, the environment and resource management. Moreover, a regular solid waste management strategy is a clear indicator of the effectiveness of a municipal administration. Good waste governance that is inclusive, financially sustainable and based on sound institutions is one of the key challenges of the 21st century, and one of the key responsibilities of a city government.

SDG indicator 11.6.1 quantifies parameters that will help cities and countries to better manage resources, mitigate and prevent environmental pollution, create business, employment and livelihood opportunities, and shift towards a circular economy. The methodology to monitor SDG indicator 11.6.1 provides guidelines for ladders for MSW collection services and control level of waste management facilities and aims to bring standardization around MSW data points.

The indicator 11.6.1 has strong linkages to other SDG indicators such as 6.3.1 (proportion of wastewater safely treated), 12.3.1 (food waste), 12.4.2 (Hazardous waste generated per capita and proportion of hazardous waste treated and by type of treatment) and 12.5.1 (National recycling rate).

UN-Habitat has also developed an additional document Waste Wise Cities Tool - Step by Step Guide to Assess a City's MSWM Performance through SDG indicator 11.6.1 Monitoring which provides detailed methodology for data collection if not available.

*Concepts*:

Municipal Solid Waste (MSW)
Municipal Solid Waste includes waste generated from: households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings). It also includes bulky waste (e.g. white goods, old furniture, mattresses) and waste from selected municipal services, e.g. waste from park and garden maintenance, waste from street cleaning services (street sweepings, the content of litter containers, market cleansing waste), if managed as waste. The definition excludes waste from municipal sewage network and treatment, municipal construction and demolition waste.

Generation
Total MSW Generated is the sum of the amount of municipal waste collected plus the estimated amount of municipal waste from areas not served by a municipal waste collection service.

Collection
Total MSW Collected refers to the amount of municipal waste collected by or on behalf of municipalities, as well as municipal waste collected by the private sector. It includes mixed waste, and fractions collected separately for recovery operations (through door-to-door collection and/or through voluntary deposits).
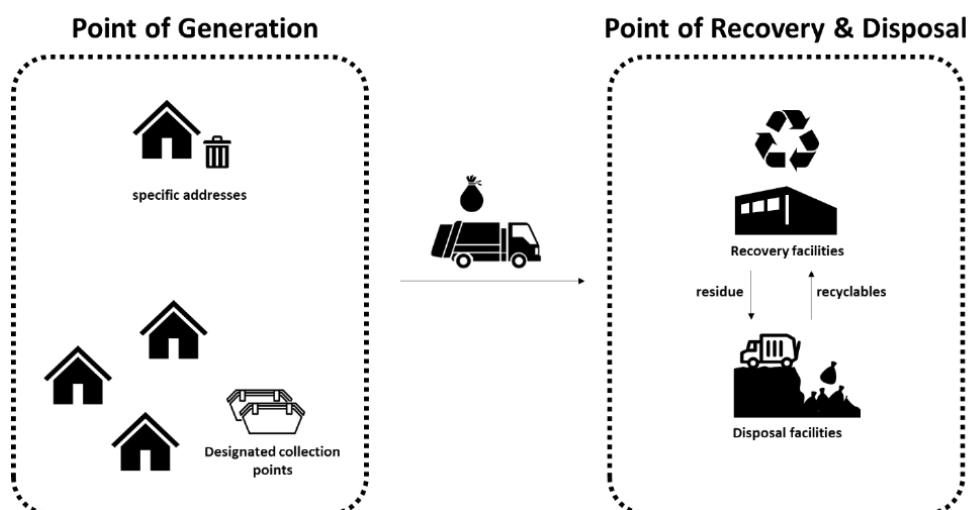
Figure 1: What MSW collected means for SDG indicator 11.6.1

The proportion of the population with Access to Basic MSW Collection Services is the proportion of the population who receive waste collection services that are either basic, improved or full, defined by the service ladder of MSW collection service. It considers aspects of frequency, regularity and proximity of the collection points (**Error! Reference source not found.**). This aspect is measured under the SDG indicator 11.6.1 assessment but it is reported through a different indicator, SDG 1.4.1. on access to basic services.

Table 1: Ladder of MSW collection service that household receives

| SERVICE LEVEL | DEFINITION |
|---|---|
| Full | Receiving door-to-door MSW collection service with basic frequency and regularity and MSW is collected in three or more separate fractions; or<br>Having a designated collection point within 200m distance served with basic frequency and regularity and without major littering and MSW is collected in three or more separate fractions |
| Improved | Receiving door-to-door MSW collection service with basic frequency and regularity and MSW is collected in a minimum of two, separate fractions (eg. wet and dry fractions)<br>Having a designated collection point within 200m distance served with basic frequency and regularity and without major littering and MSW is collected in a minimum of two, separate fractions (eg. wet and dry fractions) |
| Basic | Receiving door-to-door MSW collection service with basic frequency and regularity or<br>Having designated collection point within 200m distance served with basic frequency and regularity |
| Limited | Receiving door-to-door MSW collection service without basic frequency and regularity;<br>Having a designated collection point within 200m distance but not served with basic frequency and regularity; or<br>Having designated collection point in further than 200 m distance. |
| No | Receiving no waste collection service |
| Note: Basic frequency and regularity: served at least once a week for one year | |

Recovery

Recovery means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

Recovery facilities include any facility with recovery activities defined above including recycling, composting, incineration with energy recovery, materials recovery facilities (MRF), mechanical biological treatment (MBT), etc.

Material Recovery Facility (MRF; or materials reclamation facility, materials recycling facility, multi re-use facility) is a specialized recovery facility that receives, separates and prepares recyclable materials for marketing to further processors or end-user manufacturers.

Mechanical Biological Treatment (MBT) facilities are a type of recovery facility that combines an MRF with a form of biological treatment such as composting or anaerobic digestion.

Incineration is the controlled combustion of waste with or without energy recovery.

Incineration with Energy Recovery is the controlled combustion of waste with energy recovery.

Recycling is defined under the UNSD/UNEP Questionnaire and further for the purpose of these indicators as "Any reprocessing of waste material in a production process that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product, and for different purposes should be included. Recycling within industrial plants i.e., at the place of generation

should be excluded." For the purpose of consistency with the Basel Convention reporting and correspondence with EUROSTAT reporting system, Recovery operations R2 to R12 listed in Basel Convention Annex IV, are to be considered as 'Recycling' under the UNSD reporting for hazardous waste.

Recycling value chain usually involves several steps of the private recycling industry which purchase, process and trade materials from the point a recyclable material is extracted from the waste stream until it will be reprocessed into products, materials or substances that have market value. In many low and low-to-middle income countries, this involves informal waste pickers, many middlemen, traders, apex traders and end-of-chain recyclers.

Apex traders collect recyclable materials from different sources and suppliers (in different cities across municipal or even national boundaries) and supply them to different end-of-chain recyclers (sometimes after pre-processing such as sorting, washing and bailing).

End-of-chain recyclers purchase recyclable material from suppliers such as apex traders and reprocess it into products, materials, or substances that have market value.



Example of Plastic

Figure 2: Complexity in the recovery chain (plastic example)

Disposal

Disposal means any operation whose main purpose is not the recovery of materials or energy even if the operation has as a secondary consequence the reclamation of substances or energy.

Disposal Facilities refer to sites which are regularly used by the public authorities and private collectors, regardless of their level of control and legality, to dispose of waste. Such sites may or may not have an official recognition, a permit or a license. Disposal sites may be managed in either a controlled or uncontrolled manner. The definition excludes other unrecognized places where waste is deposited occasionally in small amounts which public authorities may organise clean ups to remove the waste from these sites.

Landfill is the deposit of waste into or onto land. It includes specially engineered landfill sites and temporary storage of over one year on permanent sites. The definition covers both landfills at internal sites, i.e. where a generator of waste is carrying out its own waste disposal at the place of generation, and at external sites.

Control level of MSW recovery and disposal facilities

MSW Managed in Controlled Facilities refers to MSW collected and transported to recovery and disposal facilities with basic, improved or full control according to the Ladder of waste management facilities' control level (Table 2: Ladder of waste management facilities' control level.Table 2). The Ladder can be used as a checklist for assessing the level of control of a particular recovery or disposal facility. The facility has the level of control, where it checks the most boxes. Note that the emphasis is on operational control rather than engineering/design. A facility that is constructed to a high standard, but not operated in compliance with Level 3 (or above) standard is not regarded as a controlled facility.

Table 2: Ladder of waste management facilities' control level.

| CONTROL LEVEL | Landfill site | Incineration with energy recovery | Other recovery facilities |
|---|---|---|---|
| Full Control | Waste daily covered<br>Waste compacted<br>Site fenced and full 24-hour control of access<br>Properly sited, designed and functional sanitary landfill<br>Leachate containment and treatment (naturally consolidated clay on the site or constructed liner)<br>Landfill gas collection and flaring and/or utilization<br>Site staffed;<br>Post closure plan | Built to and operating in compliance with current national laws and standards including stringent stack and GHG emission criteria<br>Emission controls are conducted compliant to environmental standards and results of tests are accessible and transparent to citizens/users<br>Fly ash managed as a hazardous waste using the best appropriate technology<br>Weighing and recording conducted<br>A strong and robust environmental regulator inspects and monitors emissions | Built to and operating in compliance with current national laws and standards<br>Pollution control compliant to environmental standards<br>Protection of workers' health and safety<br>The nutrient value of biologically treated materials utilized for separate organic waste (e.g. in agriculture/horticulture)<br>Materials are extracted, processed according to market specifications, and sold to recycling markets<br>Weighing and recording of incoming loads conducted |

| | | | |
|---|---|---|---|
| | Weighing and recording conducted<br>Protection of workers' health and safety | Protection of workers' health and safety | All outgoing loads registered by weight and type of destination |
| Improved Control | Waste periodically covered<br>Waste compacted<br>Site fenced and control of access<br>Leachate containment and treatment<br>Landfill gas collection (depending on landfill technology)<br>Site staffed<br>Weighing and recording conducted<br>Provisions made for workers' health and safety | N/A | Engineered facilities with effective process control<br>Pollution control compliant to environmental standards<br>Protection of workers' health and safety<br>Evidence of materials extracted being delivered into recycling or recovery markets.<br>Weighing and recording of incoming and outgoing loads conducted |
| Basic Control | Some use of cover<br>Waste compacted<br>Sufficient equipment for compaction<br>Site fenced and control of access<br>No fire/smoke existence<br>Site staffed<br>Weighing and recording conducted<br>The slope of the landfill is stable, landslides not possible<br>Provisions made for workers' health and safety | Emission controls to capture particulates<br>Trained staff follow set operating procedures<br>Equipment maintained<br>Ash management carried out<br>Weighing and recording conducted<br>Provisions made for workers' health and safety | Registered facilities with marked boundaries<br>Some environmental pollution control<br>Provisions made for workers' health and safety<br>Weighing and recording of incoming and outgoing loads conducted |
| Limited Control | No cover<br>Some compaction<br>Some equipment for compaction<br>Some level of access control/fencing<br>No leachate control<br>Some fire/smoke existence<br>Site staffed<br>Weighing and recording conducted<br>The slope of the landfill is unstable with high possibility of a landslide | N/A | Unregistered facilities with distinguishable boundaries<br>No environmental pollution control<br>No provisions made for workers' health and safety<br>Weighing and recording conducted |
| No Control | No cover<br>No compaction<br>No/ limited equipment<br>No fencing<br>No leachate control<br>Fire/smoke existence<br>No staff<br>The slope of the landfill is unstable with high possibility of a landslide | Uncontrolled burning<br>No air/water pollution control | Unregistered locations with no distinguishable boundaries<br>No provisions made for workers' health and safety<br>No environmental pollution control |

Formality of MSWM

The Formality of MSWM activities is an important aspect to take into consideration when conducting the SDG indicator 11.6.1 assessment. MSWM activities are carried out by formal and informal economic units, both public and private, and by generators for the purpose of prevention, collection, transportation, treatment and disposal of waste.

Formal waste management relates to waste management activities undertaken by units working within the context of the formal governmental or non-state actors regulating and operating waste management; that is, organisations or individuals registered as economic units with government authorities and assumed to generally abide by local laws and regulations related to wastes and their management.

Informal waste management, recycling and recovery refers to waste management and recovery activities undertaken by individuals, economic units, or enterprises which are not sponsored, financed, recognised, supported, organised or acknowledged by the formal solid waste authorities, or which operate in violation of or in competition with formal authorities (Scheinberg et al., 2010). Informal units are assumed to abide by local waste-related laws and regulations when it is in their interests to do so.

Municipal Solid Waste Flow in Mombasa, Kenya
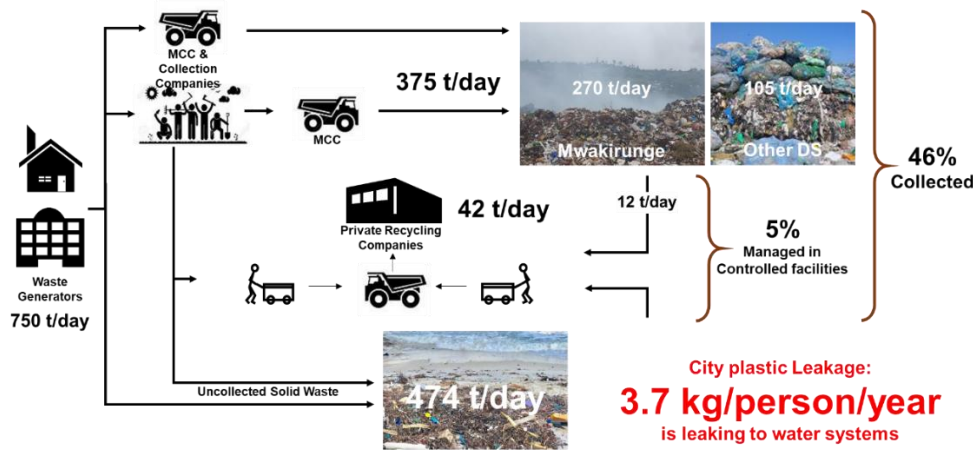


Plastic Waste Flow Diagram for Mombasa, Kenya
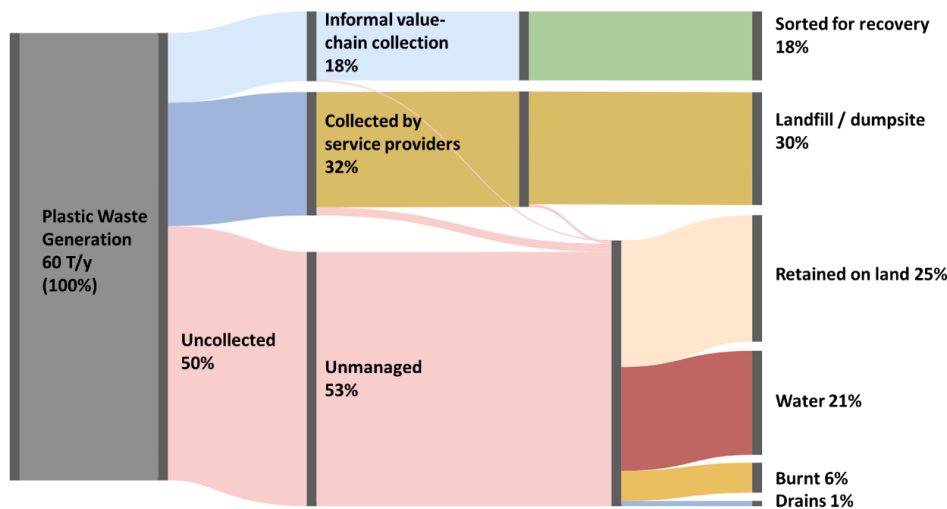
*All %'s are in reference to the total Plastic Waste generated*

## Methodology

Computation Method:

Formulas

The numerator of this indicator is 'total MSW collected and managed in controlled facilities(tonnes/day)' and the denominator is 'total municipal solid waste generated by the city (tonnes/day').

SDG indicator 11.6.1 is calculated as follows:

$$SDG\ 11.6.1 = \frac{\text{Total MSW collected and managed in controlled facilities (t/day)}}{Total\ MSW\ generated\ (t/day)}\ x\ 100\ (\%)$$

The calculation of SDG indicator 11.6.1. provides two important sub-categories with varying policy implications:

$$SDG\ 11.6.1.\ category\ a = \frac{\text{Total MSW collected (t/day)}}{Total\ MSW\ generated\ (t/day)}\ x\ 100\ (\%)$$

$$SDG\ 11.6.1.\ category\ b = \frac{\text{Total MSW managed in controlled facilities (t/day)}}{Total\ MSW\ generated\ (t/day)}\ x\ 100\ (\%)$$

Figure 3 summarizes the elements measured by SDG indicator 11.6.1. The MSW generated by the city is either collected or uncollected, and the collected MSW is delivered to recovery or disposal facilities. Recovery facilities generate residues that are sent to disposal facilities. In many cities, recyclables are also recovered from disposal facilities and brought back into the recycling value chain. Recovery or disposal facilities can be categorized as either 'controlled' or 'uncontrolled' depending on the operational measures put in place to minimize the environmental, health and safety impacts from the facilities. When both recovery and disposal occur within the same facility, it is necessary to evaluate the control level of the recovery and disposal operations independently of each other.
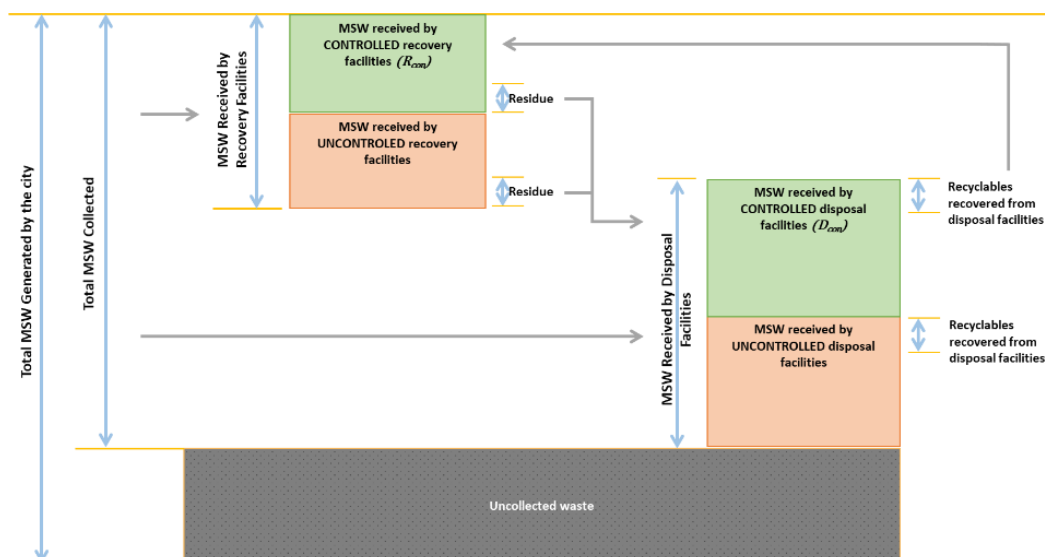
Figure 3: Concept figure of SDG indicator 11.6.1

Data points
The data points required to calculate SDG indicator 11.6.1 include:
Total MSW generated by the city
Total MSW collected
Total MSW managed in controlled facilities
These data also help cities to identify the proportion of MSW that remains uncollected.
Total MSW generated by the city
For cities that do not have reliable data on MSW generation, it can be estimated through the multiplication of the total population and per capita MSW generation from the household. Detailed methodology for this is provided in Steps 1, 2 and 3 in *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring* (UN-Habitat, 2020).
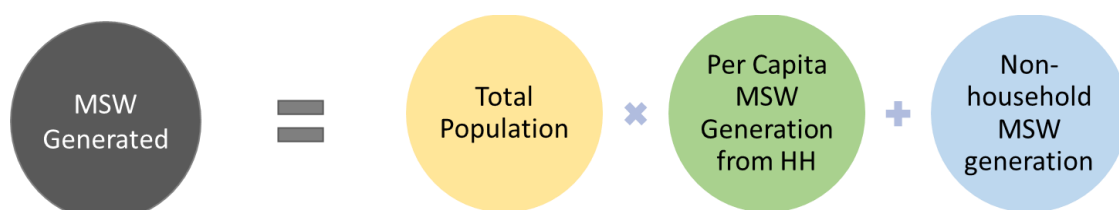


Equation 1: Total MSW Generated
Total MSW collected
When measuring total MSW collected, there is a risk of double counting, concerning the residue or rejects from recovery facilities and the amount of waste recovered from disposal facilities going to recovery. Therefore, these amounts need to be deducted from the sum of waste received by both recovery and disposal facilities. It is assumed residue of recovery facilities is going to disposal facilities or other recovery facilities.
Steps 4 and 5 in *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring* provide detailed methodology on how to collect this data if not available.



Equation 2: Total MSW[37] collected

Total MSW managed in controlled facilities
MSW Managed in Controlled Facilities is MSW collected and transported to recovery and disposal facilities with basic control or above according to the control ladder. Steps 4 and 5 in *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring* provide detailed methodology on how to collect this data if not available.

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[37] Note that MSW collected for recovery includes mixed MSW, commingled recyclables or recoverable fractions extracted from MSW

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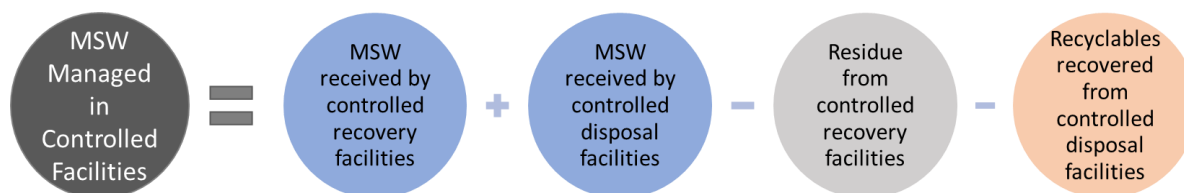
Equation 3: Total MSW Managed in Controlled Facilities

Additional data points

The SDG indicator 11.6.1 assessment provides information for the calculation of three more very relevant MSW management data points. Although they are not necessary for the calculation of the SDG indicator, these figures are of interest for city authorities:

Per capita MSW generation rate

MSW composition

Uncollected waste

Per capita MSW generation rate

A very relevant parameter that can be derived from the previous formula is the "total per capita MSW generation rate". Steps 2 and 3 in *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring* explain how to calculate this through waste sampling from households, if no reliable or updated data is available. Particularly for cities where a large amount of MSW remains uncollected, it is recommended to sample the waste from households, as provided by the Waste Wise Cities Tool.

MSW Composition

The SDG indicator 11.6.1 assessment determines the waste composition at the point of generation (i.e. households) and at the point of disposal. Understanding MSW composition at the beginning and end of the MSW service chain is a useful exercise for several reasons; Understanding composition helps identifying how the existing recovery/recycling sector is functioning, it enables further recovery facilities to be identified and planned, and overall assists triangulation (i.e. test validity and reliability) of data collected. Note that MSW also includes waste from non-household sources. In Step 3 of *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring*, the quantities of MSW generated from commercial and institutional sources, as well as from public spaces, is estimated. However, specific composition analysis on MSW from non-household sources is beyond the scope of this tool as it is complex and resource intensive.

Total uncollected waste

Total uncollected MSW can be calculated by subtracting the total MSW regularly collected from the total MSW generated.
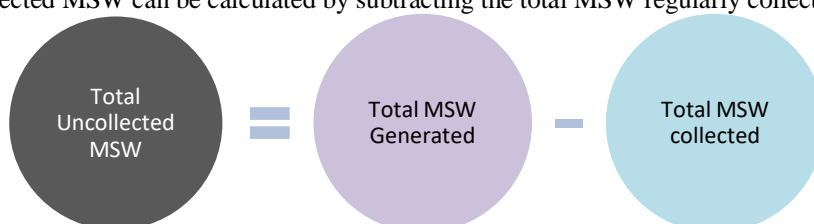


Disaggregation:

Data for this indicator can be disaggregated at various levels in accordance with the country's policy information needs. For instance:

Disaggregation by location (intra-urban)

Disaggregation by source of waste generation e.g. residential, industrial, office, or MSW material received by recovery facilities

Disaggregation by type of final treatment and disposal

MSW generation rate of different income level (high, middle, low)

MSW generation rate in different cities

Treatment of missing values:

<span style="color:blue">At country level</span>

Missing values may arise at the reporting of the city level estimates. At the national level, estimates will be derived by relevant national entities from the nationally representative sample of cities, in which case then there will be very few missing entries.

<span style="color:blue">At regional and global levels</span>

Regarding promoting data quality assurance through the collection of data via the UNSD/UNEP Questionnaire on Environment Statistics, UNSD carries out extensive data validation procedures that include built-in automated procedures, manual checks and cross-references to national sources of data. Communication is carried out with countries for clarification and validation of data. UNSD does not make any estimation or imputation for missing values so the number of data points provided are actual country

data. Only data that are considered accurate or those confirmed by countries during the validation process are included in UNSD's environment statistics database and disseminated on UNSD's website.

Regional aggregates:
Regional aggregates can be an average of the SDG 11.6.1 values in the representative cities in the region.

Sources of discrepancies:
Data on formal Municipal solid waste collection and management may be available from municipal bodies and/or private contractors. Informal collection data may be available from NGOs and community organizations. It is important that all data sources are used for reporting, otherwise discrepancies in forms and guides used are likely to introduce inconsistencies in reported figures. Discrepancies are also likely to arise where geographical jurisdictions are not well marked out for service providers and facilities that manage collected waste.

Methods and guidance available to countries for the compilation of the data at the national level:
It is recommended to establish a system where SDG 11.6.1 data is collected at the municipal level using Waste Wise Cities Tool, consolidated at prefecture or province level then further consolidated at national level. This process can be led by Ministry of Environment or any other national agency with environmental control and protection mandate.

*UN-Habitat's Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring* provides the step-by-step guide for cities to collect relevant parameters necessary to estimate SDG 11.6.1. This also can be utilized as an assessment tool to for the environmental performance of city's solid waste management. The ministries and agencies responsible for environmental protection and waste management is recommended to actively promote and disseminate this tool to collect the fact-based waste data for the policy formulation and infrastructure development for sustainable waste management.


## Data Sources

Countries and cities/municipalities that have the data already are recommended to answer the UNSD/UNEP Questionnaire on Environment Statistics to provide the data related to SDG 11.6.1. For countries and municipalities/cities that do not have the data, it is recommended to apply UN-Habitat's *Waste Wise Cities Tool – Step by Step Guide to Assess a City's MSMW Performance through SDG indicator 11.6.1 Monitoring*.


Collection process:
It is recommended to establish a system where local or municipal governments collect SDG 11.6.1 data utilizing Waste Wise Cities Tool, then the data aggregated by the ministries and agencies in charge of environmental protection. These collected data should be reported to UNSD/UNEP Questionnaire on Environment Statistics every two years from national statistical offices of countries. Currently the response rate for the UNSD/UNEP Questionnaire is around 50% and data completeness and quality remain a challenge, especially for developing countries.

Countries may report their data to UNSD via the UNSD/UNEP Questionnaire on Environment Statistics (waste section) following application of the methods specified in this metadata template. UNSD engages in an extensive data validation process including automated checks, and liaisons with the country's NSO or Ministry of Environment.

**References**
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Manual on the Basic Set of Environment Statistics (https://unstats.un.org/unsd/envstats/fdes/manual_bses.cshtml): Generation and Management of Waste (https://unstats.un.org/unsd/environment/FDES/MS_3.3.1_3.3.2_Waste.pdf)
UNSD/UNEP Questionnaire on Environment Statistics (waste section) (https://unstats.un.org/unsd/envstats/questionnaire)
UNSD Indicator Tables (waste) (https://unstats.un.org/unsd/envstats/qindicators)

**19. Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities**

Adapted from SDG 11.7.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-07-01.docx

Definition and method of Computation

The indicator has several interesting concepts that required global consultations and consensus. These include; built-up area, cities, open spaces for public use, etc. As a custodian agency, UN-Habitat has worked on these concepts along with several other partners.

a) City: A range of accepted definitions of the "city" exist, from those based on population data and extent of the built-up area to those that are based solely on administrative boundaries. These definitions vary within and between nations, complicating the task of international reporting for the SDGs. As partners, UN-Habitat organized global consultations and discussions to narrow down the set of meaningful definitions that would be helpful for the global monitoring and reporting process. The global consultations narrowed down to two city definitions, both emanating from joint work conducted by teams from New York University and European Commission-Joint Research Centre. These are available elsewhere with full documentation of the pros and cons for each. For this indicator, partners resolved to work with the City as defined by its Urban extent (built-up and urbanized open space).

b) City as defined by its Urban extent (built-up and urbanized open space)
The definition of urban extent described in this note was developed to facilitate the study of a global sample of 200 cities in the production of the Atlas of Urban Expansion: 2016 Edition. It relies on the analysis of satellite imagery to define the boundary of the city morphologically – based on the density of structures, not on the density of population, which we know to be highly variable in different contexts. It supposes that non-residential zones should be thought of as part of the city, along with open spaces such as parks and small amounts of undeveloped land, in addition to residential areas that report populations for the census.

c) Urban extent is defined as the total area occupied by the built-up area and the urbanized open space. The built-up area is defined as the contiguous area occupied by buildings and other impervious surfaces.
Landsat imagery[38] is used to identify and classify the built-up pixels into 3 types depending on the share of built-up density (urban-ness) in a 1-km2 circle of a given building (walking distance radius of about 564 meters around a given building):
   • Urban built-up area: pixels where the walking distance circle has a built-up density greater than 50%.
   • Suburban built-up area: pixels where the walking distance circle has a built-up density between 25%-50%. It also includes subdivided land, whether it is wholly unbuilt or not.
   • Rural built-up area: pixels where the walking distance circle has a built-up density of less than 25% and that are not on subdivided land.

The urbanized open space (mainly refers to unbuilt areas including open countryside, forests, crop fields, parks, unbuilt urban areas, cleared land) is classified into 3 types:

   • Fringe open space consists of all open space pixels within 100 meters of urban or suburban pixels;
   • Captured open space consists of all open space clusters that are fully surrounded by urban and suburban built-up pixels and the fringe open space pixels around them, and that are less than 200 hectares in area; and
   • Rural open space consists of all open spaces that are not fringe or captured open spaces.

The fringe open space and captured open space together make up the urbanized open space in a given study area. In other words, the urban extent consists of all the buildings and the small open space areas (<200 ha) that are surrounded by buildings and the open space fringe that is within 100 meters of urban and suburban areas (i.e. where built up area is more than 25%).

d) Public space: The Global Public Space toolkit defines Public Space as all places that are publicly owned or of public use, accessible and enjoyable by all, for free and without a profit motive, categorized into streets, open spaces and public facilities. Public space in general is defined as the meeting or gathering places that exist outside the home and workplace that are generally accessible by members of the public, and which foster resident interaction and opportunities for contact

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[38] Landsat Imagery is made up of several spectral bands that can be used to identify impervious surfaces roughly corresponding to built-up areas, making it possible to classify them by human-assisted algorithms into several classes with a high degree of accuracy.

and proximity. This definition implies a higher level of community interaction and places a focus on public involvement rather than public ownership or stewardship.

For the purpose of monitoring and reporting on indicator 11.7.1, public space is defined as all places of public use, accessible by all, and comprises open public space and streets.

e) **Open public space**: is any open piece of land that is undeveloped or land with no buildings (or other built structures) that is accessible to the public without charge, and provides recreational areas for residents and helps to enhance the beauty and environmental quality of neighbourhoods. UN-Habitat recognizes that different cities have different typologies of open public spaces depending on their typology and size used in planning approaches. Classification by size both soft and hard surface open public spaces are broadly classified into six categories; national/metropolitan open spaces, regional/larger city open spaces, district/city open spaces, neighbourhood open spaces, local/pocket open spaces and linear open spaces. Classification of open public space by typology is described by the function of the space and this may include; green public areas such as riparian reserves, parks and urban forests, playground, square, plazas, waterfronts, sports field, community gardens, parklets and pocket parks.

f) **Streets** are defined thoroughfares that are based inside urban areas, towns, cities and neighbourhoods most commonly lined with houses or buildings used by pedestrians or vehicles in order to go from one place to another in the city, interact and to earn a livelihood. The main purpose of a street is facilitating movement and enabling public interaction. The following elements are considered as streets space: Streets, avenues and boulevards, pavements, passages and galleries, Bicycle paths, sidewalks, traffic island, tramways and roundabouts. Elements excluded from street space include plots (either built-up), open space blocks, railways, paved space within parking lots and airports and individual industries.

g) **Land allocated to streets** refers to the total area of the city/urban extent that is occupied by all forms of streets (as defined above). This indicator only includes streets available at the time of data collection and excludes proposed networks.

For more details and illustrations on the definition of the different types of open spaces considered for this indicator see: (definitions document full link) and SDG 11.7.1 step by step training module (https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf)

**Rationale:**

This indicator is linked to theme 1.1.1.4 "Ensure equal access to public spaces including streets, sidewalks and cycling lanes" in the Guidelines for Reporting on the Implementation of the New Urban Agenda. In the New Urban Agenda, Member States articulated a vision of cities that "prioritize safe, inclusive, accessible, green and quality public spaces that are friendly for families, enhance social and intergenerational interactions, cultural expressions and political participation, as appropriate, and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognizing the specific needs of those in vulnerable situations".[39] In this vein, Member States committed to promote safe, inclusive, accessible, green and quality public spaces, and in particular facilitate access for persons with disabilities to public spaces (NUA §36, 37 & 53). This indicator provides a good way to monitor progress towards achieving this commitment.

Public spaces increase the value of property values around them. The UN-HABITAT research on 30 cities around the world and found evidence that prosperous cities are those that allocate enough land to street development (with proper layout), and enough intersections[40].

The value of public spaces is often overlooked or underestimated by policy makers, leaders, citizens and urban developers. There are several reasons for this, such as the lack of resources, or understanding or capacity to use public space as a complete, multi-functional urban system. Often the lack of appropriate enabling frameworks, weak political will and the absence of the means of public engagement compound the situation. Nevertheless, fundamentally, the lack of a global measurement indicator has hindered the local and global appreciation of the value of the public spaces.

The SDGs have for the first time provided a platform where public spaces can be globally monitored. Indicator 11.7.1 measures the share of land allocated to public spaces and the total population with access of these spaces by age, gender and disability. The share of land that a city allocates to streets and open public spaces is not only critical to its productivity, but also contributes significantly to the social dimensions and health of its population. The size, distribution and quality of a city's overall public space act as a good indicator of shared prosperity.

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[39] New Urban Agenda, page 11

[40] UN-HABITAT, Street as Public Spaces-Drivers of Prosperity (2013), https://unhabitat.org/books/streets-as-public-spaces-and-drivers-of-urban-prosperity/

Cities that improve and sustain the use of public space, including streets, enhance community cohesion, civic identity, and quality of life. A prosperous city develops policies and actions for sustainable use of, and equitable access to public space. In cities, due to a neglect of public space both in quality and quality, there is a need to revise and expand the ratio of land allocated to public spaces to make them more efficient, prosperous and sustainable. Uncontrolled rapid urbanization has created disorderly settlement patterns with dangerously low shares of public space. Many cities in developed countries are also experiencing a dramatic reduction of public space. Reclaiming urban spaces for people is part of how we can humanize our cities and make our streets and public areas more communal.

**Computation Method:**
The method to estimate the area of public space has been globally piloted in over 600 cities and this follows a series of methodological developments that go back to the last 7 years. The finalized methodology is a three-step process:
Spatial analysis to delimit the city/urban extent which will act as the geographical scope for the spatial analysis and indicator computation.
Spatial analysis to identify open public spaces, field work to validate data and access the quality of spaces and calculation of the total area occupied by the verified open public spaces;
Estimation of the total area allocated to streets;
Estimation of share of population with access to open public spaces within 400 meters walking distance out of the total population in the city/ urban area and disaggregation of the population with access by sex, age and persons with disabilities

**Spatial analysis to delimit the city/ urban extent**
Built-up areas are a true reflection of multiple (urban) activities, and the presence of populations; with higher built-up density often reflecting higher activity/population concentrations. To monitor and report on indicator 11.7.1, the main focus is on the built-up area defined as the contiguous area occupied by buildings and other impervious surfaces. To delimit the area of analysis for the indicator, follow these steps:
Identify the study area – this can be all cities in a country or a representative sample of cities
Download freely available LANDSAT imagery for the analysis year. Aim for imagery with low cloud cover. Alternative high resolution imagery from other sources can also be used.
Classify LANDSAT imagery into built-up, non-built-up, and water using a GIS or image processing software.
Assess the level of urban-ness for each of the resultant built-up pixels - This can be achieved through spatial statistics in GIS and/or image processing software. Place a 1-km2 circle around each built-up pixel and calculate the share of pixels in the circle that are also built-up. If >=50% of the pixels in the circle are built-up, the pixel is classified as Urban. If >=25% and <50% of the pixels in the circle are built-up, the pixel is classified as Suburban. If <25% of the pixels in the circle are built-up, the pixel is classified as Rural.
Combine contiguous urban and suburban pixels to form an urban cluster of the built-up area.

**Spatial analysis to identify open public spaces, ground verification and estimate their total area**
This step involves mapping of potential open public spaces within the urban boundaries defined in step one above and estimation of their area. Identification of potential open public spaces is based on the spatial character of each space, and is also informed by existing country/ city land use maps and open space inventories. To compute this component of the indicator, follow these steps:
An inventory of Open Public Spaces should be the initial source of information. Additional legal documents, land use plans and other official sources of information can be used to complement the data from the inventory. If the focus urban area or city has a detailed and up-to-date database of its open public spaces, use the information to plot such spaces in GIS software and compute their areas. Where necessary, clean data to remove components which are not applicable in the computation of this sub-indicator (e.g. recreation areas which attract a fee such as golf courses, etc).
Since many cities and countries do not have an open public spaces inventory, satellite imagery can be used to extract information on open public spaces. The identification of such spaces from imagery should be based on careful evaluation of the character of each space against the known forms of open public spaces within that city / country. High resolution satellite imagery or google earth imagery can be used in this analysis. Open data sources such as OpenStreetMap (OSM) have some polygon data on open spaces in many cities. While this data may not be comprehensive for all cities, it can contribute to the data collection efforts and can be explored.
Using the data extracted from step 2 above, undertake validation to remove spaces which are not open for public use (e.g. private non-built up land within the urban area), or to add new spaces that might have been omitted during the extraction stage. This can be achieved through analysing the character of spaces (e.g size, shape, land cover, etc), comparison of identified spaces with known recreational areas within the city or with data from OpenStreetMap, or consultations with city leaders, local civil society groups, community representatives among others. UN-Habitat, in consultation with partners, experts and data producers have developed a detailed tool to facilitate the verification of each space and collection of additional data on the space quality and accessibility. This tool is freely available and allows for on-site definition/ editing of the space's boundaries. It also contains standard and extended questions which collect data relevant to the indicator, including location of the spaces, their ownership and management, safety, inclusivity and accessibility. This data provides basic information about each space, as well as information relevant for disaggregation - such as access issues linked to age, gender and disabilities, as requested for by the indicator. The tool is dynamic and allows cities to include extra questions which generate information that is useful for their decision making (Tool is available at https://ee.kobotoolbox.org/x/#IGFf6ubq). It should however be noted that the validation approaches which require primary data collection are capital intensive and may not be feasible for most countries in the short term. Validation based on existing city-level

data and continuous stakeholder engagement should thus be adopted since they have been shown to produce reliable results at lower costs.

Calculate the total area covered by the verified open public spaces. Once all open public spaces have been verified, calculate their area in GIS or other database management software. The share of land occupied by these spaces is then calculated using the formula

$$\textbf{Share of occupied land by OPS} = 100 \left[ \frac{\textbf{Total area covered by OPS}}{\textbf{Total area of the city/}\ \textbf{urban extent}} \right]$$

**Computation of land allocated to streets (LAS)**

Where street data by width and length fields is available/specified, the following methodology could be used:

Select only the streets included in the urban extent (or clip streets to the working city boundary)

From GIS (or alternative software), calculate the total area occupied by each street by multiplying its length with width. Add up all individual street areas to attain the total amount of land occupied all streets within the defined urban area.

Where detailed data on streets is not available, there is need map out each street line (or the entire area covered by the streets), measure its length and width, which are required for the area computation. For small urban areas, it is possible to manually digitize all streets, but this is more complex for large urban areas and cities. For these large urban areas, an alternative technique for computing land allocated to the streets is one that adopts sampling principles. An approach that uses the Halton sampling sequence is recommended, specifically because the sequence generates equidistant points, increasing the degree of sample representativeness. To compute LAS using this method, follow the following steps:

Using the urban extent boundary identified earlier, generate a Halton sequence of sample points (Halton sequence refers to quasi-random sequence used to generate points in space that are ex-post evenly spread i.e. Equidistant). The number of points used for each city varies based on its area. In large study areas of more than 20 km2, a density of one circle per hectare is used while in small study areas of less than 20 km2 a density of 0.5 circle per hectare is used.

Buffer the points to get sample areas with an area of 10 hectares each.

Within each 10 hectare sample area, digitize all streets in GIS software and compute the total amount of land they occupy.

Calculate the average land allocated to streets for all sample areas using the following formula:

$$\text{The land allocated to streets} = \frac{\text{Sum of LAS from all sampling points}}{\text{Number of sampling points}}$$

Open source datasets such as OpenStreetMap (OSM) have a good amount of street data on many cities, which is increasingly being updated and extended to cover new areas. This data can also be used as a starting point to understand the pattern of streets in a city. Upon verification of the OSM street categorization for each city, sampling can be used to estimate the average width of each street category; which can in turn help compute the share of land allocated to streets.

The final computation of the indicator is done using the formula:

$$\textbf{Share of the built} - \textbf{up area of the city that is open space in public use}(\%)$$

$$= \frac{\textbf{Total surface of open public space} + \textbf{Total surface of land allocated to sreets}}{\textbf{Total area of the city/}\ \textbf{urban extent}}$$

**Estimation of share of population with access to open public spaces and disaggregation by population group**

To help define an "acceptable walking distance" to open public spaces", UN-Habitat organized a series of consultations with national statistical officers, civil society and community groups, experts in diverse fields, representatives from academia, think tanks, other UN-agencies, and regional commissions among other partners. These consultations, which were held between 2016 and 2018 concluded that a walking distance of 400 meters - equivalent to 5 minutes walk, was a practical and realistic threshold. Based on this, a street network based service area is drawn around each public open space, using the 400 meters access threshold. All populations living within the service areas are in turn identified as having access to the public open spaces, based on the following key assumptions:

Equal access to each space by all groups of people – i.e children, the disabled, women, elderly can walk a distance of 400 meters (for 5 minutes) to access the spaces (in actual sense, these will vary significantly by group)

All streets are walkable – where existing barriers are known (e.g un-walkable streets, lack of pedestrian crossings, etc), these can be defined in the delimitation of the space service area

All public open spaces have equal area of influence – which is measured as 400 meters along street networks. In real life situations, bigger spaces have a much larger area of influence.

All buildings within the service area are habitable, and that the population is equally distributed in all buildings/built up areas

The estimation of total population with access to open public spaces is achieved using the two broad steps described below:

Create 400 meters walking distance service area from each open public along the street network. This requires use of the network analyst tool in GIS software and street data  (such as that from City Authorities or from Open Sources such as OpenStreetMap).   A network service area is a region that encompasses all accessible areas via the streets network within a specified impedance/distance. The distance in each direction (and in turn the shape of the surface area) varies depending on, among other things, existence of streets, presence of barriers along each route (e.g. lack of foot bridges and turns) and walkability or  availability of pedestrian walkways along each street section. In the absence of detailed information on barriers and walkability along each street network, the major assumption in creating the service areas is that all streets are walkable. Since the analysis is done at the city level, local knowledge can be used to exclude streets which are not walkable. The recommendation is to run the service area analysis for each OPS separately then merge all individual service areas to create a continuous service area polygon. Step by step guidance on how to create the service area is provided in the detailed SDG 11.7.1 training module (https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf)

In GIS, overlay the created service area with high resolution demographic data, which should be disaggregated by age, gender, and disability. The best source of population data for the analysis is individual dwelling or block level total population which is collected by National Statistical Offices through censuses and other surveys. Where this level of population data is not available, or where data is released at large population units, countries are encouraged to create population grids, which can help disaggregate the data from large and different sized census/ population data release units to smaller uniform sized grids. For more details on the available methods for creation of population grids explore the links provided under the references section on "Some population gridding approaches". A generic description of the different sources of population data for the indicator computation is also provided in the detailed Indicator 11.7.1 training module (https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf).    Once the appropriate source of population data is acquired, the total population with access to open public spaces in the city/urban area will be equal to the population encompassed within the combined service area for all open public spaces, calculated using the formula below.

$$\text{Share of population with access to open space in public spaces } (\%) = 100 \frac{\text{Total population within 400m service areas}}{\text{Total population within the city/urban extent}}$$

**Methods and guidance available to countries for the compilation of the data at the national level:**

The detailed tutorial on the indicator computation can be accessed here: https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf

**Sources and collection process:**

Satellite imagery (open sources), documentation outlining publicly owned land and community-based maps are the main sources of data.

For estimating the total surface of Built-up area - Data can be extracted from existing layers of satellite imagery ranging from open sources such as Google Earth, US Geological Survey/NASA Landsat imagery and Sentinel Imagery to higher resolution land cover data sets and commercial imagery. Images are to be analyzed for the latest available year.

For the Inventory of open public space - Information can be obtained from legal documents outlining publicly owned land and well-defined land use plans. In some cases, where this information is lacking, incomplete or outdated, open sources, key informants in the city and community-based maps, which are increasingly recognized as a valid source of information, can be a viable alternative. The share of land occupied by public open spaces cannot be obtained directly from the use of high-resolution satellite imagery because it is not possible to determine the ownership or use of open spaces through remote sensing. However, fieldwork to validate and verify the open spaces derived from satellite imagery helps to map out land that is for public and non-public use.

**Data collection and release calendar:**

The monitoring of the indicator can be repeated at regular intervals of 3-5 years, allowing for three reporting points until the year 2030.

UN-Habitat has developed a simple reporting template to collect city level data which will be sent to countries on an annual basis for reporting. This reporting template, which requests for information on the major components described in this metadata is expected to be used until 2030, but slight changes may be effected based as data on more aspects becomes available. The template is appended to this metadata [double click on template icon to see it].



Template for compilation of SDG in

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**20: Does your country have a National Urban Policy or Regional Development Plan that (a) responds to population dynamics, (b) ensures balanced territorial development, and (c) increase in local fiscal space. [41]**
**Adapted:** SDGs 11a.1: https://unstats.un.org/sdgs/metadata/files/Metadata-11-a-01.docx


**Definition:**

*National Urban Policies and regional development plans:*
A National Urban Policy (NUP) is defined as a coherent set of decisions or principle of actions derived through a deliberate government led process of coordinating and rallying various actors for a common vision and goal that will promote more transformative, productive, inclusive, and resilient urban development for the long term[42].
This standard definition is extended and adapted to country contexts and may include, where applicable terms such as National Urban *Plan*, *Framework*, or *Strategy* as long as they are aligned with the above qualifiers.
Similarly, regional development plans follow the same definition, only applied at the subnational level.[43]

*NUP that responds to population dynamics:*
This first qualifier examines to what extent the NUP addresses issues to do with population composition, trends and projections in achieving development goals and targets.
- *Population composition* includes size, geographic distribution and density, household size and composition, mobility and migration, age and sex distribution and disaggregation, as specified in SDG target 17.18
- *Trends* are changes in composition of the population from over time
- *Projections* are expected changes over time that the NUP needs to ensure that they are well addressed.

Key questions for the assessment:
- To what extent are quality and timely data on urban and rural population composition, trends and projections available for use in the development, implementation and monitoring of NUP or Regional Development Plans (RDPs)?
- To what extent do the strategies/interventions of the NUP and/or RDPs refer to population composition, trends and projections over the timeframe of the plan?

*Ensure balanced territorial development:*
This second qualifier entails the promotion of a spatially coherent territory that includes a balanced system of human settlements including cities and towns and including urban corridors; that addresses social, economic, environmental and spatial disparities particularly considering the urban-rural continuum.

Key questions for the assessment:
- To what extent does the national urban policy consider the need for balanced development of the territory as a whole including the differentiated yet equivalent development of all types of settlements including villages, cities and towns, including urban corridors?
- To what extent are the linkages – social, economic, environmental and spatial – between urban, peri-urban and rural areas consider with the ultimate goal of strengthening the urban-rural continuum?

*Increase local fiscal space:*
Local fiscal space is understood as the sum of financial resources available for improved delivery of basic social and economic services at the local level as a result of the budget and related decisions by governments at all levels without any prejudice to the sustainability of a government's financial position.

Key questions for the assessment:
- To what extent has the policy made allowance for the provision of local financial resources to provide for the implementation of the policy and for the delivery of essential basic social and economic services
- To what extent has the policy assessed the status of human capacities required to effectively use financial resources for the implementation of the policy and the delivery of essential basic social and economic services?

*Developing:*
Developing refers to the policy development pathways and processes that consider the feasibility, diagnosis of policy problems and opportunities, the formulation/drafting of the policy until the approval of the policy

*Implementing:*
Implementation refers to the realization of the policy proposal through legislative or financial action/commitments, including the continued monitoring and evaluation of that policy

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[41] Adapted from https://unhabitat.org/un-habitat-for-the-sustainable-development-goals/11-a-urban-rural-linkages/
[42] UN-Habitat and Cities Alliance, 2014., The Evolution of National Urban Policy: A global overview
[43] The metadata https://unstats.un.org/sdgs/metadata/files/Metadata-11-0a-01.docx is slightly shortened here.

**Rationale:**

The New Urban Agenda calls for participatory urban policies and mainstreaming sustainable urban and territorial development as part of integrated development strategies and plans. In this vein, it invited the United Nations system, development partners, international and multilateral financial institutions, the private sector and other stakeholders to coordinate their urban and rural development strategies. It also calls for coherent policy frameworks and fiscal decentralization processes, so that adequate capacities are developed at all levels (NUA §82, 86 and 130).

This indicator is used to monitor economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning. National Urban Policy (NUP) and Regional Development Plans (RDP) promote coordinated and connected urban development. A coordinated effort from government through a NUP or RDP provides the best opportunity for achieving sustainable urbanization and balanced territorial development by linking sectorial policies, connecting national, regional and local government policies, strengthening urban, peri-urban and rural links through balanced territorial development.

This indicator provides a good barometer on global progress on sustainable national urban policies. It serves as gap analysis to support policy recommendations. The indicator can identify good practices and policies among countries that can promote partnership and cooperation between all stakeholders. This indicator is both process oriented and aspirational and has the potential to support the validation of Goal 11 and other SDGs indicators with an urban component. The indicator has the ability to be applicable at multi jurisdictions levels, i.e covering a number of areas while taking care of urban challenges in a more integrated national manner.

Urbanization has indeed historically been a catalyst for economic growth and social progress, and even holds the possibility for the protection and more efficient use of natural resources, and climate change mitigation and adaptation. However, this positive impact is not automatic, particularly in developing countries - where rapid and/or unplanned urbanization can bring about negative economic, social and environmental externalities with increasing congestion, sprawl, informality, social exclusion and conflict – if the provision of services and infrastructure does not keep up with natural and internal population growth , equitable distribution, migration patterns to the city, etc. Governments need to be sensitive to this fact that urbanization is a nation-wide and multi-sectorial issue. Therefore, NUPs provide the framework to harness urbanization dividends and mitigate its negative externalities. A national urban policy calls attention to the impact of sectorial governmental policies on the sustainable development of cities and encourages and enables the vertical and horizontal coordination of government departments and their policies to best support it.

Finally, NUP as an overarching framework articulating and aligning subnational and local plans and policies under a common vision for urbanization that also makes it particularly suited to consider the urban-peri-urban-rural continuum. This urban and rural consideration is a key element of data disaggregation and administrative delineation in territorial planning. However, the importance of urban-rural linkages (through flows of people, natural resources, capital, goods, ecosystem services, information, technology, ideas and innovation) is increasingly being acknowledged for sustainable and integrated territorial development. The New Urban Agenda (NUA) for instance stresses the need to reduce urban and rural disparities to foster equitable development and encourage connectivity. Target 11.a is the only one that explicitly considers *urban, peri-urban and rural areas* under a city-centric SDG 11. NUP is the adequate framework to strengthen and direct urban and rural flows towards the most sustainable patterns of consumption and equitable resource distribution, as they can strike the balance between competition and solidarity between territories of a country.

NUPs are a particularly appropriate framework to achieve target 11.a "Support positive economic, social, and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning", and more generally can be instrumental in creating the necessary enabling framework to implement the urban development objectives of SDG 11.

**Qualifiers for a measurable process indicator**
Given their instrumental role for the implementation and monitoring of global urban agendas, the adoption of a NUP by a national government can be considered as a strong indicator of political commitment to promoting sustainable urban development. It also makes them particularly well suited for measuring target 11.a through a *process* indicator. As a process indicator, 11.a.1 is indeed supposed to assess the progress made towards creating an enabling environment that will ensure achievement of the outcomes and impacts of the targets of the Sustainable Development Agenda. Its definition sets the foundation on *how* target 11.a can be achieved, through measurable means. The proposed revision of the indicator therefore supplements *national urban policies and regional development plans* with 3 qualifiers that indicate the means of successfully reaching the requirements of target 11.a.

The first qualifier is that policies and plans should *respond to population dynamics*. Grounding policies and plans in the most current and comprehensive spatial and demographic data and projections is indeed a prerequisite for a successful implementation. The challenges posed by rapid urbanization indeed stem from the fact that policy and planning framework and their implementation are outpaced by population growth, coupled with policy priorities that may not prioritize inclusive development for all current and future urban residents, which together result in straining the provision of infrastructure and services, and causing socio-economic and environmental damages. Forecasting demographic trends and needs in the diagnosis phase of policies and plans enables

governments to plan ahead for urbanization and provide adequate land and infrastructure in a more cost-efficient and less socially disruptive way than trying to catch up, repair and upgrade uncontrolled expansion. This process of developing urban policies and plans can also be the occasion to improve national data collection on urban areas, and serve other SDG-11 indicators, as well as provide a baseline for monitoring the outcomes of such interventions.

The second qualifier requires policies and plans to *ensure balanced territorial development*, in a direct answer to target 11.a.1's reference to the urban, peri-urban and rural continuum. Policies and plans should adopt a broad territorial perspective and consider the linkages and flows from urban to rural areas not only to avoid and reduce social, economic and environmental disparities between territories but also to promote distinctive strengths and encourage beneficial interactions for the most efficient path to sustainable growth for the country. Such a perspective for policies and plans is achieved higher territorial scale than cities, through regional plans and national policies.

Finally, the third qualifier is to *increase local fiscal space*. As integrated NUPs and regional development plans introduce a more coordinated and decentralized articulation of responsibilities for urban development, ensuring that subnational and local governments have the adequate financial resources to carry out their responsibilities is essential to the successful implementation of policies and plans. The transfer of competences from central to local levels must therefore be accompanied by a commensurate devolution of financial resources and autonomy. Moreover, in times of shrinking governmental budgets, the capacity of local governments to expand and diversify endogenous financial resources and revenues and not rely too heavily on central transfers should be increased. This involves more fiscal power and capacity, better land value capture mechanisms – which go hand in hand with a clear and enforceable land policy framework – and innovative financial partnerships, for instance collaborating with the private sector for service and infrastructure delivery. In all cases, fiscal policies and mechanisms must remain subordinated to the established urban policy and planning objectives: central transfers must be embedded within the NUP framework, and take into account territorial equity; and local fiscal systems must be closely tied to local territorial plans so as to incentivize sustainable patterns of development.

**Computation Method**

The methodology uses a policy evaluation framework that assesses and tracks progress on the extent to which country level national urban policy or regional development plans are being developed or implemented to cover or satisfy the following criteria:
   a) Responds to population dynamics
   b) Ensures balanced regional and territorial development
   c) Increases local fiscal space

Essentially, countries that already have NUP and regional development plans, the NUPs are examined for their consistency in covering the three above qualifiers. While for countries that do not have NUP or are currently developing NUP, these are noted and documented as steps towards developing a NUP. Such countries are counted with zero scores to ensure a full coverage of status on all countries.

To maintain the objectivity and comparability in the policy analysis, five categories of assessment are used for each qualifier. These categories correspond to a progressive evaluation of the extent to which national and regional policies in plans integrate elements that contribute to the realization of each qualifier:

● Category 1: policy document does not make any reference to the qualifier or the country is not developing or implementing a policy (no national urban policy exists)
● Category 2: policy document makes some reference to the specific qualifier, but this qualifier is not integrated in the diagnosis and recommendations of the policy
● Category 3: policy document integrates the specific qualifier, but this qualifier is poorly understood or misinterpreted
● Category 4: policy document integrates in a cross-cutting perspective the specific qualifier without clear policy recommendations
● Category 5: policy document integrates and mainstreams the specific qualifier with clear policy recommendations derived from the qualifier

Each category is assigned a percentage bracket, as follows:
● Category 1: 0 per cent
● Category 2: 1-25 per cent
● Category 3: 26-50 per cent
● Category 4: 51-75 per cent
● Category 5: 76-100 per cent

For example, in Table 1, the evaluator provides a numeric value based on the category that corresponds to the qualifier analysed, understanding that only one category per qualifier is selected:
***Table 1. Evaluators Assessment of one of the qualifiers***

| Qualifier | Category 1 (0 %) | Category 2 (1-25 %) | Category 3 (26-50%) | Category 4 (51-75%) | Category 5 (76-100%) | Total (max 100 per qualifier) |
|---|---|---|---|---|---|---|
| **Qualifier (a)** *national urban policies or regional development plans respond to population dynamics* | 0 | 0 | 40% | 0 | 0 | a = 40% |
| **Qualifier (b)** *National urban policies or regional development plans ensure balanced regional and territorial development* | 0 | 20% | 0 | 0 | 0 | b = 20% |
| **Qualifier (c)** *National urban policies or regional development plans increase local fiscal space* | 0 | 0 | 0 | 75% | 0 | c = 75% |

To reduce the bias of subjectivity in the overall assessment, independent policy evaluation will be undertaken by several evaluators. Once each qualifier is evaluated by all the evaluators, a final averaged value for the indicator 11.a.1 is calculated. The table 2 below provides a summary of the procedures for the computation of the final values (final averaged value for the indicator 11.a.1).

*Table 2: Summary table for the computations of the indicator*

| National Urban Policy | Evaluation 1 | Evaluation 2 | Evaluation 3 | Evaluation 4 | Total (max 100 per qualifier) |
|---|---|---|---|---|---|
| **Qualifier (a)** *national urban policies or regional development plans respond to population dynamics* | A1 | A2 | A3 | A4 | Qa = (A1+A2+A3+A4)/4 |
| **Qualifier (b)** *National urban policies or regional development plans ensure balanced regional and territorial development* | B1 | B2 | B3 | B4 | Qb = (B1+B2+B3+B4)/4 |
| **Qualifier (c)** *National urban policies or regional development plans increase local fiscal space* | C1 | C2 | C3 | C4 | Qc = (C1+C2+C3+C4)/4 |
|  | Final value of the assessment (average values of all 3 qualifiers) | | | | X = (Qa + Qb + Qc)/3 |

Based on the final value of the assessment (X in Table 2 above), countries that fall into categories 2 and 3, which correspond to 1 – 50 percentage points, are not counted as "countries that are developing and implementing a national urban policy or regional development plans". These countries are encouraged to deploy efforts in order to improve national urban policies or regional development plans.

Countries that fall into categories 4 and 5, which correspond to 51 percentage points or more in the assessment, are considered as "countries that are developing and implementing a national urban policy or regional development plan" that contribute to the achievement of Target 11.a. Countries that are counted as having national urban policies or regional development plans can still make efforts to improve the rating of the 3 qualifiers

**Data Sources and Frequency of Data Collection**

The primary source of data is the official documents of national urban policies and regional development plans, available in or provided by national and regional administrations of the countries. All these will be derived from the national and global state of NUP survey results.

The alignment of the policies and plans with proposed indicators are assessed by independent national level policy evaluators to avoid subjectivity and bias. The field of practice on NUP has developed a database of experts across the regions where evaluators are routinely drawn for undertaking these reviews.

To help with this evaluation according to the three qualifiers, policy evaluators follow an agreed upon analysis framework. Other supporting tools such as expert opinion, baseline data, benchmarking, performance monitoring and reporting, and gap and content analysis could be used.

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**21: Material Footprint, material footprint per capita, and material footprint per GDP**

**Adapted:** SDGs 12.2.1: https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-01.docx

**Definition:**

Material Footprint (MF) is the attribution of global material extraction to domestic final demand of a country. The total material footprint is the sum of the material footprint for biomass, fossil fuels, metal ores and non-metal ores[44]. Material footprint per capita is the total material footprint divided by total population of a country.

**Rationale:**

This indicator will be used to monitor progress of the theme "Sustainable Management and Use of Natural Resources" and category 1.3.2.1 "Strengthen the sustainable management of natural resources in urban areas". Member States committed themselves to facilitating the sustainable management of natural resources in cities and human settlements while protecting and improving the urban ecosystem and environmental services, reducing greenhouse gas emissions and air pollution and promoting disaster risk reduction and management and enabling economic development (NUA §65). Material footprint of consumption reports the amount of primary materials required to serve the final demand of a country and can be interpreted as an indicator for the material standard of living/level of capitalization of an economy. Per-capita MF describes the average material use for final demand.

This indicator is used for monitoring the sustainable management and efficient use of natural resources. In the context of the New Urban Agenda, and the monitoring will go on up to 2036.

*Concepts:*

Domestic Material Consumption (DMC) and MF need to be looked at in combination as they cover the two aspects of the economy, production and consumption. The DMC reports the actual amount of material in an economy, MF the virtual amount required across the whole supply chain to service final demand. A country can, for instance have a very high DMC because it has a large primary production sector for export or a very low DMC because it has outsourced most of the material intensive industrial process to other countries. The material footprint corrects for both phenomena.

*Comments and Limitations:*

The global material flows database is based on country material flow accounts from the European Union and Japan and estimated data for the rest of the world.

**Computation Method**

It is calculated as raw material equivalent of imports ($RME_{IM}$) plus domestic extraction (DE) minus raw material equivalents of exports ($RME_{EX}$). For the attribution of the primary material needs of final demand; a global, multi-regional input-output (MRIO) framework is employed. The attribution method based on I-O analytical tools is described in detail in Wiedmann et al. 2015. It is based on the EORA MRIO framework developed by the University of Sydney, Australia (Lenzen et al. 2013) which is an internationally well established and the most detailed and reliable MRIO framework available to date.

The MF indicator can be disaggregated to four main material categories, a varying number of economic sectors whose expenditure require materials and to three domestic final demand sectors (household consumption, government consumption and capital investment) and foreign final demand (i.e. exports).

At country level A zero is imputed when no positive real value was officially recorded, in the base data sets used, for any of the underlying components which make up this aggregated total. Thus "0.0" can represent either NA, or a genuine 0.0, or (crucially) a combination of both, which is a common situation. This allows for values to be easily aggregated into further aggregations; however, it should be thus noted that due to imputing missing values as '0.0', the aggregations may represent a lower value than actual situation.

Similarly, missing values are imputed as zero in the regional and global aggregations. However, in the case where no data is available at all for a particular country then the per capita and per GDP estimates are weighted averages of the available data.

**Data Sources and Frequency of Data Collection**

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[44] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-01.docx, but it has been shortened.

The global material flows database is based on country material flow accounts from the European Union, Japan and estimated data for the rest of the world. Estimated data is produced on the basis of data available from different national or international datasets in the domain of agriculture, forestry, fisheries, mining and energy statistics. International statistical sources for DMC and MF include the IEA, USGS, FAO and COMTRADE databases.

The International Resource Panel of the United Nations Environment Programme compiles the data from countries and from other sources. The data covers more than 170 countries. The data set covers each nation individually from 1970 to 2017. It is available at https://www.resourcepanel.org/global-material-flows-database .

**References**

1. https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-01.docx
2. EUROSTAT (2013). Economy-wide material flow accounts. Compilation Guide 2013.
3. Wiedmann, T., H. Schandl, M. Lenzen, D. Moran, S. Suh, J. West, K. Kanemoto, (2013) The Material Footprint of Nations, Proc. Nat. Acad. Sci. Online before print.
4. Lenzen, M., Moran, D., Kanemoto, K., Geschke, A. (2013) Building Eora: A global Multi-regional Input-Output Database at High Country and Sector Resolution, Economic Systems Research, 25:1, 20-49.

**22: Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP**

Adapted from SDG 12.2.2 : https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-02.docx

**Definition:**
Domestic Material Consumption (DMC) is a standard material flow accounting (MFA) indicator and reports the apparent consumption of materials in a national economy[45]. Domestic Material Consumption reports the actual amount of material in an economy

**Rationale:**
This is another indicator under the theme "Sustainable Management and Use of Natural Resources" and category 1.3.2.1 "Strengthen the sustainable management of natural resources in urban areas". It is also based on the commitment to facilitate the sustainable management of natural resources in the economy (NUA §65). DMC reports the amount of materials that are used in a national economy. DMC is a territorial (production side) indicator. DMC also presents the amount of material that needs to be handled within an economy, which is either added to material stocks of buildings and transport infrastructure or used to fuel the economy as material throughput. DMC describes the physical dimension of economic processes and interactions. It can also be interpreted as long-term waste equivalent. Per-capita DMC describes the average level of material use in an economy – an environmental pressure indicator – and is also referred to as metabolic profile.

This indicator is also for monitoring the sustainable management and efficient use of natural resources, and in the case of NUA the monitoring will go on up to 2036.

*Concepts:*
Domestic Material Consumption (DMC) and MF need to be looked at in combination as they cover the two aspects of the economy, production and consumption. The DMC reports the actual amount of material in an economy, MF the virtual amount required across the whole supply chain to service final demand. A country can, for instance have a very high DMC because it has a large primary production sector for export or a very low DMC because it has outsourced most of the material intensive industrial process to other countries. The material footprint corrects for both phenomena.

*Comments and Limitations:*
DMC cannot be disaggregated to economic sectors which limits its potential to become a satellite account to the System of National Accounts (SNA).

**Computation Method**

It is calculated as direct imports (IM) of material plus domestic extraction (DE) of materials minus direct exports (EX) of materials measured in metric tonnes. DMC measures the amount of materials that are used in economic processes. It does not include materials that are mobilized in the process of domestic extraction but do not enter the economic process. DMC is based on official economic statistics and it requires some modelling to adapt the source data to the methodological requirements of the MFA. The accounting standard and accounting methods are set out in the EUROSTAT guidebooks for MFA accounts. MFA accounting is also part of the central framework of the System of integrated Environmental-Economic Accounts (SEEA).

The DMC indicator can be disaggregated into imports, domestic extraction and exports by a large number of material flow categories. At the highest level of aggregation biomass; fossil fuels, metal ores and non-metallic minerals are distinguished. DMC is usually reported for 11 material categories, DE for 44 material categories.

At country level, a zero is imputed when no positive real value was officially recorded, in the base data sets used, for any of the underlying components which make up this aggregated total. Thus "0.0" can represent either NA, or a genuine 0.0, or (crucially) a combination of both, which is a common situation. This allows for values to be easily aggregated into further aggregations; however, it should be thus noted that due to imputing missing values as '0.0', the aggregations may represent a lower value than actual situation.

Similarly, at regional and global levels, missing values are imputed as zero in the regional and global aggregations. However, in the case where no data is available at all for a country then the per capita and per GDP estimates are weighted averages of the available data.

**Data Sources and Frequency of Data Collection**

The global material flows database is based on country material flow accounts from the European Union, Japan and estimated data for the rest of the world. Estimated data is produced based on data available from different national or international datasets in the

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[45] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-02.docx, but it has been shortened.

domain of agriculture, forestry, fisheries, mining and energy statistics. International statistical sources for DMC and MF include the IEA, USGS, FAO and COMTRADE databases.

The IRP Global Material Flows and Resource Productivity working group compiles the data from countries and from other sources. The data covers more than 170 countries. The data set covers each nation individually from 1970 to 2017. National Statistical Offices are a major source of data for the indicator.

**References:**

1.  https://unstats.un.org/sdgs/metadata/files/Metadata-12-02-02.docx
2.  EUROSTAT (2013). Economy-wide material flow accounts. Compilation guide 2013.
3.  Wiedmann, T., H. Schandl, M. Lenzen, D. Moran, S. Suh, J. West, K. Kanemoto, (2013) The Material Footprint of Nations, Proc. Nat. Acad. Sci. Online before print.
4.  Lenzen, M., Moran, D., Kanemoto, K., Geschke, A. (2013) Building Eora: A global Multi-regional Input-Output Database at High Country and Sector Resolution, Economic Systems Research, 25:1, 20-49.

## 23: Recycling rate, tons of material recycled

Adapted from SDG 12.5.1:  https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf

**Definition**
Proportion of material recycled in the country/city plus quantities exported for recycling out of total waste generated in the country/city, minus material imported intended for recycling. Recycling is material recovery.

**Rationale**
This indicator will be used to monitor progress under the theme "Sustainable Management and Use of Natural Resources" under category 1.3.2.2 "Promote resource conservation and waste reduction, reuse and recycling". In the New Urban Agenda (NUA §74), Member States committed to promoting environmentally sound waste management by reducing, reusing and recycling waste, minimizing landfills, reducing marine pollution and converting waste to energy when that choice delivers the best environmental outcome. For purposes of monitoring the New Urban Agenda; in addition to computing the indicator at the country level, it highly desirable to compute it at city level and national urban level.

Good integrated and sustainable (solid) waste management (ISWM) involves: maintaining healthy conditions for residents in cities through good waste collection and disposal services; protection of the environment throughout the waste chain, especially during treatment and disposal; and proper resource management: by returning both materials and nutrients to beneficial use, through preventing waste and achieving high rates of organics recovery, reuse and recycling. Good resource management involves the "3Rs": reduce, reuse and recycle. Recycled materials can be returned to industrial value chains where they are inputs in national, regional and global production.

Recycling saves cities money and provides employment. For instance, informal and microenterprise sectors handled as much as 27% of waste generated in Delhi, providing employment and also saving the city money since the city would otherwise have had contractors to collect and dispose of an additional 1800 tonnes of waste every day[46].

*Concepts*
Recycling is one of four recovery operations. Recovery is any waste management operation that diverts waste material from the waste stream which results in a certain product with a potential economic or ecological benefit. Recovery refers to the following operations[47]:
1. Material recovery is "recycling"[48];
2. Energy recovery is "re-use as fuel";
3. Biological recovery: includes composting and methanisation;
4. Re-use: any end-of-life products and equipment or its components (e.g. electrical and electronic equipment) are used for the same purpose for which they were produced.

The concepts of recovery and recycling necessitate delineation of when a waste stops being waste. The EU Waste Framework Directive specifies that waste stops being waste when it has undergone a recovery operation[49].

***Computation Method:***

*Equation 1*

$$x = \frac{\text{Municipal plastic waste recycled}}{\text{Total municipal plastic waste generated by the city}} \times 100 \ (\%)$$

*Equation 2*

$$x = \frac{\text{Municipal glass waste recycled}}{\text{Total municipal glass waste generated by the city}} \times 100 \ (\%)$$

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[46] UN-Habitat (2010). *Solid Waste management in the World Cities Water and Sanitation in the World's Cities*, Earthscan, London, ISBN 978-1-84971-169-2 http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2918, page XIX.
[47] ibid
[48] Note that waste material undergoing internal recycling, i.e., directly at the place of generation, is excluded as it does not enter the waste cycle.
[49] United Nations Statistics Division, "Manual on the Basic Set of Environment Statistics of the FDES 2013", Generation and Management of Waste chapter, page 30, https://unstats.un.org/unsd/environment/FDES/MS_3.3.1_3.3.2_Waste.pdf

*Equation 3*

$$x = \frac{\text{Municipal metal waste recycled}}{\text{Total municipal metal waste generated by the city}} \times 100 \ (\%)$$

*Equation 4*

$$x = \frac{\text{Municipal paper waste recycled}}{\text{Total municipal paper waste generated by the city}} \times 100 \ (\%)$$

When disaggregation is not feasible, utilize the following formula:

*Equation 5*

$$x = \frac{\text{Municipal solid waste recycled}}{\text{Total municipal solid waste generated by the city}} \times 100 \ (\%)$$

Total municipal solid waste (MSW) generated (the denominator same as for indicator 18 (SDG-11.6.1)) by the city can be estimated by multiplying the municipal solid waste generated per capita with the population of the city. When the MSW generation per capita is not available, a survey to determine the daily waste generation in households and other institutions (e.g. restaurants, hotels, hospitals, schools, etc.) should be conducted.

**Data Sources and Collection Method**

More detailed qualitative assessment of the degree of management control of MSW facilities is helpful to identify and stimulate performance improvement. The qualitative assessment is based on the internationally recognised 'Wasteaware ISWM Benchmark Indicators' (or WABIs). The WABIs use six sub-indicators (2E1-6) to carry out a balanced assessment of the overall management performance of waste management facilities.

Survey Sheet Example for Recycling and Treatment Facilities

| Treatment facility name | Degree of control score | Process employed | Type of waste | Amount of solid waste received | Amount of sewage sludge | Amount of residue | Residue is exported where |
|---|---|---|---|---|---|---|---|
| | (1) | | | | | | |
| | (2) | | | (t) | (t) | (t) | |
| | (3) | | | | | | |
| | (1) | | | | | | |
| | (2) | | | (t) | (t) | (t) | |
| | (3) | | | | | | |

National statistical offices will get the data from the local authorities and then aggregate to get recycling rates for urban areas countrywide.

Data Disaggregation
- Data for this indicator can be disaggregated at the city and town level or locations in a city
- Disaggregation by population (tons recycled per capita)
- Disaggregation by material type, i.e., paper, plastic, glass, metal

It is important to disaggregate because recycling rates vary greatly by type of material. Plastic waste has a very negative impact of on the environment, especially on marine life. Hence, it is crucial to know progress in reducing plastic waste.

**References:**

*SDG Metadata URL:* https://unstats.un.org/sdgs/metadata/files/Metadata-12-05-01.pdf

United Nations Statistics Division, "Manual on the Basic Set of Environment Statistics of the FDES 2013", Generation and Management of Waste chapter, page 30.
https://unstats.un.org/unsd/environment/FDES/MS_3.3.1_3.3.2_Waste.pdf
United Nations Statistics Division, "Manual on the Basic Set of Environment Statistics of the FDES 2013", Generation and Management of Waste chapter, page 29 - 30 , https://unstats.un.org/unsd/environment/FDES/MS_3.3.1_3.3.2_Waste.pdf
UN-Habitat (2010). *Solid Waste management in the World Cities Water and Sanitation in the World's Cities*, Earthscan, London, ISBN 978-1-84971-169-2 http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2918
UN Environment (2015) *Global Waste Management Outlook*, ISBN: 978-92-807-3479-9 http://web.unep.org/ourplanet/september-2015/unep-publications/global-waste-management-outlook
United Nations Statistics Division/United Nations Environment Programme *United Nations Statistics Division/United Nations Environment Programme Questionnaire on Environment Statistics,* https://unstats.un.org/unsd/envstats/questionnaire
United Nations Statistics Division, UNSD Environmental Indicators, https://unstats.un.org/unsd/envstats/qindicators
International Solid Waste Management Association (2015) *Roadmap to Closing Waste Dumpsites the World's Most Polluted Places*
http://www.iswa.org/fileadmin/galleries/About%20ISWA/ISWA_Roadmap_Report.pdf Accessed on 26 November 2016
Wilson et al - Wasteaware ISWM indicators - doi10.1016j.wasman.2014.10.006 - January 2015
Wilson_et_al_Supplementary_information_Wasteaware_ISWM_Benchmark_Indicators_User_Manual_Online

**24: Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions**
Adapted from https://unstats.un.org/sdgs/metadata/files/Metadata-16-07-01A.docx

**Definition:**

This metadata sheet is focused only on the first sub-component of indicator 16.7.1, namely on positions in national legislatures / city council held by women (sex and age).

The legislative / city council sub-component of indicator 16.7.1 aims to measure how representative of the general population are the individuals occupying key decision-making positions in national legislatures / city council. More specifically, this indicator measures the proportional representation of various demographic groups (women, age groups) in the national population amongst individuals occupying the following positions in national legislatures / city council: (1) Members, (2) Speakers and (3) Chairs of permanent committees in charge of the following portfolios: Foreign Affairs (national legislature only), Defence (national legislature only), Finance, Human Rights and Gender Equality. Furthermore, it looks at the electoral and constitutional provisions adopted by countries to secure representation in national legislatures of persons with disabilities and contextually relevant population groups[50].

**Rationale:**

The New Urban Agenda calls for achievement of gender equality and empowering all women and girls by ensuring women's full and effective participation and equal rights in all fields and in leadership at all levels of decision-making[51] and addressing of multiple forms of discrimination faced by women and girls, as well as other vulnerable population groups (NUA §20). This indicator is monitoring section 2.1.6 of the Guidelines for Reporting on the Implementation of the New Urban Agenda, which is on "Promote women's full participation in all fields and all levels of decision-making".

*The concept of representation*
There are different approaches to the concept of representation in parliament, with two of the most widely known being descriptive and substantive representation (Bird, 2003; Floor Eelbode, 2010). Descriptive representation is concerned with the extent to which the composition of parliament mirrors the various socio-demographic groups in the national population. Substantive representation, meanwhile, is concerned with the extent to which parliament acts in the interest of certain population groups (irrespective of whether or not members of parliament consider themselves as members of those groups).

Indicator SDG 16.7.1 focuses on descriptive representation. The underlying assumption is that when parliament / city council reflects the social diversity of a nation / city, this may lead to greater legitimacy of the parliament in the eyes of the electorate or the residents of a city, as members resemble the people they represent in respect to gender and age. Descriptive representation has been found to be associated with higher levels of trust in public institutions, as people feel closer to elected representatives who resemble them and perceive more visibly representative political bodies with better quality and fairness of policy decisions, and with less undue influence of vested interests over decision-making.[52] Such descriptive representation should then enhance the substantive influence of population groups. This Monitoring Framework focuses on women and girls for purposes of monitoring the New Urban Agenda,

The methodology for this indicator measures representation in parliamentary decision-making with respect to the sex and age of members of parliament. It identifies the extent to which the proportion of women members of parliament and the proportion of young members of parliament, corresponds to the proportion of these groups in society as a whole.

A different approach is taken with regard to disability and population group status, which focuses on electoral and constitutional provisions guaranteeing the representation of persons with disabilities and various population groups in national parliaments (see 'Comments and Limitations').

*'Decision-making positions' in national parliaments / city councils*
Target 16.7 focuses on 'decision-making' and the extent to which it is responsive, inclusive, participatory and representative. For the purpose of this indicator, three positions were identified for their importance in decision-making and leadership: Members of

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[50] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-16-07-01A.docx, but it has been shortened.
[51] New Urban Agenda page 5
[52] See OECD (2017)

parliament, the Speaker of parliament and permanent committee Chairs. Broadly speaking, the decision-making power of individuals holding these positions can be described as follows:

- *Members of parliament* play important roles in public decision-making by voting on laws and holding the government to account.
- *The Speaker* of a legislature presides over the proceedings of parliament and typically plays a significant role in setting the parliamentary agenda and organizing the business of parliament. The Speaker is responsible for ensuring parliamentary business is conducted fairly and effectively, and for protecting the autonomy of the legislature in relation to the other branches of government.
- *Committee Chairs* preside over the work of parliamentary committees, and typically have great influence over the committee agenda and business, including the legislative and oversight work carried out. In addition, committee Chairs often participate in the management boards or bureau that guide the overall work of parliament. As the number and mandates of permanent committees vary between parliaments, for the sake of better quality data and greater comparability, this indicator only considers five Permanent Committees: Foreign Affairs, Defence, Finance, Human Rights and Gender Equality (see 'Comments and Limitations').

In the case of city councils, the important decision-making individuals are: The Mayor, who is considered the head of the city, and the city council committee chairs.

*Political representation and disaggregation dimensions*

The indicator calls for disaggregation of positions by age, sex, contextually relevant population groups and disability status. The following international human rights instruments contain provisions on enhancing opportunities for political participation by individuals and groups holding such characteristics:

*The right and opportunity to participate in public affairs*
Article 25 of the International Covenant on Civil and Political Rights (ICCPR) recognizes "the right and opportunity, without distinction of any kind such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status to take part in the conduct of public affairs, directly or through freely chosen representatives".

*Age*
The 2015 Security Council Resolution 2250 urges Member States to consider ways to increase inclusive representation of youth in decision-making at all levels in local, national, regional and international institutions and mechanisms to prevent and resolve conflict and counter violent extremism.

*Sex*
The 2000 Security Council Resolution 1325 and the six supporting resolutions between 2000-2013 on Women, Peace and Security urge member states to increase the numbers of women at all levels of decision-making institutions. The 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) provides the basis for realizing equality between women and men through ensuring women's equal access to, and equal opportunities in political and public life, including the right to vote and to stand for election, as well as to hold public office at all levels of government (Article 7). States parties agree to take all appropriate measures to overcome historical discrimination against women and obstacles to women's participation in decision-making processes (Article 8), including legislation and temporary special measures (Article 4).

*Concepts:*

The indicator is based on the following key concepts and terms:

- *National legislature:* A legislature (alternatively called 'assembly' or 'parliament') is the multi-member branch of government that considers public issues, makes laws and oversees the executive.
  - *Unicameral / bicameral parliaments:* A legislature may consist of a single chamber (unicameral parliament) or two chambers (bicameral parliament). The organization of a country's legislature is prescribed by its constitution. Around the world, about 59% of all countries have unicameral legislatures, while the remaining 41% are bicameral[53]. To allow for a comprehensive analysis, this indicator will consider both chambers in bicameral parliaments.

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[53] Source: Structure of Parliaments, IPU New Parline database on national parliaments
https://data.ipu.org/compare?field=country%3A%3Afield_structure_of_parliament#pie

- *Member of Parliament (MP):* A person who is formally an elected or appointed member of a national legislature. This metadata considers all members of lower and upper chamber regardless of the selection modality (direct election, indirect election and appointment).
- Speaker: A Speaker (alternatively called 'president' or 'chairperson' of the legislature) is the presiding officer of the legislature.

*Measuring representation*
- The significance of descriptive representation has been challenged in different ways. First, there is the question of what and who should be mirrored in the representative body; why be attentive to some groups (women, young people etc). One of the base tenets of democracy is freedom of choice at the ballot box and if one is corralled into having to vote for a candidate of your own sex or ethnicity, then that intrinsic liberty is constrained. Third, descriptive representation has the danger of ultimately becoming an end in itself. Concerns about effective representation should not end once parliament has the appropriate number of members for each minority groups. Indeed, at this stage concerns about adequate political representation should be just beginning. These members should be able to articulate minority concerns and have the same opportunities to influence policy as other members. Nevertheless, if a parliament includes none, or very few, women, young people, minorities etc., that is probably a worrying sign that their interests are not being heard. [54]
- Representation needs to go hand in hand with participation, with both concepts being part of target 16.7. Without meaningful opportunities for citizens to participate in parliamentary decision-making, representation alone is unlikely to automatically lead to effective popular control of the government - one of the fundamental principles of democracy (International IDEA, 2013).
- The age and sex of individuals holding decision-making positions in parliament provide an indication at the symbolic level of the way in which power is shared within this institution. However, there is no certainty that because a Speaker or committee Chair is young (or old), a woman (or a man), or belongs to a minority group, she or he will bring to the fore issues of interest to groups with the same socio-demographic profile.
- Tracking the age of MPs over time offers some measure of youth representation in parliament. However, in most parliaments around the world, leadership positions such as Speaker and permanent committee Chairs are considered senior functions which require considerable experience and are awarded in recognition of parliamentary achievement. This means that such positions are by nature unlikely to be held by members below the 'youth' age bracket of '45 years old and under'. As such, for the positions of Speaker and committee Chairs, more relevant insights will be generated on the basis of sex disaggregation.
- IPU studies on women in parliaments[55] have found that committees representing the three 'hard' policy portfolios of Foreign Affairs, Defence and Finance are traditionally male dominated. The two other committees tracked by this indicator, representing cross-cutting portfolios of Human Rights and Gender Equality, are also of interest given their specific areas of focus. Although not found in every parliament, the very existence of these two committees suggests a particular commitment within parliament to safeguarding human rights and promoting gender equality.
- In certain countries, particularly Small Island Developing States, the number of members of parliament may be very small. Consequently, there may not be a committee system, or the committee system may not contain the same distribution by areas of responsibility as observed in the majority of parliaments. In addition, in parliaments with a very small number of members, the addition or reduction of just one or two people to the number of women or the number of young MPs may have a significant impact on the overall percentage of representation of these groups.

**Computation Method**
- As regards the scope of 'population groups', while representation of minorities and indigenous peoples may be more often tracked by national parliaments due to the availability of internationally accepted definitions, the indicator also invites reporting on any other tracked population groups, including, for instance, occupational groups.
- An obvious limitation of this metadata is that it only considers members of parliament, in keeping with the focus of target 16.7 on 'decision-making'. However, some parliaments may find it useful to also look at the composition of various staff categories such as clerks of the parliament, committee clerks or researchers, etc.
- Who holds the Chairs of parliamentary committees is largely tributary to the overall distribution of seats within the parliament. For example, parliaments with no members under the age of 30 will not have any committee Chairs under that

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[54] IPU and UNDP, "Frequently Asked Questions on the representation of minorities and indigenous peoples in parliament" (2008) in "Promoting inclusive parliaments: The representation of minorities and indigenous peoples in parliament"
[55] See, for example: IPU, "Gender-Sensitive Parliaments" (2011), "Equality in Politics: A Survey of Women and Men in Parliaments" (2008), "Women in Parliament: 20 Years in Review" (2016), "Women in Politics" (2017)

age. Since committee chairs are typically awarded on the basis of experience and seniority,[56] higher age groups are expected to be common among committee Chairs and Speakers.

*Data collection*
- In between reporting dates, it may be difficult to maintain up-to-date information on the results of special elections held in selected constituencies to fill vacancies arising from the death or resignation of members.
- From one year to another, during any given parliamentary term (typically 4 or 5 years), some Members may fall into a different age group amongst those considered for this indicator. For this reason, age should be reported as that at the time of election to parliament. In the case of Speakers and permanent committee Chairs, at the time of nomination to a given position).

*Recommendations for reporting also on the composition of local parliaments*
While the indicator currently only looks at national parliaments; broadening its scope to include legislative bodies of local governments could be considered in the future, in line with target 16.7 which calls for decision-making to be representative "at all levels". Local councils or assemblies hold important decision-making powers, including the ability to issue by-laws that influence the lives of their respective local communities. While it is premature at this stage to propose a global methodology to report on representation in local legislatures due to the varying quality of data collection systems in place at the local level, and to a number of methodological complexities (notably with regards to the need for disaggregated population statistics to be available for each administrative division, in order to compute representation ratios in each local parliament), countries should nonetheless be encouraged to track diversity in local parliaments, using methodologies appropriate to their local context.

**Computation Method:**
- Members:

Indicator aims to compare the proportion of various demographic groups (by sex and age) represented in national parliaments, relative to the proportion of these same groups in the national population above the age of eligibility.

To report on indicator, two ratios must be calculated, namely:
- For 'young' MPs (aged 45 and below)
- For female MPs

When comparing ratios of 'young' MPs and female MPs with corresponding shares of the national population that is aged 45 and below (for the first ratio) and female (for the second ratio), *it is important to consider the population <u>of, or above, the age of eligibility</u>*, the latter being, by definition, the lowest possible age of members of parliament. In other words, if the age of eligibility in a given country is 18 years old, the national population to be used as a comparator for the first ratio (for 'young' MPs) will be the national population aged 18-45 (*not* 0-45), and for the second ratio (for female MPs), the female population aged 18 and above.

1) To calculate the ratio for 'young' MPs (aged 45 and below), the following formula is to be used:

$$Ratio\ 1 = \frac{Proportion\ of\ MPs\ aged\ 45\ and\ below\ in\ parliament}{Proportion\ of\ the\ national\ population\ aged\ 45\ and\ below}$$

*(with the age of eligibility as a lower boundary)*

Where:
- The numerator is the number of seats held by MPs aged 45 and below, divided by the total number of members in parliament
- *The denominator can be computed using national population figures as follows =*
$$\frac{[Size\ of\ national\ population <\ =\ to\ 45]\ -\ [Size\ of\ national\ population <\ to\ age\ of\ eligibility]}{Size\ of\ the\ national\ population}$$

The resulting ratio can then be interpreted as follows:

- 0 means no representation at all of 'youth' (45 years and below) in parliament
- 1 means perfectly proportional representation of 'youth' (45 years and below) in parliament

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[56] See e.g. IPU "Gender-sensitive Parliaments", p. 18 (on committee chairs: "All leaders, irrespective of gender, need to demonstrate their capabilities before they can be accepted as credible and legitimate authority bearers")

- <1 means under-representation of 'youth' (45 years and below) in parliament
- >1 means over-representation of 'youth' (45 years and below) in parliament

While a simple proportion of 'young' MPs in parliament is not internationally comparable, a ratio computed using the above formula is. For instance, 48% of 'young' MPs (45 years old or younger) may be an overrepresentation of youth in country A where only 30% of the national population above eligibility age falls in this age bracket (Ratio = 48/30 = 1.6), but in country B where 70% of the national population is 45 years old or younger, the same 48% would be interpreted as under-representation (Ratio = 48/70 = 0.69). In this example, the figure of 48% is not internationally comparable in relation to the national population (it means over-representation in one country and under-representation in another), but the ratios 1.6 and 0.69 *are* internationally comparable. They help us understand whether 48% of MPs aged 45 years old or less is close to, or far from, proportional representation of this age group in the national population.

2) To calculate the ratio for female MPs, the following formula is to be used:

$$Ratio\ 2 = \frac{Proportion\ of\ female\ MPs}{Proportion\ of\ women\ in\ the\ national\ population}$$
*(with the age of eligibility as a lower boundary)*

Where:
- The numerator is the number of seats held by female MPs, divided by the total number of members in parliament
- The denominator can be computed using national population figures as follows:

*[Size of female national population > or = to age of eligibility]*
*Size of the national population > or = to age of eligibility*

Note: This denominator can be set at 50 in most countries, as women generally represent around 50% of the national population in any given age bracket.

The resulting ratio can be:
- 0, when there is no representation of women at all in parliament
- <1, when the proportion of women in parliament is lower than that in the national population
- =1, when the proportion of women in parliament equals that in the national population
- >1, when the proportion of women in parliament is higher than that in the national population

- *Speakers:* No computation, as most parliaments will only have one Speaker per parliament in unicameral parliaments or one Speaker per chamber in bicameral parliaments[57]. Personal characteristics of the individual(s) holding the position of Speaker are recorded (i.e. age group and sex).
- *Chairs of permanent committees on Foreign Affairs, Defence, Finance, Human Rights and Gender Equality:* No computation, as data is collected only on five committee Chairs. Personal characteristics of the five individuals chairing these three committees are recorded (i.e. age group and sex).

*Computation in bicameral legislatures*
In bicameral parliaments, data will be collected and computed separately for the same set of positions in each chamber.

**Disaggregation:**

- Sex (Male/Female)
- Age: Cut-off age of 45 years of age or younger at the time of election, for members of the current legislature. For the Speaker and permanent committee Chairs, same cut-off age of 45 years of age or younger at the time of nomination to the position.[58]
- Disability: List of electoral or constitutional provisions guaranteeing representation of persons with disabilities in parliament.
- Contextually relevant population groups (e.g. indigenous/linguistic/ethnic/religious/occupational groups): List of electoral or constitutional provisions guaranteeing representation of various population groups in parliament.

**Regional / global aggregates:**

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[57] In very rare cases, there are two or more speakers per parliament / chamber. For the sake of clarity and consistency of the analysis, this metadata does not introduce computation for such cases.
[58] In an attempt to maximize data availability and minimize gaps in submissions of data on age and sex, this indicator is aligned with existing data collection practices of the IPU with regards to age and adopts IPU's definition of young MPs as those under 45 years old.

An internationally comparable scaled value aggregating the two ratios (see section on 'Computation Method' above) on the proportional representation of Members by sex and age must be calculated for this indicator. There is no computation to be made on the data provided on the Speaker and Chairs of the five permanent committees, which are not expressed as proportions.

In case of bilateral parliaments, scaled values will need to be calculated separately for each chamber.

Here is an example of how the computation and subsequent aggregation of the two ratios into a single scaled value can be done:

a) **Ratio 1: For 'young' MPs (45 years and below)**

Say in country A, 30% of the national population is aged 45 or younger (but above the age of eligibility), but only 25% of MPs fall in this age category:

$$Ratio\ 1 = \frac{Proportion\ of\ MPs\ aged\ 45\ and\ below\ in\ parliament}{Proportion\ of\ the\ national\ population\ aged\ 45\ and\ below}$$

*(with the age of eligibility as a lower boundary)*

Ratio = 0.25 / 0.3 = **0.83**

*(<1 since MPs aged 45 or younger are under-represented amongst MPs compared to the proportion of this age group in the national population. The ratio is close to 1 as the share of 'young' MPs is not too far from the corresponding share of the national population falling in this age group.)*

b) **Ratio 2: For female MPs**

Say in the same country A, 10% of seats are held by women MPs (and say we can assume that in country A, women generally represent around 50% of the national population in any given age bracket):

$$Ratio\ 2 = \frac{Proportion\ of\ female\ MPs}{Proportion\ of\ women\ in\ the\ national\ population}$$

*(with the age of eligibility as a lower boundary)*

Ratio = 0.10 / 0.50 = **0.2**

*(<1 since women are under-represented amongst MPs, but this time the ratio is much smaller as sex-based representation in parliament is far from parity.)*

c) **Calculate the gap between each one of the two ratios and the 'parity score' of 1**

Using the above example:

- Gap 1: For 'young' MPs (45 years and below): 1-0.83 = 0.17
- Gap 2: For female MPs: 1-0.2 = 0.8

Important note: *This calculation must be done irrespective of whether ratios are smaller or greater than 1, therefore using absolute values. For example, let's say in a given country 50% of MPs are aged 45 years or below, yet only 35% of the national population falls in this age bracket. Ratio 1 for this country will be 50/35 = 1.43. This ratio is greater than 1 as 'young MPs' are over-represented. Gap 1 would then be calculated as follows:*

- Gap 1: For 'young' MPs (45 years and below): |1-1.43| = |-0.43| = 0.43

*And say 60% of seats are held by women in another country. In this country, Ratio 2 will be 60/50 = 1.2. Once again, this ratio is greater than 1 given women are over-represented. Gap 2 would then be calculated as follows:*

- Gap 2: For female MPs: |1 – 1.2|= |-0.2| = 0.2

d) **Calculate the average of the two gaps**
Average gap =   (Gap 1 + Gap 2)/2
Using the above initial example:  (0.17 + 0.8)/2 = 0.485
e) **Convert into a 'scaled value' between 0-100**
Overall scaled value =  [1 – Average gap] x 100

Using the above initial example: [1 – 0.485] x 100 = 0.515 x 100 = **51.5**
This scaled value can be interpreted as follows:
- The closer to 100, the more the composition of parliament mirrors of the social diversity of the country in terms of sex and age (i.e. 100 would mean a mirror image of the proportion of women and people aged 45 and younger in parliament and in society)
- The closer to 0, the less the composition of parliament mirrors the social diversity of the country in terms of sex and age (i.e. 0 would mean no representation of women and no representation of 'youth' aged 45 or younger amongst MPs)

**Important notes on the interpretation of the scaled value:**

*The need to consider both individual ratios and the overall scaled value*
**Both** the overall scaled value **and** the two individual ratios on age-based representation and sex-based representation should be taken into consideration. When a country performs well on the proportional representation of one group (e.g. 'young' MPs, in the above example, where the ratio was 0.83) and poorly or averagely on the proportional representation of another group (e.g. female MPs, in the above example, where the ratio was 0.2), the better representation of one group should not compensate for the poorer representation of another group, nor should the better representation be overlooked due to the poorer representation bringing the overall scaled value down. In the above example, the overall scaled value of 51.5 is average (on a scale of 0-100): the low ratio for female MPs (0.2) has been compensated for by the high ratio for 'young' MPs (0.83). This average scaled value of 51.5 is also hiding the good representation of 'young' MPs, as the lower level of representation of female MPs is bringing the overall scaled value down.

*Effect of the age of eligibility for upper chambers on the age ratio and overall scale value*
While in many bicameral legislatures, the age of eligibility for the upper chamber is significantly higher than that for the lower chamber, some have adopted an equal or similar age requirement for both chambers.[59] However, regardless of the minimum age of eligibility set for upper chambers, members of these chambers throughout the world are older on average than members of lower chambers (see New Parline). As such, those upper chambers that have a low eligibility age are likely to have a lower ratio for 'young' MPs than upper chambers that have a higher eligibility age. In other words, in upper chambers where the eligibility age is lower, the share of MPs who are 45 or younger is likely to be considerably less than the corresponding proportion of the national population that falls between the eligibility age and 45 years old. In turn, this lower age ratio for upper chambers that have a lower eligibility age will bring down the overall scaled value. This should be kept in mind when contextualizing the age ratio and overall scaled value for upper chambers.

**Methods and guidance available to countries for the compilation of data at national level:**

Data on the age and sex of Members, Speakers and Committee Chairs, as well as of electoral or constitutional provisions guaranteeing representation of persons with disabilities and various population groups in parliament, will be reported directly by the IPU. The IPU already compiles this data in the New Parline database on national parliaments (https://data.ipu.org).

New Parline contains data on the composition, structure and working methods of all national parliaments, it was launched in September 2018, as the successor to the Parline database on national parliaments that was established by the IPU in 1996. New Parline contains 450 different fields, which are collected or updated at varying intervals, depending on the nature of the data. Data is collected by the IPU directly from national parliaments and other official sources (such as electoral commissions). Data is collected using questionnaires and surveys that are distributed via national IPU Groups in parliament (via the Secretary General of non-member parliaments. As at 19 September 2018, the IPU has 177 members; a further 16 national parliaments are not members). Data is then processed by the IPU prior to inclusion in the database. Some fields are updated daily, while others are updated annually, after each election, or when the constitutional or legal powers of parliament are changed. Parliaments are invited to check and update their data at least annually.

Once the methodology for SDG 16.7.1 is upgraded to Tier II, the IPU will inform parliaments that part of the data they provide will be used for the purpose of monitoring this indicator and will provide appropriate guidelines to respondents. In addition, the IPU will extend its data collection to include information on the age and sex of the Chairs of permanent committees on Foreign Affairs, Defence and Finance (data on Chairs of permanent committees on women and human rights is already collected within the scope of New Parline).

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[59] In 41 upper chambers, the age of eligibility is 30 years old or older, and in another 7, it falls between 25-29. In the remaining 26 upper chambers for which such information is collected by the IPU, the age of eligibility is between 18 and 24 years old. Source: New Parline (https://data.ipu.org/compare?field=chamber%3A%3Afield_min_age_member_parl&structure=any__upper_chamber#bar)

**Methods and guidance available to countries for the compilation of data at international level:**

The Declaration on Parliamentary Openness calls on parliaments to make publicly available information "about the backgrounds, activities and affairs of members, including sufficient information for citizens to make informed judgments regarding their integrity and probity, and potential conflicts of interest."

Inter-Parliamentary Union (IPU)'s "Guidelines for the Content and Structure of Parliamentary Websites" (2000) recommend that for the sake of informing the electorate about Members, official parliamentary websites should feature biodata of the current speaker and a list of members and permanent committee Chairs as recommended minimum. Biodata of members is a much-welcomed optional element.

**Quality Assurance**

Data for the indicator will follow the quality assurance measures put in place by IPU for New Parline database. Data is collected directly from national parliaments. Quality controls and "sanity checks" are carried out by the IPU, using comparison against historical records for the same country and comparison between countries. In the case of any inconsistencies, a dialogue is opened with the parliament to clarify and, where necessary, correct the data. In addition, parliaments are invited to review all of their data on New Parline at regular intervals, at least annually and following elections.

**Data Sources and Frequency of Data Collection**
The multiple data points pertaining to the parliamentary sub-component of indicator 16.7.1 will be compiled by the Inter-Parliamentary Union (IPU) based on information gathered in its New Parline database on national parliaments:

The IPU already collects data from secretariats of national parliaments on an ongoing basis for New Parline. The Platform already provides up-to-date and disaggregated data on the following positions:
- *Members*: data disaggregated by sex and age.
- *Speakers*: data disaggregated by sex and age.
- *Chairs of permanent committees on Human Rights and Gender Equality:* data disaggregated by sex and age.

Data on the sex and age of Chairs of permanent committees on Foreign Affairs, Defence and Finance is not currently collected but will be incorporated into the existing data gathering process for New Parline, once this indicator is upgraded to Tier II. This is building on the successful attempt made by the IPU in 2011 to collect sex-disaggregated data on committee Chairs, broken down by area of competence (see IPU, Gender-sensitive parliaments, 2011).

Data on age and sex of City Council Members and Mayors:
- *Council Members*: data disaggregated by sex and age.
- *Mayors*: data disaggregated by sex and age.
- *Chairs of permanent committees:* data disaggregated by sex and age.

Data on council members will be available at city councils.

The compilation of data by the Inter-Parliamentary Union uses the following mechanisms:
- Data collection forms sent to Parliaments[60]
- Internal review and validation of data obtained from national parliaments by the IPU
- Online dissemination of data by IPU on New Parline

The IPU will apply the data validation procedures developed for New Parline, plus additional checks specifically for SDG indicator 16.7.1(a), prior to submitting data at the international level for SDG reporting.

Data on age and sex:

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[60] In case of bicameral parliaments, data will be obtained separately from the secretariat of each chamber, except where the two chambers share a secretariat / contact point.

As a general rule, nearly all parliamentary secretariats keep records of basic information on all members. While the format and scope of information provided vary, most feature the MPs' date of birth and sex. As such, parliamentary secretariats are the primary source of data for the **age** and **sex** dimensions of this indicator.

The IPU publishes data points on the sex and age of Members, Speakers and committee Chairs for the following number of countries:
- *Members*: Sex-disaggregated data available for parliaments in 193 countries and split between chambers in case of bicameral parliaments. With respect to age disaggregation, the latest data gathering by the IPU was carried out in 2015 in 128 countries across all regions, using the following age cut-offs (30, 40 and 45 years old) for counting 'young' parliamentarians (see IPU, Youth participation in national parliaments, 2016). The New PARLINE database provides information on the number of MPs in each parliament across 10 statistical intervals (age 18-20; age 21-30; age 31-40; age 41-45; age 46-50; age 51-60; age 61-70; age 71-80; age 81-90; age 91 and over) and the percentage of members in two age brackets (age 45 and younger; age 46 and older), with 45 being the cut-off age for 'youth' MPs. From 2014 to 2017, data on the age of parliamentarians was updated using an annual survey. From 2018 onwards, it is updated after every election.
- *Speakers*: Sex and age of Speakers available on New Parline for all parliamentary chambers in 193 countries. This data is updated on a daily basis, every time a change occurs.
- *Permanent committee Chairs*: Sex and age of chairs on committees on Human Rights and Gender Equality are featured on New Parline. This data is updated after every election. Furthermore, previous studies have provided data on the sex of committee Chairs in 89 parliamentary chambers, broken down by area of competence (see IPU, Gender-sensitive parliaments, 2011).
- In addition, New Parline provides information on the age of eligibility in 190 countries (i.e. the age of eligibility will be the cut-off age above which the demographic profile of the national population will be compared to that of members in parliament). This is required for defining the national population to be used as a comparator for the share of 'young' MPs in parliament (see Ratio 1). This data is updated every time a change occurs.
- *National population statistics:* The World Population Prospects 2019 database is the most recent official United Nations population estimates and projections[61]. *World Population Prospects* presents estimates for 233 countries and areas. About half of those countries or areas do not report official demographic statistics with the detail necessary for the preparation of cohort-component population projections. Hence, this estimation work was undertaken by the Population Division in order to close those gaps. Estimates are presented for five-year periods, starting with 1950-1955 and ending with 2010-2015. These statistics are required to calculate the denominator of ratio 1 (see 'Computation Method'):
  o To calculate the "size of national population < or = to 45", all age groups must be selected from 0-4 to 40-44 (unfortunately, the database does not produce more granular data for individual ages, so those aged 45 will be excluded from the total), for the current year, and for both sexes combined.
  o To calculate the "size of national population < to age of eligibility", all age groups must be selected (for the current year, and for both sexes combined) from 0-4 to the 5-year interval *closest* to the eligibility age (e.g. If the eligibility age is 18 years old, the closest interval will be 15-19, which contains the eligibility age; however if the eligibility age is 21, the closest interval will still be 15-19, and not 20-24, as the first interval is only 2 years 'short of' the eligibility age (i.e. 20-21), whereas the second interval is 3 years above the eligibility interval (i.e. 22-23-24).

Data should be collected at least once every legislative term (preferably within 6 months of the opening of a new parliament). If possible, data should be updated annually. This will ensure timely capturing of changes in the composition of parliament and/or permanent committees, which may come because of the electoral cycle, snap elections and special elections held in selected constituencies to fill vacancies arising from the death or resignation of members.

- Sex and age of members: updated after every election
- Sex and age of Speakers: updated daily, every time a change occurs
- Sex and age of permanent committee Chairs: updated after every election
- Data on electoral or constitutional provisions guaranteeing representation of persons with disabilities and various population groups: updated at the time of every election

In addition, all data will be reviewed and updated annually by parliaments.

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[61] The Population Division of the Department of Economic and Social Affairs of the United Nations issues a new Revision every two years. The next one is due in the first half of 2021. As explained by the UN Population Division, estimates from the *World Population Prospects* sometimes differ from official statistics as "official demographic statistics are affected by incompleteness of coverage, lack of timeliness and errors in the reporting or coding of the basic information.

Data will be reported at the international level in April each year and will provide a snapshot of the situation as at 1 January of that year.

The Inter-Parliamentary Union is responsible for the provision of data on all dimensions of the indicator. Most part of the data is already available on New Parline, directly provided by national parliaments. The few remaining data points (on the age and sex of the Chairs of permanent committees on Foreign Affairs, Defence and Finance) will be added to the Platform once the indicator will be upgraded to Tier II.

The Inter-Parliamentary Union is responsible for the compilation of all data points required by this indicator to compute data on parliamentarians and for the computation of the two ratios and internationally comparable scaled values for each parliamentary chamber of each country. However, data council members can be obtained by city councils.

For purposes of New Urban Agenda reporting, The National Statistical Office may report the data on this indicator based on data from the New Parline database or compile indicator directly.

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**Definition:**

The indicator fixed Internet broadband subscriptions, by speed, refers to the number of fixed-broadband subscriptions to the public Internet, split by advertised download speed[62].

The indicator is currently broken down by the following subscription speeds:

- 256 kbit/s to less than 2 Mbit/s subscriptions: Refers to all fixed broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 256 kbit/s and less than 2 Mbit/s.

- 2 Mbit/s to less than 10 Mbit/s subscriptions: Refers to all fixed -broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 2 Mbit/s and less than 10 Mbit/s.

- Equal to or above 10 Mbit/s subscriptions (4213_G10). Refers to all fixed -broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 10 Mbit/s.

**Rationale:**

By adopting the New Urban Agenda, Member States commit themselves to promoting equitable and affordable access as well as promoting appropriate measures in cities and human settlements that facilitate access to public information and communication (including information and communications technologies) and other facilities in both urban and rural areas. They also committed themselves to encouraging urban-rural interactions and connectivity by strengthening sustainable transport and mobility, and technology and communications networks and infrastructure, based on planning instruments of the integrated urban and territorial approach (NUA §34, 36 and 50).

The Internet has become a major way for accessing information, especially in regard to science, technology and innovations. High-speed Internet access is crucial to ensuring that Internet users have good quality access to the Internet, fast download and upload times reduce waiting times for accessing or uploading internet content. Globally, fixed broadband subscriptions have increased from 4.3 per 100 inhabitants in 2006 to 14.1 per 100 inhabitants in 2018, while service providers are increasingly offering higher speeds. Differences in fixed broadband Internet affects the quality and functionality of Internet access. Differences in fixed broadband internet affect the quality and functionality of Internet access. Many developing countries have very low fixed-broadband subscriptions rates and very low speeds, which is a barrier to achieving Target 17.6 "Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism" . The indicator highlights the potential of the high-speed Internet access to improve cooperation and access to science, technology and innovation, and knowledge sharing. It also highlights the importance of Internet use as a development enabler and differences in access to the Internet.

In terms of Means of Implementation, Member States agreed to promote the development of national information and communications technology policies and e-government strategies, as well as user friendly digital governance tools, in order to make information and communications technologies accessible to the public, including women and girls, children and youth, persons with disabilities, older persons and persons in vulnerable situations. They will also encourage the use of digital platforms and tools, including geospatial information systems in order to improve long-term integrated urban and territorial planning and design, land administration and management, and access to urban and metropolitan services (NUA §156).

*Concepts:*

Fixed Internet broadband subscriptions refer to subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building, other fixed (wired)-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks. It should include fixed WiMAX and any other fixed wireless technologies. It includes both residential subscriptions and subscriptions for organizations.

The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files.

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[62] The source of the metadata is https://unstats.un.org/sdgs/metadata/files/Metadata-17-06-01.docx, but it has been shortened.

*Comments and Limitations:*

Since most Internet service providers offer plans linked to download speed, the indicator is relatively straightforward to collect. Countries may use packages that do not align with the speeds used for this group of indicators. Countries are encouraged to collect the data in more speed categories so as to allow aggregation of the data according to the split shown above. In the future, ITU might start to include higher-speed categories, reflecting the increasing demand and availability of higher-speed broadband subscriptions.

**Computation Method**

ITU collects data for this indicator through an annual questionnaire from national regulatory authorities or Information and Communication Technology (ICT) Ministries, who collect the data from national Internet service providers. The data can be collected by asking each Internet service provider in the country to provide the number of their fixed-broadband subscriptions by the speeds indicated. The data are then added up to obtain the country totals.
For NUA monitoring purposes, there is need to have the data at city-level as well.

Since data for this indicator are based on administrative data from ISPs, no information on individual subscribers is available and therefore the data cannot be broken down by any individual characteristics. Data could in theory be broken down by geographic location, city-level and urban/rural, but ITU does not collect this information.

Differences between global and national figures may arise when countries do not use the same definition for fixed-broadband subscriptions, or when speed tiers differ. Differences for each data point will be explained in a note.

**Data Sources and Frequency of Data Collection:**

Since data for this indicator are based on administrative data from operators, no information on individual subscribers is available and therefore the data cannot be broken down by any individual characteristics. Data could in theory be broken down by geographic location and urban/rural, but ITU does not collect this information.

ITU collects data for this indicator through an annual questionnaire from national regulatory authorities or Information and Communication Technology Ministries, who collect the data from Internet service providers.

Data for this indicator exist for about 214 economies up to 2018 as of July 2020. Data on fixed-broadband subscriptions not broken down by speed are widely available, and regional and global are being produced.

For purposes of New Urban Agenda reporting, the National Statistical Office can collect the information for the indicator from the telecommunication/ICT regulatory authority or the Ministry in charge of ICTs within each country, who collect the data from Internet Service Providers (ISPs).

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**Definition:**

One way to identify the ease of starting a business is the number of days it takes a firm to register. Registration must ideally include obtaining all necessary licenses and permits and completing any required notifications, verifications or inscriptions for the company and its employees with the relevant authorities[63]. Unit of measurement is number of days.[64]

**Rationale:**

The New Urban Agenda calls for development of vibrant, sustainable and inclusive urban economies, resource-efficient and resilient infrastructure, promotion of sustainable and inclusive industrial development and sustainable consumption and production patterns and fostering an enabling environment for businesses and innovation, and livelihoods (NUA §45). This indicator is monitoring section 1.2.1.4 of the Guidelines for Reporting on the Implementation of the New Urban Agenda, which is "Promote an enabling, fair and responsible environment for business and innovation".

A government should provide a conducive environment in the market it regulates as competition improves quality of goods and services, lowers cost for both producers and consumers, and creates facilities for those who want to enter any market. Excessive business regulation affects economic performance and development as it increases the costs of engaging in the formal economy (Doing Business, 2014). A prosperous city should develop a regulatory framework that permits an easy entry of firms into the market.

**Computation Method:**

Days to start a business recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate as necessary to complete all required registration procedures.

*Source:* Doing Business Indicator and Entrepreneur Surveys
Doing Business records all procedures officially required, or commonly done in practice, for an entrepreneur to start up and formally operate an industrial or commercial business, as well as the time and cost to complete these procedures and the paid-in minimum capital requirement. These procedures include the processes entrepreneurs undergo when obtaining all necessary approvals, licenses, permits and completing any required notifications, verifications or inscriptions for the company and employees with relevant authorities. The ranking of economies on the ease of starting a business is determined by sorting their scores for starting a business. These scores are the simple average of the scores for each of the component indicators.

Two types of local limited liability companies are considered under the starting a business methodology. They are identical in all aspects, except that one company is owned by five married women and other by five married men. The score for each indicator is the average of the scores obtained for each of the component indicators for both of these standardized companies.

After a study of laws, regulations and publicly available information on business entry, a detailed list of procedures is developed, along with the time and cost to comply with each procedure under normal circumstances and the paid-in minimum capital requirement. Subsequently, local incorporation lawyers, notaries and government officials review and verify the data.

Information is also collected on the sequence in which procedures are to be completed and whether procedures may be carried out simultaneously. It is assumed that any required information is readily available and that the entrepreneur will pay no bribes. If answers by local experts differ, inquiries continue until the data are reconciled.

To make the data comparable across economies, several assumptions about the businesses and the procedures are used.

**Assumptions about the business**

**The business:**

- Is a limited liability company (or its legal equivalent). If there is more than one type of limited liability company in the economy, the limited liability form most common among domestic firms is chosen. Information on the most common form is obtained from incorporation lawyers or the statistical office.
- Operates in the economy's largest business city. For 11 economies the data are also collected for the second largest business city.

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[63] http://www.doingbusiness.org/Methodology/starting-a-business#time , Accessed August 6, 2014.
[64] UN-HABITAT, 2016, The City Prosperity Index (CPI) Manual; https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

- Performs general industrial or commercial activities, such as the production or sale to the public of goods or services. The business does not perform foreign trade activities and does not handle products subject to a special tax regime, for example, liquor or tobacco. It is not using heavily polluting production processes.
- Does not qualify for investment incentives or any special benefits.
- Is 100% domestically owned
- Has five business owners, none of whom is a legal entity. One business owner holds 30% of the company shares, two owners have 20% of shares each, and two owners have 15% of shares each.
- Is managed by one local director.
- Has between 10 and 50 employees one month after the commencement of operations, all of them domestic nationals.
- Has start-up capital of 10 times income per capita.
- Has an estimated turnover of at least 100 times income per capita.
- Leases the commercial plant or offices and is not a proprietor of real estate.
- Has an annual lease for the office space equivalent to one income per capita.
- Is in an office space of approximately 929 square meters (10,000 square feet).
- Has a company deed that is 10 pages long.

**The owners:**

- Have reached the legal age of majority and are capable of making decisions as an adult. If there is no legal age of majority, they are assumed to be 30 years old.
- Are sane, competent, in good health and have no criminal record.
- Are married, the marriage is monogamous and registered with the authorities.
- Where the answer differs according to the legal system applicable to the woman or man in question (as may be the case in economies where there is legal plurality), the answer used will be the one that applies to the majority of the population.


**Procedures**

A procedure is defined as any interaction of the company founders with external parties (for example, government agencies, lawyers, auditors or notaries) or spouses (if legally required). Interactions between company founders or company officers and employees are not counted as procedures. Procedures that must be completed in the same building but in different offices or at different counters are counted as separate procedures. If founders have to visit the same office several times for different sequential procedures, each is counted separately. The founders are assumed to complete all procedures themselves, without middlemen, facilitators, accountants or lawyers, unless the use of such a third party is mandated by law or solicited by the majority of entrepreneurs. If the services of professionals are required, procedures conducted by such professionals on behalf of the company are counted as separate procedures. Each electronic procedure is counted as a separate procedure. Approvals from spouses to own a business or leave the home are considered procedures if required by law or if by failing to obtain such approval the spouse will suffer consequences under the law, such as the loss of right to financial maintenance. Obtaining permissions only required by one gender for company registration and operation, or getting additional documents only required by one gender for a national identification card are considered additional procedures.

Procedures required for official correspondence or transactions with public agencies are also included. For example, if a company seal or stamp is required on official documents, such as tax declarations, obtaining the seal or stamp is counted. Similarly, if a company must open a bank account in order to complete any subsequent procedure—such as registering for value added tax or showing proof of minimum capital deposit—this transaction is included as a procedure. Shortcuts are counted only if they fulfill four criteria: they are legal, they are available to the general public, they are used by the majority of companies, and avoiding them causes delays.

Only procedures required for all businesses are included. Industry-specific procedures are excluded. For example, procedures to comply with environmental regulations are included only when they apply to all businesses conducting general commercial or industrial activities. Procedures that the company undergoes to connect to electricity, water, gas and waste disposal services are not included in the starting a business indicators.

**Time**

Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers or notaries indicate is necessary in practice to complete a procedure with minimum follow-up with government agencies and no unofficial payments. It is assumed that the minimum time required for each procedure is one day, except for procedures that can be fully completed online, for which the minimum time required is recorded as half a day. Although procedures may take place simultaneously, they cannot start on the same day (that is, simultaneous procedures start on consecutive days). A registration process is considered completed once the company has received the final incorporation document or can officially commence business operations. If a procedure can be accelerated legally for an additional cost, the fastest procedure is chosen if that option is more beneficial to the economy's score.

When obtaining a spouse's approval, it is assumed that permission is granted at no additional cost unless the permission needs to be notarized. It is assumed that the entrepreneur does not waste time and commits to completing each remaining procedure without delay. The time spent by the entrepreneur preparing information to fill in forms is not measured.

**Cost**

Cost is recorded as a percentage of the economy's income per capita. It includes all official fees and fees for legal or professional services if such services are required by law or commonly used in practice. Fees for purchasing and legalizing company books are included if these transactions are required by law. Although value added tax registration can be counted as a separate procedure, value added tax is not part of the incorporation cost. The company law, the commercial code and specific regulations and fee schedules are used as sources for calculating costs. In the absence of fee schedules, a government officer's estimate is taken as an official source. In the absence of a government officer's estimate, estimates by incorporation experts are used. If several incorporation experts provide different estimates, the median reported value is applied. In all cases the cost excludes bribes.

**Paid-in minimum capital**

The paid-in minimum capital requirement reflects the amount that the entrepreneur needs to deposit in a bank or with a third-party (for example, a notary) before registration or up to three months after incorporation and it is recorded as a percentage of the economy's income per capita. The amount is typically specified in the commercial code or the company law. The legal provision needs to be adopted, enforced and fully implemented. Any legal limitation of the company's operations or decisions related to the payment of the minimum capital requirement is recorded. In case the legal minimum capital is provided per share, it is multiplied by the number of shareholders owning the company. Many economies require minimum capital but allow businesses to pay only a part of it before registration, with the rest to be paid after the first year of operation.

**Reforms**

The starting a business indicator set tracks changes related to the ease of incorporating and operating a limited liability company every year. Depending on the impact on the data, certain changes are classified as reforms and listed in the summaries of *Doing Business* reforms in order to acknowledge the implementation of significant changes. Reforms are divided into two types: those that make it easier to do business and those changes that make it more difficult to do business. The starting a business indicator set uses one criterion to recognize a reform.

The impact of data changes is assessed based on the absolute change in the overall score of the indicator set as well as the change in the relative score gap. Any data update that leads to a change of 0.5 points or more in the score and 2% or more on the relative score gap is classified as a reform, except when the change is the result of automatic official fee indexation to a price or wage index (for more details, see the chapter on the ease of doing business score and ease of doing business ranking).

**Data Sources and Frequency of Data Collection:**
Obtained from the Doing Business ranking[65].

The government should select a focal point in a ministry to provide this information. If that is not possible, then use data obtained through enterprise surveys made mostly by the World Bank. However, the data is not available for all cities. Data can be collected annually.

**References**

Doing Business (2014). Understanding Regulations for Small and Medium-Size Enterprises. 11th Edition. http://documents.worldbank.org/curated/en/115171468330898480/Doing-business-2014-understanding-regulations-for-small-and-medium-size-enterprises

https://www.doingbusiness.org/en/methodology/starting-a-business#time

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[65] http://www.doingbusiness.org/data/exploretopics/starting-a-business , Accessed August 6, 2014.

## 27: Green Area Per Capita

Adapted from CPI metadata document: https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

**Definition:**

Total green area ($m^2$) within the city per inhabitant. Green areas are defined as public and private areas that have flora such as plants, trees and grass (e.g. forests, parks, gardens). These are undeveloped areas i.e. has no permanent buildings or built structures, partly/completely covered with grass, shrubs, trees or other vegetation irrespective of size and function. They are both private and public green areas and include green spaces such as gardens, parks, urban forests, cemeteries, and blue spaces such as ponds, lakes, streams, artificial swales or wetlands.

*Cities (or densely populated areas)[66]* is defined in the Background.

**Rationale:**

Urban green space (UGS) is vital to the healthy development and  high quality of life of urban residents and is fundamental for sustainability and biodiversity of cities. It is necessary for recreation and the provision of ecosystem services. The Sustainable Development Solutions Network (SDSN) assumed that a generally accepted minimum standard for public space in urban areas as 45%, which is disaggregated into 30% for streets and sidewalks and 15% for green space[67]. WHO lists the benefits of urban spaces as supporting and facilitating health and well-being by enabling stress alleviation and relaxation, physical activity, improved social interaction and community cohesiveness. In addition, UGS contribute to improved levels of mental health, physical fitness and cognitive and immune function, as well as lower mortality rates[68]. WHO recommends that urban residents should be able to access public green spaces of at least 0.5–1 hectare within 300 metres' (around 5 minutes' walk) of their homes. In addition, all population groups should have access to urban green spaces[69].

This indicator is used to monitor progress under the theme "Sustainable Management and Use of Natural Resources" and category "Strengthen the sustainable management of natural resources in urban areas". The basis for selecting this indicator are the commitments (including NUA §65) that call for the sustainable management of natural resources in cities and human settlements in a manner that protects and improves the urban ecosystem and environmental services, through environmentally sound urban and territorial planning.

Green areas are defined as public and private areas that have flora such as plants, trees and grass (e.g. forests, parks, gardens). These areas capture some of the CO2 emissions and release oxygen as green spaces contribute to the environmental sustainability of a city. This indicator provides information about the amount of geographical space that the city dedicates to green space. A prosperous city seeks to increase the green areas per capita to have better air quality and improve the quality of life of its population[70]. Green areas make a city more beautiful and pleasant to live in[71].

Cities located in desert areas have a natural disadvantage, however, it is a duty of the city to guarantee a minimum amount of green space to its population.

*Concepts*

Green areas are defined as public and private areas that have flora such as plants, trees and grass (e.g. forests, parks, gardens). These areas are also a way to compensate for CO2 emissions as green spaces generally generate environmental sustainability. This indicator provides information about the amount of geographical space that the city dedicates to green space. A prosperous city seeks to increase the green areas per capita to have a better air quality and improve the quality of life of its population.

Cities located in desert areas have a natural disadvantage, however, it is a duty of the city to guarantee a minimum amount of green space to its population.

**Computation Method:**

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[66] Eurostat and DG for Regional and Urban Policy –ILO, FAO, OECD, UN-Habitat, World Bank, "A recommendation on the method to delineate cities, urban and rural areas for international statistical comparisons", Statistical Commission 51st Session, https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3j-Recommendation-E.pdf

[67] SDSN, "Area of public and green space as a proportion of total city space", https://indicators.report/indicators/i-70/#:~:text=The%20generally%20accepted%20minimum%20standard,and%2015%25%20for%20green%20space.

[68] WHO, "Urban green spaces: a brief for action" https://www.euro.who.int/__data/assets/pdf_file/0010/342289/Urban-Green-Spaces_EN_WHO_web3.pdf%3Fua=1

[69] *Ibid*

[70] *Ibid*

[71] UNHABITAT, 2016, "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata", https://cpi.unhabitat.org/sites/default/files/resources/CPI%20METADATA.2016.pdf

$$Green\ area\ per\ capita\ = \frac{\text{Total green area within a city}}{\text{city population}}$$

Unit of measure is $m^2$ per capita.

The Definition of city has been given in the Background.
Spatial modelling to define analysis scope (define urban areas/cities) as per globally agreed methodologies.
Image processing, digitization and visual interpretation for green areas extraction from very high-resolution satellite/drone imagery or Geospatial analysis and green areas information extraction from land use plans or City level green area inventory.
Population modelling and disaggregate data from census/reporting units

**Data Sources and Frequency of Data Collection:**

Local urban planning authorities.
Remote sensing imagery can be used to identify intra-urban green areas when no other information is available.
Data can be collected annually.

**References**

UN-HABITAT, "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata", 2016, page 84, https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

Fuller, R. & Gaston, K. (2009). The scaling of green space coverage in European cities. Biology letters, On-line publication: doi:10.1098/rsbl.2009.0010. http://rsbl.royalsocietypublishing.org/content/early/2009/02/22/rsbl.2009.0010.full , accessed June 11, 2014.

Laghai, H. & Bahmanpour, H. (2012). GIS Application in Urban Green space Per Capita Evaluation. Annals of Biological Research, 2012, 3 (5):2439-2446.

WHO, "Urban green spaces: a brief for action" https://www.euro.who.int/__data/assets/pdf_file/0010/342289/Urban-Green-Spaces_EN_WHO_web3.pdf%3Fua=1

Eurostat and DG for Regional and Urban Policy –ILO, FAO, OECD, UN-Habitat, World Bank, "A recommendation on the method to delineate cities, urban and rural areas for international statistical comparisons", Statistical Commission 51st Session, https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3j-Recommendation-E.pdf
The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

Adapted from CPI metadata document: https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

**Definition**

This is defined as the gross density i.e. the total city population divided by the total urban area in square kilometres. The Unit of measurement is number of People per square kilometre.

**Rationale:**

High population density makes provision of many public services economically feasible, e.g. mass transit systems. This explains why for many years UN-HABITAT has advocated for compact cities. In the New Urban Agenda, Member States committed to encouraging spatial development strategies that prioritize urban renewal by planning for the provision of accessible and well-connected infrastructure and services, sustainable population densities and compact design and preventing urban sprawl (NUA §52). High-density has the many economic, social and environmental benefits.

It is possible for a city to have high population density and be prosperous at the same time. Studies show no correlation between high density and crime when factors such as income and class are accounted for. A well-designed and organized high-density neighbourhood can be safe and comfortable, but high-quality design is essential to achieve viable high-density areas (UN-Habitat, 2013). Very high population density is not desirable as it is overcrowding while very low population density is under-utilization of land.

**Computation Method:**

Formula for population density:

$$Population\ density\ = \frac{\text{City Population}}{\text{Urban area}}$$

**Data Sources and Frequency of Data Collection:**

Population data is usually collected by censuses and surveys. The local authorities must carefully mark the boundary of the urban areas (or perimeter). A density of at least 15,000 people per km$^2$ is optimal to promote high-density urban growth, minimize urban sprawl and optimize land efficiency (UN-Habitat, 2013).

Density is often measured as population divided by an administrative boundary, such as municipal boundaries, this measure of density is not very useful as municipal limits may include a large amount of vacant land or lakes and wide rivers (Bertraud 2004).

In some cities and contexts, it is possible to find functional densities with higher values from the proposed optimum. The higher values of density may vary according to cultural factors and available floor areas per person due to vertical development. Additionally, this indicator does not consider the quality of the urban design, which is essential to achieve high-density built-up areas (UN-Habitat, 2013).
Data can be collected annually.

**References**

UN-Habitat, 2013. Discussion Note 1. Urban Planning. A new strategy of sustainable neighbourhood planning: Five principles, http://unhabitat.org/wp-content/uploads/2014/05/5-Principles_web.pdf, Accessed 28 July 2014.

Bertaud, A. 2004. The Spatial Organization of Cities, http://alainbertaud.com/wp-content/uploads/2013/06/AB_The_spatial_organization_of_cities_Version_31.pdf

UN-HABITAT, "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata", 2016, pp 44-45, https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**Definition:**

The diversity of land use per square kilometre, within a city or urban area.
Measurement Unit: Dimensionless (value between 0 and 1.61).

**Rationale:**

Member States committed to promoting the development of adequate and enforceable regulations in the housing sector, including, as applicable, resilient building codes, standards, development permits, landuse by-laws and ordinances, and planning regulations, combating and preventing speculation, displacement, homelessness and arbitrary forced evictions and ensuring sustainability, quality, affordability, health, safety, accessibility, energy and resource efficiency, and resilience. They also committed to foster differentiated analysis of housing supply and demand based on high-quality, timely and reliable disaggregated data at the national, subnational and local levels, considering specific social, economic, environmental and cultural dimensions (NUA §111).

Land use is balanced through complementary uses and activities within a local area, daily trips are short and walkable. This indicator refers to the mix of residences, workplaces and local commerce. Diverse uses peaking at different times ensures animated and safe local streets that encourage walking and cycling, and foster a vibrant human environment where people want to live. The location of activities within a city has a huge impact on the levels of economic and social activities. If we consider distance as a function of the location, then the importance of a suitable location has a significant influence on economic activities and land uses, in the specialization of urban space, and therefore the presence of various sectors in the city (Kajtazi, 2007)

Land use characterizes the cityscape, while its spatial distribution determines the structure and organization of the city (Institute for Transportation and Development Policy, 2013). A prosperous city seeks to distribute the major urban activities to balance its systems and functions.

**Computation Method:**

1. Obtain urban land use map classified as follows: residential, commercial and services, industrial, public facilities, and public spaces. Public facilities are all the institutional structures defined for purposes such as: education, culture, sports and administration. Public spaces include all the open spaces that could be used for recreation such as: parks, public spaces related to the equipment and green zones that are accessible to people.
2. Overlay a regular grid of 500 m x 500 m cell size.
3. Calculate the area allocated to each land use class within each cell.
4. The land allocated to the streets must not be included, which means that this value must be extracted from the total of surface.
5. Calculate the Shannon-Wienner diversity index for each cell j as follows:

$$\text{Shannon-Wienner diversity index}_j = [ -\sum_i p_i * \ln(p_i)],$$

Where $p_i$ is the share of each land use class within the cell calculated as the area of each class divided by the total cell unit area (250,000m$^2$).

6. Calculate the average as follows:

$$\text{Land use mix} = \frac{\sum j \;\; \text{Shannon-Wienner diversity index}j}{\text{Total number of cells}}$$

**Data Sources and Frequency of Data Collection:**

Local urban observatories and city planning authorities.
Because this information comes from the regulatory plans, they do not always reflect the reality on the ground. Sometimes urban development is inconsistent with regulatory plans especially in developing countries.
Annual data collection.

**References**

1. Kajtazi, B. (2007) Measuring multi-functionality of urban area. International Institute for Geo-Information Science and Earth Observation, Enschede, the Netherlands[72].

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[72] http://www.itc.nl/library/papers_2007/msc/upla/kajtazi.pdf, Accessed June 11, 2014

2. Institute for Transportation and Development Policy (2013) TOD Standard v. 2.0. New York.
3. UN-HABITAT, "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata", 2016, pp 99-100, https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf
4. https://unstats.un.org/sdgs/metadata/files/Metadata-11-0a-01.docx
5. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**Definition:**

The mean annual concentration of fine suspended particles of less than 2.5 microns in diameters (PM2.5) is a common measure of air pollution. The mean is a population-weighted average for urban population in a country, and is expressed in micrograms per cubic meter [$\mu$g/m$^3$].

**Rationale:**

Air pollution consists of many pollutants, among other particulate matter. These particles are able to penetrate deeply into the respiratory tract and therefore constitute a risk for health by increasing mortality from respiratory infections and diseases, lung cancer, and selected cardiovascular diseases.

The New Urban Agenda calls for lower levels of GHG emissions to achieve environmental sustainability and improve air quality (NUA §65). A prerequisite for formulation of policies on mitigating climate change is development of a GHG inventory that shows the contribution of different activities to GHG emissions. In this vein, it is crucial to monitor GHG emissions which are a major cause of global warming. This indicator focuses on human activities within cities that directly or indirectly lead to GHG emissions.

**Computation Method:**

The annual urban mean concentration of PM2.5 is estimated with improved modelling using data integration from satellite remote sensing, population estimates, topography and ground measurements (WHO, 2016a; Shaddick et al, 2016)

*Data limitations:*
Urban/rural data: while the data quality available for urban/rural population is generally good for high-income countries, it can be relatively poor for some low- and middle income areas. Furthermore, the definition of urban/rural may greatly vary by country.

*Disaggregation:*
The indicator is available by 0.1° x 0.1° grid size for the world.

*Treatment of missing values:*
- At country level

   Missing values are left blank.

- At regional and global levels
   Missing values are excluded from the regional and global averages.

   **Regional aggregates:**
   The regional and global aggregates are population -weighted figures of the national estimates.

   Cagg=SUM (Cnat * Pnat)/ SUM (Pnat)

   where Cagg is the regional/global estimate, Cnat is the national estimate, Pnat is the country population. The sum is done over the countries in the region (regional aggregate) or all countries (global aggregate).

*Sources of discrepancies:*

The source of differences between global and national figures: Modelled estimates versus annual mean concentrations obtained from ground measurements.

*Methods and guidance available to countries for the compilation of the data at the national level:*
Countries which have air quality monitoring networks in places in urban areas can use the annual mean concentrations from the ground measurements and the corresponding number of inhabitants to derive the population-weighted exposure to particulate matter in cities.
*Quality assurance*
Data inputs to the model are official or published data on air quality or other relevant topics. Modelled estimates are carefully crossed-checked and compared with official ground measurements.

*Consultation/validation process with countries for adjustments and estimates*

Data inputs, methods and final estimates are shared with countries prior to publication via WHO official communication channels with WHO Member States.

**Data Sources and Frequency of Data Collection:**
Sources of data include ground measurements from monitoring networks, collected for 3,000 cities and localities (WHO 2016) around the world, satellite remote sensing, population estimates, topography, information on local monitoring networks and measures of specific contributors of air pollution (WHO, 2016b)

*Collection process:*
Data collection process for ground measurements include official reporting from countries to WHO (after request), and web searches. Measurements of PM10 or PM2.5 from official national/sub-national reports and websites or reported by regional networks such as Clean Air Asia for Asia and the European Environment Agency for Europe or data from UN agencies, development agencies, articles from peer reviewed journals and ground measurements compiled in the framework of the Global Burden of Disease Project.

*Data providers and Frequency of Data Collection:*

Mostly the Ministry of Health, and Ministry of the Environment and the data can be compiled every year.

**References**
**URL:**

www.who.int/gho/phe

Shaddick G et al (2016). Data Integration Model for Air Quality: A Hierarchical Approach to the Global Estimation of Exposures to Ambient Air Pollution. Royal Statistical Society, arXiv:1609.0014.

WHO (2016a). Ambient air pollution: a global assessment of exposure and burden of disease, WHO Geneva.
WHO (2016b). WHO Urban ambient air quality database, WHO Geneva.

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**31: Median amount of money spent on housing and transportation per household as a percentage of the median annual household income of tenants**

**Adapted from:** https://unhabitat.org/urban-indicators-guidelines-monitoring-the-habitat-agenda-and-the-millennium-development-goals/

**Definition:**

Median annual rent of a dwelling unit plus amount of money spent on transportation divided by median annual household income of tenants.
Median is the middle data value of an ordered data set.

**Rationale:**

Member States committed themselves to develop policies, tools and financing models that create a wide range of affordable and sustainable housing options, including rental and other tenure options, co-housing, community land trusts and other forms of collective tenure. They also committed themselves to implementing urban planning strategies that facilitate integration through the provision of affordable housing options with access to quality basic services and public spaces for all (NUA §99 & 107). The indicator is based on the objective that housing should not take a huge portion of total household income.

In the 2017 Survey of Household Spending conducted by Statistics Canada[73], shelter was the largest budget item for households accounting for 29.2% of their total consumption of goods and services, followed by spending on transportation at 19.9%, while expenditure on food accounted for 13.4%. It is important to note that share going to shelter had gone up by up 3.4% from 2016. In many countries, housing and transportation costs are the biggest expenditure items, hence they deserve monitoring. The bigger the share of the housing and transportation expenditures, the less money is left for other household needs[74].

*Concepts:*

*Median rent:* Rent excludes utilities such as electricity, heating, water, sewerage charges etc. Median rent might be obtained from household income and expenditure surveys. However, if that data is out of date, then median rent has to be estimated with ranges of rents estimated separately for different categories such as public housing, controlled rents, one bedroom and two-bedroom furnished and unfurnished apartments, and single-family houses of different types. The median price will be part way up the price ranges of the median dwelling types.

*Median household income of renters:* Household income is defined as the gross income from all sources, which include wages, salaries, incomes from businesses or informal sector activities, investment income, and where information is available, income in-kind such as consumption of agricultural produce which might have been sold.

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[73] Survey of Household Spending, 2017, Statistics Canada, released 12 December 2018
https://www150.statcan.gc.ca/n1/daily-quotidien/181212/dq181212a-eng.htm
[74] Detailed table available at https://www150.statcan.gc.ca/n1/daily-quotidien/181212/t001a-eng.htm

**Computation Method:**

*Rent & Transportation-to-income ratio*

| *city level* | **Year** | **2016** | **20..** | |
|---|---|---|---|---|
| | Median rent plus Median annual cost of transportation | | | A |
| | Median household income of renters | | | B |
| | **Median rent plus Median annual cost of transportation / household income** | | | A/B |

What changes do these results suggest in terms of housing affordability?

For the calculation of the rent plus cost of transportation to income ratio, incomes should be median gross income of private and public renter households. Where renter household income data does not exist, median income of all households can be used.
Data to be provided at city level.

**Data Sources and Frequency of Data Collection**

Data sources are Public housing boards, housing finance institutions, real-estate agencies, non-governmental organizations, and Ministries of housing.
The monitoring of the indicator can be every two years until 2036.

**Reference:**

UN-HABITAT, July 2009, "**Urban Indicators Guidelines**: *Monitoring the Habitat Agenda and the Millennium Development Goals- Slums Target*", https://unhabitat.org/urban-indicators-guidelines-monitoring-the-habitat-agenda-and-the-millennium-development-goals/, pp 9-10.

Survey of Household Spending, 2017, Statistics Canada, released 12 December 2018
https://www150.statcan.gc.ca/n1/daily-quotidien/181212/dq181212a-eng.htm

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**32: Ratio of the median free-market price of a dwelling unit and the median annual household income**
Adapted from Urban Indicators Guidelines 2009

**Definition:**

Median free-market price of a dwelling unit divided by median annual household income.
Median is the middle data value of an ordered data set.

**Rationale:**

Member States committed themselves to develop policies, tools and financing models that create a wide range of affordable and sustainable housing options. They also committed themselves to implementing urban planning strategies that facilitate integration through the provision of affordable housing options with access to quality basic services and public spaces for all (NUA §99 & 107). The indicator is based on the objective that housing should not take a huge portion of total household income.

The problem in many developing countries and in some developed countries is that housing is very expensive relative to average incomes of citizens. The cost of a complete dwelling in developed countries is between 2.5 and 6 times the average annual salary. The ratio is much higher in developing countries. It was 12 times in Algeria according the Global Report on Human Settlements 2005. Hence there is a big need for mortgage finance in developing countries. Monitoring this indicator will provide the need for mortgage finance.

*Concepts:*

*Median housing price:* Housing price is defined as the price at which a house would sell if placed on the market for a reasonable length of time by a seller who is not under pressure to sell. The median priced house in the urban area is the house that has 50% of the houses priced below it, and 50% of the houses priced above it. The calculation of the price of the median-priced house should, therefore, include all housing, both new and old, and both formal and informal. If, for example, most of the housing stock is informal, and the informal housing stock is generally cheaper than the formal housing stock, then the median priced house will probably be an informal unit. For blocks of apartments or multiple-family dwellings, which are usually sold as a single building, the value of one dwelling unit should be estimated as a pro rata share of the total sale price. This is particularly relevant for countries in Africa where most of the housing is of this type.

*Median household income of home owners:* Household income is defined as the gross income from all sources, which include wages, salaries, incomes from businesses or informal sector activities, investment income, and where information is available, income in-kind such as consumption of agricultural produce which might have been sold.

**Computation Method:**

*House price and income ratio*

| city level | Year | 2016 | 20.. | |
|---|---|---|---|---|
| - | Median house price | | | A |
| - | Median annual household income | | | C |
| | **House price / household income** | | | A/C |

What changes do these results suggest in terms of housing affordability?

For the calculation of the rent to income ratio, incomes should be median gross income of private and public renter households. Where renter household income data does not exist, median income of all households can be used.
Data to be provided at city level.

**Data Sources and Frequency of Data Collection**

Data sources are Public housing boards, housing finance institutions, real-estate agencies, non-governmental organizations, and Ministries of housing.
The monitoring of the indicator can be every two years until 2036.

**Reference:**

UN-HABITAT, July 2009, "**Urban Indicators Guidelines**: *Monitoring the Habitat Agenda and the Millennium Development Goals- Slums Target*", https://unhabitat.org/urban-indicators-guidelines-monitoring-the-habitat-agenda-and-the-millennium-development-goals/, pp 9-10.

UN-HABITAT, 2005, "Global Report on Human Settlements 2005: Financing Urban Shelter", ISBN 92-1-131739-8, page XXIII and 55.

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 33. Gini coefficient at national/city/ urban levels
Adapted from CPI Indicators framework.

### Definition

Gini Coefficient measures the extent to which the distribution of income (or consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. In a city where all inhabitants have equal income, Gini coefficient is zero. On the other hand, in a city where all the income is earned by only one individual, Gini Coefficient is one.

### Rationale

In the NUA Member States committed sustainable urban development that was inclusive. In this regard, they agreed to ending poverty and reducing the growing inequality (NUA §25). The Gini Coefficient is a well-known measure of inequality that can be used to monitor whether inequality is declining as desired by Member States.

Income inequality is a major urban issue. Many cities have Gini coefficients above 0.40 which is the International Alert Line. The chart below presents Gini coefficients for selected cities. The growing inequalities have health consequences as demonstrated in the current Covid-19 Pandemic, poorer sections of the population have worse outcomes, relatively higher percentages of them die.
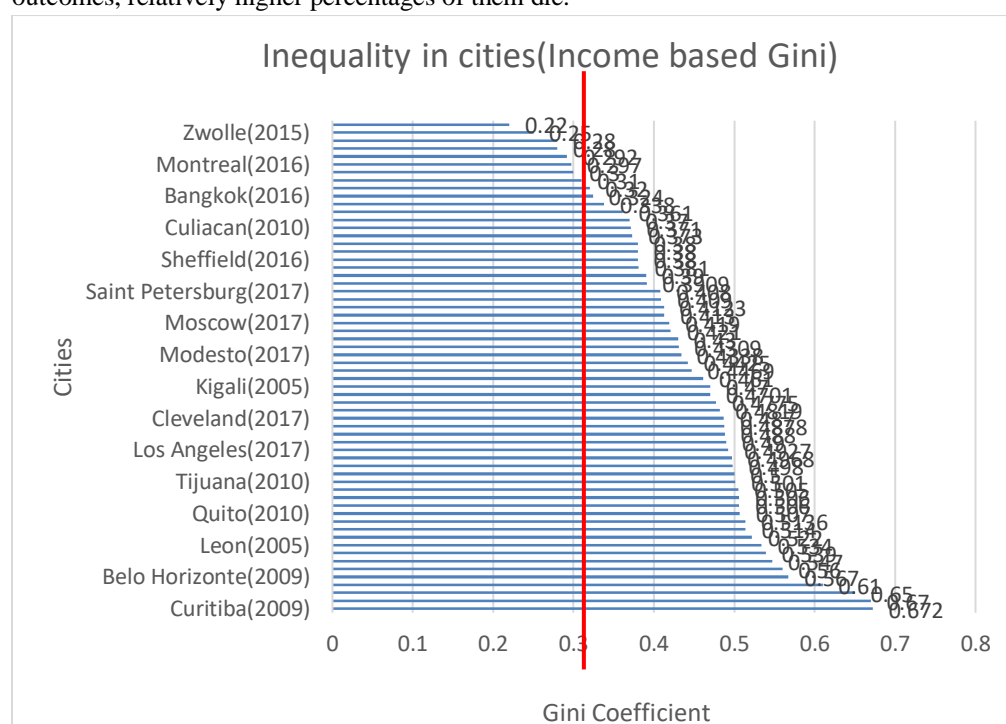


Source: UNHABITAT, Global Urban Database

### Computation Method
*Concept*
The Gini coefficient can be computed at household level or for individuals. Supposing households in a city arranged by the size of their income. The cumulative income of all household earning as much or less than the i$^{th}$ household expressed as percentage of the total incomes of all households is plotted against percentage if the cumulative number of households. The cumulative percentage of households is plotted on the X-axis. This will produce a curve like the

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one in the figure below. The Gini Coefficient is the area between the diagonal and the curve divided by the area of the triangle. The higher the Gini coefficient, the higher the income inequality.
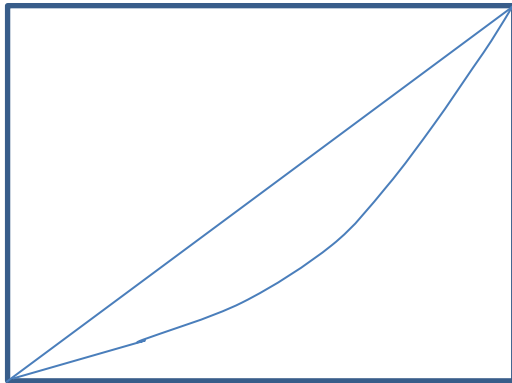


Cummulative number of households

It is recommended to use statistical software like STATA to compute Gini coefficient from household income and expenditure survey data, using STATA modules such as *fastgini* and *ineqdec0*. These two modules have to be downloaded and installed in Stata, then they can be used to compute Gini Coefficient.
Compute Gini Coefficient at National, Urban and City level.

**Data Sources and Frequency of Data Collection**
At the national level, the respondent will be in the Ministry selected by the government as the focal point for this indicator and data can be obtained from the national statistical office. Gini coefficient data is often available in household income and expenditure survey reports. The World Bank routinely collects or compiles national level Gini Coefficient data but not city level data. The monitoring of the indicator can be every two years until 2036.

**Reference:**

UN-HABITAT, "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata", 2016, pp 107-108, https://unhabitat.org/wp-content/uploads/2019/02/CPI-METADATA.2016.pdf

UNHABITAT, 2019, "Inequality in Cities", Global Urban Database

New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**34 Presence of national legislation forbidding discrimination in housing, access to public facilities and social services based on race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status**

**Definition:**

Prohibition of discrimination, whether constitutional or statutory, is more likely to be a blanket prohibition of all forms of discrimination (whether with respect to housing or employment etc.). Consequently, it will suffice if a country has a law prohibiting all forms of discrimination. If a country has a law prohibiting discrimination in housing, that will be good too.

**Rationale:**

The Universal Declaration of Human Rights (art. 1), was adopted by General Assembly on 10 December 1948[75]. Article 1 of the Declaration reads: "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood." Thus, the Declaration is against all forms of discrimination including in housing.

SDG 11 target 11.1 states that "By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums". In context of the New Urban Agenda, the timeframe for this target in 2036. In addition, the New Urban Agenda calls for adequate housing for all (NUA §31). It is a measure of how far a country is from achieving adequate housing for all, one of the key commitments in the New Urban Agenda (NUA §31). However, this NUA commitment and SDG target can be achieved only if there is no discrimination in housing.

Some examples of discrimination in housing are: setting security deposits or amount of rent based applicants' race; Not responding to enquiries by potential tenants of certain races; not informing prospective buyers of all available housing listings in their price range; and not approving mortgages to prospective buyers of homes in certain locations if they belong to some races[76].

**Computation Method**

Presence of national legislation forbidding discrimination in housing based on race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.

| Yes | |
| --- | --- |
| No | |

*Disaggregation:*
Data to be provided at national level.

**Data Sources and Frequency of Data Collection**

At the national level the respondent will be in the Ministry selected by the government as the focal point for this indicator. A senior level civil servant would be well placed to provide answers for this indicator. Monitoring is done annually.

**Reference:**
1. Fact Sheet No.2 (Rev.1), The International Bill of Human Rights, https://www.ohchr.org/Documents/Publications/FactSheet2Rev.1en.pdf
2. Consumer Action, "Know the Signs of Housing Discrimination", https://www.consumer-action.org/downloads/english/KnowSigns.pdf
3. New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

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[75] Fact Sheet No.2 (Rev.1), The International Bill of Human Rights, https://www.ohchr.org/Documents/Publications/FactSheet2Rev.1en.pdf
[76] Consumer Action, "Know the Signs of Housing Discrimination", https://www.consumer-action.org/downloads/english/KnowSigns.pdf

**35 Percentage of road length that has dedicated bike lanes (excluding motorways).**

**Definition:**

A bicycle lane is a part of the road or a special path for the use of people riding bicycles.[77]

**Rationale:**

Member State committed themselves to promoting safe, inclusive, accessible, green and quality public spaces, including streets, sidewalks and cycling lanes and parks, that are multifunctional areas for social interaction and inclusion, human health and well-being (NUA §37). They also committed to promoting well designed streets, that promote walkability and cycling which contribute to improving health and well-being (NUA §100), and to promoting affordable, accessible and sustainable urban mobility by prioritizing walking and cycling over motorized transportation (NUA §114).

They encouraged all levels of governments to develop financing their transport and mobility infrastructure and systems, such as mass rapid-transit systems, integrated transport systems, and safe, sufficient and adequate pedestrian and cycling infrastructure and technology-based innovations in transport with the aim of reducing congestion and pollution while achieving efficiency, connectivity, accessibility, health and quality of life (NUA §118).

The Netherlands, Denmark and Germany have led the way in creating good design of bicycle infrastructure and compact building style thus reducing travel distances and encouraging cycling in their cities. The benefits of having a significant proportion of a city's residents cycling instead of utilizing private cars to get around a city include better health due to increased physical activity and reduced air and noise pollution as a result of less vehicular traffic on the streets[78]. Lower vehicular traffic means lower emissions of carbon dioxide ($CO_2$), nitric oxide (NO), nitrogen dioxide ($NO_2$) and particulates, imply slower global warming.

**Computation Method**

Obtain map of the city and shapefiles for roads from Department of Roads or the Ministry of Transport. Overlay map of the city with the roads layer. If the roads layer specifies which roads have bicycle lanes, select roads that have bicycle lanes and compute their total length, then select all roads and compute their length using GIS software.

If the roads layer does not specify which roads have bicycle lanes, then the carry out GIS-mapping of bicycle lanes as was done in City of Edmonton[79]. It took about 100 man-hours or about one-week work for two people. Once the one-time-only conversion of lines on maps into GIS data has been completed, in the following years, updating the bike-lane maps takes only a day.

Percentage of road length that has dedicated bike lanes =

$$\frac{total\ length\ of\ bicycle\ lanes\ in\ the\ city}{total\ length\ of\ roads\ (excluding\ motorways)\ in\ the\ city}$$

Data to be provided at city level.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator, data supplied by the cities.
Annual monitoring of the indicator until 2036.

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[77] https://dictionary.cambridge.org/dictionary/english/bicycle-lane-path?q=bicycle+lane+
[78] Angela Hull & Craig O'Holleran, "Bicycle infrastructure: can good design encourage cycling?" https://www.tandfonline.com/doi/full/10.1080/21650020.2014.955210
[79] Alex Macdonald, "GIS bike lane mapping saves hundreds of hours", https://transformingedmonton.ca/gis-bike-lane-mapping-saves-hundreds-of-hours/

**References:**

Alex Macdonald, "GIS bike lane mapping saves hundreds of hours", https://transformingedmonton.ca/gis-bike-lane-mapping-saves-hundreds-of-hours/

Angela Hull & Craig O'Holleran, "Bicycle infrastructure: can good design encourage cycling?" https://www.tandfonline.com/do*i/full/10.1080/21650020.2014.955*210

New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**36 Percentage of road length that has dedicated sidewalks (excluding motorways).**

**Definition:**

A sidewalk is a path with a hard surface on one or both sides of a road that people walk on[80]. This indicator is percentage of road length that has dedicated sidewalks (excluding motorways) in a city.

**Rationale:**

Member State committed themselves to promoting safe, inclusive, accessible, green and quality public spaces, including streets, sidewalks and cycling lanes and parks, that are multifunctional areas for social interaction and inclusion, human health and well-being (NUA §37). They also committed to promoting well designed streets, that promote walkability and cycling which contribute to improving health and well-being (NUA §100), and to promoting affordable, accessible and sustainable urban mobility by prioritizing walking and cycling over motorized transportation (NUA §114).

They encouraged all levels of governments to develop financing their transport and mobility infrastructure and systems, such as mass rapid-transit systems, integrated transport systems, and safe, sufficient and adequate pedestrian and cycling infrastructure and technology-based innovations in transport with aim of reducing congestion and pollution while achieving efficiency, connectivity, accessibility, health and quality of life (NUA §118).

We are all pedestrians at different times of the day. However, the design of streets favours motorized traffic. 2011 – 2020 is the Decade for Action for Road Safety, which offers a framework for making walking safer, less stressful and more pleasant. Greater pedestrian safety will encourage more urban residents to walk.[81] There around 1.24 million traffic fatalities annually around the Globe, 22% (270,000) of these are pedestrians. That is a huge loss to affected families and it also represents loss of potential output due to death of workers and entrepreneurs.

WHO has stated that Non-communicable diseases (NCDs), including cardiovascular diseases and diabetes, are the major cause of early deaths worldwide. Approximately 16 million people die before the age of 70 from NCDs[82]. Walking is a good exercise is a proven method for reducing the incidence of diabetes and cardiovascular diseases. It results in a more productive population and also lowers health costs for both city residents and the government.

**Computation Method**

Obtain map of the city and shapefiles for roads from Department of Roads or the Ministry of Transport.
Overlay map of the city with the roads layer. If the roads layer specifies which roads have sidewalks, select roads that have sidewalks and compute their total length, then select all roads and compute their length using GIS software.

If the roads layer does not specify which roads have sidewalks, then the carry out GIS-mapping of sidewalks as was done for bike lanes in City of Edmonton[83]. Once the one-time-only conversion of lines on maps into GIS data has been completed, in the following years, updating the sidewalk maps takes only a day. It will be more cost effective to conduct the GIS-mapping of sidewalks and bike lanes at the same time[84].

Percentage of road length that has dedicated sidewalks=
$$\frac{total\ length\ of\ sidewalks\ in\ the\ city}{total\ length\ of\ roads\ (excluding\ motorways)\ in\ the\ city}$$

**Data Sources and Frequency of Data Collection**

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[80] https://dictionary.cambridge.org/dictionary/english/sidewalk
[81] WHO, "MAKE WALKING SAFE: A brief overview of pedestrian safety around the World",
[82] WHO, "Campaign for action – meeting the NCD targets", https://www.who.int/beat-ncds/about/en/
[83] Alex Macdonald, "GIS bike lane mapping saves hundreds of hours", https://transformingedmonton.ca/gis-bike-lane-mapping-saves-hundreds-of-hours/
[84] Length of the portions of the road that have sidewalk on one or both sides of the road.

Data to be provided at city level. The Ministry selected by the government as the focal point for this indicator, data supplied by the cities. Annual monitoring of the indicator until 2036.

**References:**

Alex Macdonald, "GIS bike lane mapping saves hundreds of hours", https://transformingedmonton.ca/gis-bike-lane-mapping-saves-hundreds-of-hours/
WHO, "MAKE WALKING SAFE: A brief overview of pedestrian safety around the World",
WHO, "Campaign for action – meeting the NCD targets", https://www.who.int/beat-ncds/about/en/
New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 37 Mortgage debt relative to GDP

**Definition:**

A mortgage is a debt whose collateral is the real estate property itself. The borrower owns the structure once he/she has paid off the mortgage. The advantage of a mortgage is that it allows the borrower to spread loan repayments over a period that is manageable to the borrower. There are big variations in levels of mortgage debt to GDP among countries. However, this is partly explained by differences in home ownership levels.[85]

**Rationale:**

There are many reasons to monitor mortgage debt. Most households cannot afford to pay for a house or flat without getting a mortgage loan. Hence, the availability of mortgage loans is key to increasing homeownership. Increasing homeownership is one of the major ways to achieving adequate housing for all, one of the key commitments in the New Urban Agenda (NUA §31). Houses and apartments provide housing for households and are also a major asset for households. The more mortgage loans are readily available, the more households become homeowners. There are also macroeconomic reasons for monitoring mortgage debt, it is important that policies are in place to ensure that borrowers purchase properties that they can afford. It is important to monitor mortgage debt. The financial crisis in 2008/2009 began in the housing sector.

*Concepts:*
Mortgage Debt is the outstanding mortgage debt relative to GDP and gauges the depth of mortgage markets by focusing on the total volume[86].

Housing Loan Penetration, the percentage of adult population with an outstanding loan to purchase a home[87].

**Computation Method:**

Mortgage debt as a percentage of GDP = $100 \times [\frac{\text{Mortgage debt}}{\text{GDP}}]$

Mortgage debt in national currency.
GDP is at current prices in national currency
Data to be provided at national level and disaggregated between residential buildings and other, if possible.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator. The most common data source for mortgage debt is a country's central bank. Data from 2016 Housing Finance in Africa Yearbook can be used as baseline data for those countries covered[88].
The monitoring of the indicator is to be annual until 2036.

**References**

1. Anton Badev, Thorsten B., Ligia V., Simon W., "Housing Finance Across Countries New Data and Analysis", Policy Research Working Paper 6756, page 5, http://documents.worldbank.org/curated/en/697351468165251669/pdf/WPS6756.pdf, data sources are listed in Appendix A1 of this World Bank Working paper.
2. Centre for Affordable Housing in Africa, "2016 Housing Finance in Africa Yearbook", http://housingfinanceafrica.org/documents/2016-housing-finance-in-africa-yearbook/
3. The Economist, 20/09/2007, https://www.economist.com/economic-and-financial-indicators/2007/09/20/mortgage-debt-and-gdp
4. New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

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[85] https://www.economist.com/economic-and-financial-indicators/2007/09/20/mortgage-debt-and-gdp
[86] Anton Badev, Thorsten B., Ligia V., Simon W., "Housing Finance Across Countries New Data and Analysis", Policy Research Working Paper 6756, page 5, http://documents.worldbank.org/curated/en/697351468165251669/pdf/WPS6756.pdf,data sources are listed in Appendix A1 of this World Bank Working paper.
[87] *Ibid,* page 6
[88] Centre for Affordable Housing in Africa, "2016 Housing Finance in Africa Yearbook", http://housingfinanceafrica.org/documents/2016-housing-finance-in-africa-yearbook/

## 38: Percentage of people living in unaffordable housing

**Definition:**

This indicator measures the percentage of people who live in households that spend a very big proportion of their income on housing, such that they have problems budgeting for their other wants.

**Rationale:**

Article 25 of the Universal Declaration of Human Rights states that everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing and housing. Unaffordable housing makes it difficult for a household to have an adequate standard of living, which is a human right.

The New Urban Agenda's vision is guided by the principle of "Leave no one behind" by ending poverty by providing access (among other things) to adequate and affordable housing (NUA §14). In this connection, Member States agreed to supporting the implementation of urban planning strategies that facilitate the provision of affordable housing options with access to quality basic services and public spaces for all, safety and security and intergenerational interaction (NUA §99).

*Concepts*
*Unaffordable housing*
A household is considered to face housing unaffordability if their net monthly expenditure on housing cost exceeds 30% of the total monthly income of the household. It is important to also compute and report on "Percentage of people in the households that spend 30 percent or more of their income on housing costs" so that the percentage of the urban or city population in living in unaffordable housing is monitored, which may lead to appropriate policies to address the problem being formulated.

**Computation Method:**

The national focal point for this indicator can obtain this data from the national statistical office. A national statistical office can compute percentages of population living in unaffordable housing utilizing household surveys such as Demographic Health Surveys (DHS), MICS and population and housing census data as well as household income and expenditure survey using the following formula:

Percentage of people in households that spend 30 percent or more of their income on housing costs =
$$100 \times \left[\frac{\text{Number of of people living in households that spend 30 percent or more of their income on housing costs}}{\text{City population}}\right]$$

Data to be provided at national and city level.

**Data Sources and Frequency of Data Collection:**

The main data source for this indicator are the national statistical offices.
The indicator will be monitored annually until 2036.

**References:**
1. New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
2. United Nations, The Universal Declaration of Human Rights, Article 25, https://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf
3. UN-HABITAT, 2017, "Measuring the SDG Target 11.1's Indicator – Background concept note", page 8
4. UN-HABITAT, 2016, "The Fundamentals of Urbanization Evidence Base for Policy Making", https://unhabitat.org/wpdm-package/the-fundamentals-of-urbanization-evidence-base-for-policy-making/, pages 61-62

## 39 Proportion of cities with slum upgrading programmes

**Definition:**

Slum upgrading and prevention programmes are important strategies for improving living conditions of the urban poor and integrating slums and slum dwellers into a city. Upgrading slums in their original location is flexible, viable and costs less and is more effective than relocating slum dwellers to public housing.

**Rationale:**

Member States committed to support the development of policies, tools, mechanisms and new ways of financing that lead to most of urban residents having access to a wide range of affordable, sustainable housing options, including rental, cooperative solutions, co-housing and other tenure options, so as to improve the availability of housing for all income groups, and stop segregation and arbitrary forced evictions and displacements and provide dignified and adequate relocation. In addition, they would support to incremental housing, self-build schemes, and upgrading slums and informal settlements (NUA §107).

Member States agreed to promote planned urban extensions and infill, whilst focusing on renewal, regeneration and retrofitting of urban areas, including the upgrading of slums and informal settlements, and avoiding spatial and socioeconomic segregation and gentrification, (NUA §97). They also committed to strengthening the resilience of cities and human settlements, the development of infrastructure that is resilient and resource efficient and that minimizes the risks and impact of disasters, including the rehabilitation and upgrading of slums and informal settlements, as well as promoting measures for strengthening and retrofitting all risky housing stock, including in slums and informal settlements, to make it resilient to disasters, in coordination with local authorities and stakeholders (NUA §77).

The percentage of slum dwellers in developing countries has declined from 39.4% in 2000 to 29.7% in 2014 but it has increased in absolute numbers from 791 million to 881 million over the same period[89]. Two major causes of slums are lack of improved water and improved sanitation, thus as economies develop, cities are able provide basic services such as piped water and improved sanitation and the proportion on slum dwellers declines. In a study of residents of Nairobi slums, slum dwellers identified access to basic infrastructure, such as toilets and water supply as their priority[90]. The well-being of slum dwellers is lower than that of well-off urban dwellers. The children of slum dwellers tend not to have access to good health care or schools. Hence, it important for local governments to formulate policies to upgrade slums.

In addition to basic services such water, sanitation and regular trash collection, a major component of slum upgrading providing secure land tenure to residents. Quite often slum dwellers earn little income. Hence, for a slum upgrading programme to be successful, it must address issues of livelihoods as well.

**Computation Method**

This indicator has two components that should be computed or counted:

Percentage of cities with slum upgrading programmes =

$$100 \times [\frac{\text{Number of cities with slum upgrading programmes}}{\text{Total number of cities}}]$$

Data to be provided at national and city level.

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[89] UN-HABITAT, "World Cities Report 2016", page 3
[90] UN-Habitat (2018). SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading. United Nations Human Settlement Programme (UN-Habitat), Nairobi, page 8.

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator. Some data can come from the cities directly. Bi-annual monitoring until 2036.

**References:**

1. UN-HABITAT, "World Cities Report 2016", page 3
2. UN-Habitat (2018). SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading. United Nations Human Settlement Programme (UN-Habitat), Nairobi.
3. New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**40: Number of cities having annual budget allocations addressing any of the 5 slum deprivations and inclusive public spaces in known slum areas**

**Definition:**

This indicator is a count of cities that budget allocation addressing any of: (i) creation of inclusive public spaces in slum areas and (ii) the five slum deprivations which are lack of improved water, lack of improved sanitation, lack of sufficient living area, lack of housing durability and lack of security of tenure.

**Rationale:**

Member States committed themselves to increased allocations of financial and human resources for slum upgrading and prevention of slums and informal settlements. In addition, they committed to integrating slums and informal settlements into the social, economic, cultural and political life of the cities and to implementing policies that facilitated or produced adequate affordable housing, safe inclusive high quality green public spaces (NUA §109).

Member States committed to develop policies, tools and financing mechanisms that increase the range of affordable and sustainable housing options for all income groups. Some of the approaches that they would support are incremental housing, self-build schemes, and upgrading slums and informal settlements (NUA §107).

Member States agreed to promote planned urban extensions and infill, renewal, regeneration and retrofitting of urban areas, slum upgrading and prevention of spatial and socioeconomic segregation and gentrification, (NUA §97). They also called for the strengthening the resilience of cities and human settlements, the development of infrastructure that is resilient and resource efficient and that minimizes the risks and impact of disasters, including the rehabilitation and upgrading of slums and informal settlements, as well as promoting measures for strengthening and retrofitting all risky housing stock, including in slums and informal settlements, to make it resilient to disasters, in coordination with local authorities and stakeholders (NUA §77).

The quote "What gets measured gets done." Has been attributed to a number of people[91]. Regular measurement and reporting focuses all stakeholders' attention on what is measured, hence policy can be formulated to improve what is being measured. Thus, highlighting the number of cities that have budget allocations that address "(i) creation of inclusive public spaces in slum areas and/or (ii) the five slum deprivations which are lack of improved water, lack of improved sanitation, lack of sufficient living area, lack of housing durability and lack of security of tenure." Should in general lead to more cities having budget allocations for addressing creation of public spaces and the five slum deprivations.

**Computation Method**

*N= count of cities having an annual budget allocation addressing any of the five slum deprivations and inclusive public spaces in known slum areas.*

Data to be provided at national and city level.

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator. Some data can come from the cities directly. Bi-annual monitoring until 2036.

**References:**

1. UN-Habitat (2018). SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading.

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2.  United Nations Human Settlement Programme (UN-Habitat), Nairobi.
3.  The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
4.  Leslie Wolf, 2010, "What Gets Measured Gets Done: Key Performance Indicators", https://cdlib.org/cdlinfo/2010/09/15/what-gets-measured-gets-done-key-performance-indicators/

**41 Percentage of cities that have integrated housing policies and regulations in their local development plans**

**Definition:**

The term 'integrated' is used to mean (a) overall social, economic and spatial integration of a city, whereby poorer, marginalized sections of a city are formally integrated into the rest of the city and (b) a multi-sector approach that is coordinated and mutually supportive, with all the different sectors operating in concert so that results in one are reinforced by achievements in another. Some of the integrated housing policies include:

    i.    Provide affordable housing to residents at all income levels.

    ii.    Recognize existing urban slum areas and mitigate their expansion in the future.

    iii.    Increase job opportunities for micro and small enterprises and unskilled labors, which will in turn provide income for their families to afford their own housing.

    iv.    Align with national urban strategies.

**Rationale:**

Member States agreed to nurture the progressive realization of the right to adequate housing as a major element of the right to an adequate standard of living. In this vein, they would formulate and implement housing policies at all levels, incorporating participatory planning and applying the principle of subsidiarity and ensuring coherence among national, subnational and local development strategies, land policies and housing supply (NUA §105).

Member States committed to setting up robust legal and regulatory frameworks for sustainable national and municipal borrowing, based on sustainable debt management, backed by adequate revenues and capacities, by means of local creditworthiness as well as enlarged sustainable municipal debt markets when necessary. In this vein, they would consider the establishment of appropriate financial intermediaries for urban financing, such as regional, national, subnational and local development funds or development banks, including pooled financing mechanisms, which can catalyse public and private, national and international financing (NUA §139).

This is to understand the role of housing within National Urban Policies and plans, whether is treated as a central element (as per the Housing@centre approach[92]) or if it not included. Cities can integrate housing policies in their strategic plans such as provision of adequate and affordable housing for all including subsidized housing to low income families[93] in line with the principle of "no one left behind". Other housing policies could include sustainable building codes, regulations or certification tools for sustainable housing construction in line with SDG 11.1.

**Computation Method**

Has the city integrated housing policies and regulations in their local development plans?

| Yes | |
|-----|---|
| No | |

Percentage of cities that have integrated housing policies and regulations in their local development plans =

$$100 \times [\frac{\text{number of cities that have integrated housing policies and regulations in their local development plans}}{\text{total number of cities}}]$$

The ministry responsible for municipalities of housing can examine local development plans for every city and determine whether how many of them have integrated housing policies and regulations in them. It should compute the percentage of cities that have integrated housing policies and regulations in their local development plans. Data to be provided at city level data.

**Data Sources and Frequency of Data Collection**
Data will be based on city development plans.
Annual monitoring until 2036.

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[92] https://unhabitat.org/housing-at-the-centre-of-the-new-urban-agenda/

[93] UN-Habitat Strategic Plan 2020-2023: Results Framework

**References:**

1. UN-Habitat Strategic Plan 2020-2023: Results Framework
2. https://unhabitat.org/housing-at-the-centre-of-the-new-urban-agenda/
3. Michael Majale, "An integrated approach to urban housing development: Has a case been made?", http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1268963780932/6881414-1268963797099/majale.pdf
4. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**42 Total investment in housing (in both formal and informal sectors in the urban area), as a percentage of gross domestic product.**

**Definition:**

This indicator measures total investment in residential housing (in both formal and informal sectors in the urban area) in local currency. Investment in housing covered construction of dwellings and associated structures, such as garages and permanent fixtures normally installed in dwellings.

**Rationale:**

Member States committed to promoting national, subnational and local housing policies that support the incremental realization of the right to adequate housing for all as an element of the right to an adequate standard of living including construction of dwellings (NUA §31). They also committed to increasing the supply of different types of adequate housing are safe and affordable to households in all income groups and take action to improve the living conditions of homeless people, facilitate their full participation in economic activity and eliminate homelessness (NUA §33).

Reaching the commitments of the New Urban Agenda requires substantial improvement is the living standards of slum dwellers. Similarly, achieving sustainable Target 11.1, which is to ensure access for all to adequate, safe and affordable housing and basic services as well as upgrading slums, requires mobilizing financial resources for both slum upgrading and prevention and supplying new affordable housing to low income households[94]. According to the "World Urbanization Prospects 2018", the World urban population will rise from 4,379 million in 2020 to 5,556 million in 2035[95]. All this increase in population will require housing, in addition, the population that is currently living in slums (estimated at 1.76 billion in 2014) will also require their housing to be either upgraded or be moved to new adequate housing. Hence, it is very important to monitor the level of investment in residential buildings.

*Concepts:*

Residential housing is defined as "Dwellings" in the System of National Accounts 2008[96]:

Buildings entirely or primarily used as residences, including associated structures, such as garages and permanent fixtures customarily installed in residences. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings. Examples include residential buildings for communities such as retirement homes, hostels and orphanages.

Costs of preparing a site for construction of a dwelling are considered part of costs of the new dwelling.
Incomplete dwellings are included to the extent that the ultimate user is deemed to have taken ownership, either because the construction is on own account or as evidenced by existence of a contract of sale or purchase.

Dwellings acquired for military personnel are included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units.

"Net capital formation of dwellings" is "gross capital formation of dwellings" minus "depreciation of dwellings", as elaborated on Table 10.2 in the System of National Accounts 2008.

**Computation Method:**
Request estimates of "Net capital formation of dwellings" and "gross capital formation of dwellings" from the National Accounts Section of the national statistical offices.

Data to be provided at national level. Countries with advanced statistical systems can provide data at city level as well. At the national level the denominator is GDP while at city level, the denominator is Gross City Product.

**Data Sources and Frequency of Data Collection**

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[94] UN-HABITAT, Global Report on Human Settlements 2005: Financing Urban Shelter, page v. The point made there is still valid.
[95] United Nations DESA / Population Division, "World Urbanization Prospects 2018", https://population.un.org/wup/Download/
[96] United Nations et al, 2009, "System of National Accounts 2008", ISBN 978-92-1-161522-7, pages 202 – 203, https://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf

The Ministry selected by the government as the focal point for this indicator to obtain data on this indicator from the national statistical office.

Annual monitoring of the indicator until 2036.

**References:**
1. UN-HABITAT, Global Report on Human Settlements 2005: Financing Urban Shelter, pages v & 5.
2. United Nations DESA / Population Division, "World Urbanization Prospects 2018", https://population.un.org/wup/Download/
3. United Nations et al, 2009, "System of National Accounts 2008", ISBN 978-92-1-161522-7, pages 202 – 203, https://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf
4. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**43 Percentage of government expenditure dedicated to housing and community amenities**

**Definition:**

"Percentage of government expenditure dedicated to housing and community amenities" is the sum of government expenditure on housing development, Community development, Water supply, Street lighting, R&D Housing and community amenities, Housing and community amenities n.e.c. expressed as a percentage of total government expenditures. Government expenditure grouped according to the "Classification of Expenditure by Functions of Government"[97]. The category "housing and community amenities" excludes housing subsidies which a component of Social protection[98].

**Rationale:**

Member States committed to increasing the availability of different safe housing options affordable and accessible to households at different income levels, as well as integrating of marginalized communities and homeless persons to prevent segregation. Member states also resolved to improve the living conditions of homeless people, facilitate their full participation in society and eliminate homelessness (NUA §33).

All urban residents need adequate and affordable housing for them to enjoy a good standard of living and have economic security. The indicator will determine if governments are spending enough and being effective with spending on housing. However, affordable housing may not be available in private real estate market. Hence, governments may need to invest in residential housing for low-income residents or implement policies that encourage household access to mortgages.

Public investment in housing and roads and utilities can be simulate economic growth through the multiplier effect. Public investment is one main tools that governments have to raise long-run economic growth especially after a recession such the current one[99].

*Concepts*

*Housing development (CS) 70610*
• Administration of housing development affairs and services; promotion, monitoring, and evaluation of all housing development activities (public or private); development and regulation of housing standards
• Slum upgrading and acquisition of land needed for construction of dwellings;
• Production and dissemination of public information, technical documentation, and statistics on housing development affairs and services
• Grants, loans, or subsidies to support the expansion, improvement, or maintenance of the housing stock.
Excludes: development and regulation of construction standards (70443); cash benefits and benefits in kind to help households meet the cost of housing (71060).

*Community development (CS) 70620*
• Administration of community development affairs and services; administration of zoning laws and land-use and building regulations
• Planning of new communities or of rehabilitated communities; planning the improvement and development of facilities such as housing, industry, public utilities, health, education, culture, recreation, etc. for communities; preparation of schemes for financing planned developments
• Production and dissemination of general information, technical documentation, and statistics on community development affairs and services.

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[97] These concepts/definitions are extracted from IMF, "Government Finance Statistics Manual 2014", https://www.imf.org/external/Pubs/FT/GFS/Manual/2014/gfsfinal.pdf, page 143 and pp160-161.
[98] *Ibid*
[99] IMF, 2015, "Making public investment more efficient", page 5

Excludes: plan implementation—that is, the actual construction of housing, industrial buildings, streets, public utilities, cultural facilities, etc.; agrarian reform and land resettlement (70421); administration of construction standards (70443) and housing standards (70610).

*Water supply (CS) 70630*
• Administration of water supply affairs; assessment of future needs and determination of availability in terms of such assessment; supervision and regulation of all facets of potable water supply including water purity, price and quantity controls.
• Construction or operation of non-enterprise-type of water supply systems.
• Production and dissemination of general information, technical documentation and statistics on water supply affairs and services.
• Grants, loans, or subsidies to support the operation, construction, maintenance, or upgrading of water supply systems.
Excludes: irrigation systems (70421); multipurpose projects (70474); collection and treatment of wastewater (70520).

*Street lighting (CS) 70640*
• Administration of street lighting affairs; development and regulation of street lighting standards.
• Installation, operation, maintenance, upgrading, etc. of street lighting.
Excludes: lighting affairs and services associated with the construction and operation of highways (70451).
7065 R&D HOUSING AND COMMUNITY AMENITIES
Definitions of basic research, applied research and experimental development are given under (7014) and (7015).

*R&D Housing and community amenities (CS) 70650*
• Administration and operation of government agencies engaged in applied research and experimental development related to housing and community amenities
• Grants, loans, or subsidies to support applied research and experimental development related to housing and community amenities undertaken by nongovernment bodies, such as research institutes and universities.
Excludes: basic research (70140); applied research and experimental development into construction methods or materials (70484).

*Housing and community amenities n.e.c. (CS) 70660*
• Administration, operation, or support of activities such as formulation, administration, coordination, and monitoring of overall policies, plans, programs, and budgets relating to housing and community amenities; preparation and enforcement of legislation and standards relating to housing and community amenities; production and dissemination of general information, technical documentation, and statistics relating to housing and community amenities. Includes: administration, operation, or support activities relating to housing and community amenities that cannot be assigned to (7061), (7062), (7063), (7064), or (7065).

**Computation Method**

Data on total government housing expenditure will be available in government finance statistics.

"Percentage of government expenditure dedicated to housing and community amenities" expressed as a percentage of total government expenditure.

$$Percentage\ of\ government\ expenditure\ dedicated\ to\ housing\ and\ community\ amenities$$
$$= 100 \times [\frac{government\ expenditure\ dedicated\ to\ housing\ and\ community\ amenities}{Total\ government\ expenditure}]$$

Indicator to be computed at national level.

*Table: Percentage of government expenditure dedicated to housing and community amenities*

| Year | Percentage of government expenditure dedicated to housing and community amenities |
|------|-----------------------------------------------------------------------------------|
| 2000 | |

| | |
|---|---|
| 2005 | |
| | |
| 2010 | |
| 2011 | |
| 2012 | |
| 2013 | |
| 2014 | |
| 2015 | |
| 2016 | |
| 2017 | |
| 2018 | |

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator. Data can come from ministry of finance and some from cities directly. Annual monitoring until 2036.

**References:**
1. IMF, "Government Finance Statistics Manual 2014",
   https://www.imf.org/external/Pubs/FT/GFS/Manual/2014/gfsfinal.pdf, page 143 and pp160-161

2. IMF, 2015, "Making public investment more efficient", https://www.imf.org/external/np/pp/eng/2015/061115.pdf

3. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 44 Percentage of commuters using public transport

**Definition:**

Percentage of commuters aged 15 years and over who used public transport as their main means to travel to work during a reference period (e.g. on Census day, survey date etc.). Main mode of travel is defined as the transport mode used to travel the longest distance to their place of employment. Commuters are employed persons aged 15 years and over who travelled to work during reference period. Public transport includes buses, trains, and other forms of transport that are available to the public, charge set fares and run on fixed routes[100].

**Rationale:**

Member States committed to promoting access for all to safe, affordable, accessible and sustainable urban mobility enabling meaningful participation in social and economic activities in cities and human settlements, by integrating transport and mobility plans into overall urban and territorial plans and encouraging a wide range of transport and mobility options by supporting a significant increase in accessible, safe, efficient, affordable and sustainable infrastructure for public transport, and providing better and coordinated transport and land-use planning, which reduces travel and transport needs, enhancing connectivity between urban, peri-urban and rural areas, including waterways, and transport and mobility planning, particularly for small island developing States and coastal cities (NUA §114).

The advantages of commuters using public transport are increased physical activity and greater safety than travelling by private vehicle. The greater the percentage of commuters that use public transport, the fewer the number of private vehicles on the streets and the lower the risk of road traffic crashes, and the lower the long-term exposure to air pollutants for pedestrians and cyclists sharing the streets, hence the higher the life expectancy.

Public transit increased property values of all properties located near it. For example, in Sydney, Australia, a study found that "at the construction stage, residential prices rose an average of 0.037% for every 1% reduction in the distance to the nearest metro station"[101]. Commuters who use public transit services must walk to and from the station. On average they walk much more that commuters who drive to work, hence they tend to have healthier lifestyles. Workers with healthier lifestyles are more productive and have a longer life expectancy.[102] Public transit services reduce road congestion, fewer cars on road lowers use of fossil fuels and hence reduces pollution and road accidents. Commuters can get some work done on public transit but not while driving.

*Concepts:*
Public transportation is a form of travel offered locally that enables more people to travel together along designated routes. Typical examples of types of public transportation include buses, trains, and trams. High-speed rails, airlines, and coaches dominate public transportation between cities. Most public transport services operate on stipulated timelines. Some transportation systems operate on a full capacity basis, which means the vehicle will not start until it's full. However, many cities across the world provide shared taxis when the essence of time is a factor.

**Computation Method**

Percentage of commuters using public transport =

$$\frac{Number\ of\ commuters\ who\ use\ public\ transport\ as\ their\ main\ means\ of\ travel}{Total\ number\ of\ commuters}$$

The main means of travel is the mode of travel used to travel the longest distance to their place of employment. Commuters are defined as the employed usually resident population aged 15 years and over who travelled to work during reference period.

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[100] https://www.lexico.com/en/definition/public_transport

[101] Yuer Chen, Maziar Yazdani, Mohammad Mojtahedi, and SidneyNewton, "The impact on neighbourhood residential property valuations of a newly proposed public transport project: The Sydney Northwest Metro case study", https://www.sciencedirect.com/science/article/pii/S2590198219300697

[102] Christopher C Berggren, "The Top 10 Benefits of Public Transportation", https://www.smartcitiesdive.com/ex/sustainablecitiescollective/top-10-benefits-public-transportation/1063096/

Data to be provided at national urban and city level.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator. The main source of data is normally the national statistical office, but some cities may provide data.
The indicator can be monitored annually until 2036.

**References:**
- http://www.ehinz.ac.nz/assets/Factsheets/Metadata/Metadata-main-means-of-travel-to-work.pdf
- https://www.bma.org.uk/collective-voice/policy-and-research/public-and-population-health/transport

- Yuer Chen, Maziar Yazdani, Mohammad Mojtahedi, and SidneyNewton, "The impact on neighbourhood residential property valuations of a newly proposed public transport project: The Sydney Northwest Metro case study", https://www.sciencedirect.com/science/article/pii/S2590198219300697

- Christopher C Berggren, "The Top 10 Benefits of Public Transportation", https://www.smartcitiesdive.com/ex/sustainablecitiescollective/top-10-benefits-public-transportation/1063096/

- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 45. Small and medium-sized enterprises percentage share of GDP

**Definition:**

The indicator measures the share small and medium-sized enterprises percentage share of GDP. Small and medium-sized enterprises (SMEs) are enterprises employing fewer than 250 people[103].

Small and medium-sized enterprises face different challenges from large enterprises. Hence, the need to monitor their percentage share of GDP.

**Rationale:**

Small and Medium Enterprises (SMEs) account for a significant proportion of employment and production especially in developing countries. The World Bank estimates that SMEs account for about 90% of businesses and more than 50% of employment worldwide.[104]

One of the key commitments of Member States in the New Urban Agenda is promotion of an enabling, fair and responsible environment (NUA §58), and addressing challenges faced by SMEs throughout the value chain. This indicator is for monitoring SMEs' share of GDP. SMEs generate a lot of employment opportunities for men, women and youth. The bigger their share of GDP, generally, the greater the employment opportunities.

The Covid-19 Pandemic has exposed the unequal access to bank credit when comparing small with large enterprises. Many small enterprises do not have a line of credit with a bank, which they can utilize during an unforeseen event like the Covid-19 Pandemic. SMEs are likely to be more vulnerable to 'social distancing' than big companies[105]. Many SMEs are in the sectors like tourism, restaurants and bars. These are sectors that have been seen demand fall dramatically. Research by JPMorgan Chase Institute on 25 Metro areas shows that in the event of a disruption to inflows, 50 percent of small businesses would not pay out of their cash balances up to 15 cash buffer days[106]. Consequently, many SMEs will not survive the Covid-19 containment measures.

It is crucial that countries know the structure of enterprises in their countries so that they are able to design appropriate policies especially in times of crisis.

*Concepts*
Small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) are non-subsidiary, independent firms which employ fewer than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees. Small and mid-size enterprises (SMEs) play an important role in the economy, employing vast numbers of people and helping to shape innovation. Governments regularly offer incentives, including favorable tax treatment and better access to loans, to help keep them in business.

**Computation method**

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[103] OECD definition of SMEs is at https://data.oecd.org/entrepreneur/enterprises-by-business-size.htm
[104] World Bank, SMALL AND MEDIUM ENTERPRISES (SMES) FINANCE: Improving SMEs' access to finance and finding innovative solutions to unlock sources of capital, https://www.worldbank.org/en/topic/smefinance
[105] http://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/

[106] JPMorgan Chase Institute, April 2020, "Small Business Cash Liquidity in 25 Metro Areas", https://institute.jpmorganchase.com/institute/research/small-business/small-business-cash-liquidity-in-25-metro-areas

Small and medium-sized enterprises percentage share of GDP $= \frac{contribution\ of\ small\ and\ medium\ sized\ share\ of\ GDP}{Total\ GDP}$

Data to be provided at national level.

**Data Sources and Frequency of Data Collection**

The government agency responsible for compiling national accounts (GDP figures). Usually the national statistical office can provide the data.

The monitoring of the indicator can be every two years until 2036.

**References:**

- OECD definition of SMEs is at https://data.oecd.org/entrepreneur/enterprises-by-business-size.htm
- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- https://stats.oecd.org/glossary/detail.asp?ID=3123
- World Bank, Small and Medium Enterprises (SMES) Finance: Improving SMEs' access to finance and finding innovative solutions to unlock sources of capital, https://www.worldbank.org/en/topic/smefinance
- JPMorgan Chase Institute, April 2020, "Small Business Cash Liquidity in 25 Metro Areas", https://institute.jpmorganchase.com/institute/research/small-business/small-business-cash-liquidity-in-25-metro-areas

**46 Employment in cultural and creative industries of as proportion of total employment**
Adapted from UNESCO Cities indicators.

**Definition:**

The indicator is represented by the share of cultural and creative industries employment in total employment. Creative and cultural occupations as listed in Table 2 below.

**Rationale:**

Member States committed to promotion of cultural and creative industries, sustainable tourism, performing arts and heritage conservation activities (NUA §60). This indicator measures the percentage of cultural and creative industries employment in total employment. Cultural and creative industries can absorb significant proportion of workers in a country. It is important for central and local governments to come up with policies to encourage this sector. In this regard, governments require data on this indicator for planning purposes.

*Concepts:*

Persons in employment are defined as all those of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit. They comprise employed persons "at work", i.e. who worked in a job for at least one hour; and employed persons "not at work" due to temporary absence from a job, or to working-time arrangements (such as shift work, flexi-time and compensatory leave for overtime)[107].

**Computation Method**

The share of cultural and creative industries employment in total employment equals:

$$\frac{\text{Total employment in cultural and creative activities}}{\text{Total employment in all economic activities}} \times 100$$

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[107] ILO Glossary of Statistical Terms, https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

**Cultural occupations defined with ISCO 08 codes**

| Domain | Function | ISCO 08 | Notes | Description |
|---|---|---|---|---|
| **CULTURAL OCCUPATIONS** | | | | |
| A. Cultural and Natural Heritage | Creation | 2632 | 1 | Sociologists, anthropologists and related professionals |
| | Dissemination | 3433 | | Gallery, library and museum technicians |
| | Exhibition/Transmission | 1349 | 2 | Professional services managers, n.e.c. |
| | Archiving/preserving | 2133 | 3 | Environmental protection professionals |
| | | 2621 | 4 | Archivists and curators |
| B. Performance and Celebration | Creation | 2659 | 5 | Creative and performing artists, n.e.c. |
| | Producing | 2652 | | Musicians, singers and composers |
| | | 2653 | | Dancers and choreographers |
| | | 7312 | | Musical instrument makers and tuners |
| | Education/training | 2310 | 6 | University and higher education teachers |
| | | 2320 | 6 | Vocational education teachers |
| | | 2354 | | Other music teachers |
| C. Visual Arts and Crafts | Creation | 2651 | | Visual artists |
| | | 3118 | | Draughts-persons |
| | Producing | 3431 | | Photographers |
| | | 7313 | | Jeweler and precious-metal workers |
| | | 7314 | | Potters and related workers |
| | | 7315 | | Glass makers, cutters, grinders and finishers |
| | | 7316 | | Sign writers, decorative painters, engravers and etchers |
| | | 7317 | | Handicraft workers in wood, basketry and related materials |
| | | 7318 | | Handicraft workers in textile, leather and related materials |
| | | 7319 | | Handicraft workers, n.e.c. |
| | | 7522 | | Cabinet-makers and related workers |
| | | 7531 | | Tailors, dressmakers, furriers and hatters |
| | | 7532 | | Garment and related pattern-makers and cutters |
| | | 7533 | | Sewing, embroidery and related workers |
| | | 7534 | | Upholsterers and related workers |
| | | 7535 | | Pelt dressers, tanners and fellmongers |
| | | 7536 | | Shoemakers and related workers |
| | | 7549 | | Craft and related workers, n.e.c. |
| | Education/Training | 2310 | 7 | University and higher education teachers |
| | | 2320 | 7 | Vocational education teachers |
| | | 2330 | 7 | Secondary education teachers |
| | | 2355 | 8 | Other arts teachers |
| D. Books and Press | Creation | 2641 | | Authors and related writers |
| | Producing, dissemination | 2642 | | Journalists |
| | | 2643 | | Translators, interpreters and other linguists |
| | Archiving/Preserving | 2622 | | Librarians and related information professionals |
| | | 4411 | | Library clerks |
| E. Audio-Visual and Interactive Media | Producing | 2513 | | Web and multimedia developers |
| | | 2654 | | Film, stage and related directors and producers |
| | | 2655 | | Actors |
| | | 3435 | 9 | Other artistic and cultural associate professionals |
| | Dissemination | 2656 | | Announcers on radio, television and other media |
| | Education/Training | 2310 | 10 | University and higher education teachers |
| | | 2320 | 10 | Vocational education teachers |
| F. Design and Creative Services | Creation | 2161 | | Building architects |
| | | 2162 | | Landscape architects |
| | | 2163 | | Product and garment designers |
| | | 2164 | | Town and traffic planners |
| | | 2165 | | Cartographers and surveyors |
| | | 2166 | | Graphic and multimedia designers |
| | | 3432 | | Interior designers and decorators |
| | Producing | 3118 | | Draughts-persons |
| | Dissemination | 1222 | | Advertising and public relations managers |
| | | 2431 | | Advertising and marketing professionals |
| | Education/Training | 2310 | 11 | University and higher education teachers |
| | | 2320 | 11 | Vocational education teachers |

*Source:* UIS Framework for Cultural Statistics, page 74-75

*Notes:*

1 Includes archaeologists and conservators.

2 Includes also museum, archive managers and professionals. When possible, includes theatre managers in Domain
B. Performance and Celebration.

3 Includes professionals working in protected areas.
4 Includes archivists, art gallery curator, museum curator.
5 Other live performers (music hall artists, ventriloquists, bull fighters, tap dancers, etc.); community arts worker, clowns, magicians and related workers.
6 Should include teachers in music in formal education.
7 Should include teachers in visual arts in formal education.
8 When possible, drama and dance teachers should be categorised in Domain B. Performance and Celebration.
9 Includes script-girl/boy, prompter, stage manager, body artist.
10 Should include teachers in audio-visual and interactive media.
11 Should include teachers in design and creative services.

Data on cultural occupations is collected through Labour Force Surveys, the estimates may be reliable only at national level. No code exists for managers and officials in the arts. Nevertheless, include managers such as directors of art companies. The estimate usually underestimates many individuals with cultural jobs in the informal sector.

**Data Sources and Frequency of Data Collection**

Labour force surveys, population censuses, Administrative Records. The ministry that is the focal point to obtain data from the national statistical office and other agencies.
The monitoring of the indicator should be every two years until 2036.

**References**

- ILO Glossary of Statistical Terms, https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf
- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- UIS Framework for Cultural Statistics, page 74-75

## 47 Annual number of vocational and technical education individuals trained

**Definition:**

This indicator measures the number of people that have completed their vocational and technical training during the year.

**Rationale:**

Member States committed themselves to increasing economic productivity, as appropriate, by providing the labour force with access to income-earning opportunities, knowledge, skills and educational facilities that contribute to an innovative and competitive urban economy (NUA §56). They also committed themselves to harnessing the urban demographic dividend, where applicable, and to promoting access for youth to education, skills development and employment to achieve increased productivity and shared prosperity in cities and human settlements. Girls and boys, young women and young men are key agents of change in creating a better future and when empowered they have great potential to advocate on behalf of themselves and their communities. Ensuring more and better opportunities for the youth is essential for the implementation of the New Urban Agenda (NUA §61).

A thriving modern urban economy requires an adequate supply of technical and entrepreneurial skills. However, many countries have focused on producing university graduates. Consequently, not enough young people are getting vocational training. In U.K., for example, only one third of jobs created between 2012 and 2022 were expected to be in jobs in high-skilled occupations. During the same period, around twenty percent of workers in lower skilled occupations have higher education qualifications[108]. They are over-qualified for their jobs. It was projected that there would be an additional 3.6 million jobs in medium-skilled occupations by 2022.

Benefits of vocational education and training (VET) depends on the demand for those skills in a country. Analysis of Survey of Education and Training (longitudinal) Australia shows that individuals with VET qualifications on average receive higher wages throughout their career than similar individuals without VET qualifications[109].

In many developing countries, some of the workers trained at vocational colleges go into paid employment and some the workers become productive self-employed entrepreneurs since many economies cannot produce enough formal sector jobs.

*Concepts:*
There are five types of vocational systems[110]:
1. Vocational and technical schools;
2. Vocational training centres;
3. Formal apprenticeships;
4. Dual apprenticeships combining school training with a firm-based approach; and
5. Informal-based training

Countries select preferred system based on their institutional framework conditions and traditions.

**Computation Method**

Get the total number of individuals who have completed vocational and technical education training during each year. Data to be provided at national level.

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[108] IPPR, "Winning the global race? Jobs, skills and the importance of vocational education", http://www.ippr.org/files/publications/pdf/winning-global-race_June2014.pdf

[109] OECD, "Costs and Benefits in Vocational Education and Training", https://www.oecd.org/education/innovation-education/41538706.pdf , page 14

[110] UNESCO, 2014, "Attractiveness of vocational education and training",
https://unevoc.unesco.org/fileadmin/up/bibb_unevoc_bibliography.pdf

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator to obtain data from governments ministries that run or regulate vocational training institutions.
The monitoring of the indicator to be annual until 2036.

**References:**
1. IPPR, "Winning the global race? Jobs, skills and the importance of vocational education", http://www.ippr.org/files/publications/pdf/winning-global-race_June2014.pdf
2. OECD, "Costs and Benefits in Vocational Education and Training", https://www.oecd.org/education/innovation-education/41538706.pdf , page 14
3. UNESCO, 2014, "Attractiveness of vocational education and training", https://unevoc.unesco.org/fileadmin/up/bibb_unevoc_bibliography.pdf
4. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**48. Proportion of land under protected natural areas**
Adapted from https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf

**Definition:**

This indicator measures land under protected natural areas as a proportion of the area of a city. Protected natural areas are nature reserves that are legally protected under the laws of a country.

*Natural protected area* is clearly defined geographical space, recognized, dedicated, and managed through legal means or other types of efficient means to achieve the long-term conservation of nature with associated ecosystem services and cultural values. [SOURCE: ISO 18065:2015(en), 3.6][111]

**Rationale:**

Member States committed themselves to strengthening the sustainable management of resources, including land, forests and facilitating ecosystem conservation (NUA §71). Establishing and managing protected areas is part of the economic development and planning process, it ensures that sustainable development takes into account national cultural heritage and conservation policies. The protected areas have to be classified in a way that ensures the efficient functioning of a national system of protected areas[112]. Parks and vegetation increase value of properties around them.

*Concepts:*

Protected areas[113], as defined by the International Union for Conservation of Nature (IUCN; Dudley 2008), are clearly defined geographical spaces that are recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. Importantly, a variety of specific management objectives are recognized within this definition, spanning conservation, restoration, and sustainable use:
- Category Ia: Strict nature reserve
- Category Ib: Wilderness area
- Category II: National park
- Category III: Natural monument or feature
- Category IV: Habitat/species management area
- Category V: Protected landscape/seascape
- Category VI: Protected area with sustainable use of natural resources

The status "designated" is attributed to a protected area when the corresponding authority, according to national legislation or common practice (e.g., by means of an executive decree or the like), officially endorses a document of designation. The designation must be made for the purpose of biodiversity conservation, not de facto protection arising because of some other activity (e.g., military).

Sites contributing significantly to the global persistence of biodiversity are identified following globally criteria set out in A Global Standard for the Identification of Key Biodiversity Areas (IUCN 2016) applied at national levels. Key Biodiversity Areas encompass (a) Important Bird & Biodiversity Areas, that is, sites contributing significantly to the global persistence of biodiversity, identified using data on birds, of which >13,000 sites in total have been identified from all of the world's countries (BirdLife International 2014, Donald et al. 2018); (b) Alliance for Zero Extinction sites (Ricketts et al. 2005), that is, sites holding effectively the entire population of at least one species assessed as Critically Endangered or Endangered on the IUCN Red List of Threatened Species, of which 853 sites have been identified for 1,483 species of mammals, birds, amphibians, reptiles, freshwater crustaceans, reef-building corals, conifers, cycads and other taxa; (c) Key Biodiversity Areas identified under an earlier version of the Key Biodiversity Area criteria (Langhammer et al. 2007), including those identified in Ecosystem Hotspot Profiles developed with support of the Critical Ecosystem Partnership Fund. These three subsets are being reassessed using the Global

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[111] UN-HABITAT, 2019, "Resilience General Glossary English"
[112] UNEP, "COMMON GUIDELINES AND CRITERIA FOR PROTECTED AREAS IN THE WIDER CARIBBEAN REGION: Identification, Selection, Establishment and Management", CEP Technical Report: 37, 1996
[113] https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf

Standard, which unifies these approaches along with other mechanisms for identification of important sites for other species and ecosystems (IUCN 2016).

**Computation Method**

Measure the areas occupied by each of seven categories of protected areas. Express each as well as the total protected area as a percentage of area occupied by the city.

This indicator is calculated from data derived from a spatial overlap between digital polygons for protected areas from the World Database on Protected Areas (UNEP-WCMC & IUCN 2020) and digital polygons for marine Key Biodiversity Areas (from the World Database of Key Biodiversity Areas, including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and other Key Biodiversity Areas). Sites were classified as marine Key Biodiversity Areas by undertaking a spatial overlap between the Key Biodiversity Area polygons and an ocean raster layer (produced from the 'adm0' layer from the database of Global Administrative Areas (GADM 2019)), classifying any Key Biodiversity Area as a marine Key Biodiversity Area where it had ≥5% overlap with the ocean layer (hence some sites were classified as both marine and terrestrial). The value of the indicator at a given point in time, based on data on the year of protected area establishment recorded in the World Database on Protected Areas, is computed as the mean percentage of each Key Biodiversity Area currently recognised that is covered by protected areas.

Year of protected area establishment is unknown for ~12% of protected areas in the World Database on Protected Areas, generating uncertainty around changing protected area coverage over time. To reflect this uncertainty, a year was randomly assigned from another protected area within the same country, and then this procedure repeated 1,000 times, with the median plotted.

Prior to 2017, the indicator was presented as the percentage of Key Biodiversity Areas completely covered by protected areas. However, it is now presented as the mean % of each Key Biodiversity Area that is covered by protected areas in order to better reflect trends in protected area coverage for countries or regions with few or no Key Biodiversity Areas that are completely covered.

The calculation will be for protected natural areas that are within city boundaries for purposes of New Urban Agenda monitoring.

**Data Sources and Frequency of Data Collection:**

Data are available for protected areas and Key Biodiversity Areas in all of the world's countries, and so no imputation or estimation of national level data is necessary. *Protected area data are compiled by ministries of environment and other ministries responsible for the designation and maintenance of protected areas.* Protected Areas data for sites designated under the Ramsar Convention and the UNESCO World Heritage Convention are collected through the relevant convention international secretariats. Protected area data are aggregated globally into the World Database on Protected Areas by the UN Environment World Conservation Monitoring Centre, according to the mandate for production of the United Nations List of Protected Areas (Deguignet et al. 2014). They are disseminated through Protected Planet, which is jointly managed by UNEP-WCMC and IUCN and its World Commission on Protected Areas (UNEP-WCMC 2016).

Key Biodiversity Areas are identified at national scales through multi-stakeholder processes, following standard criteria and thresholds. Key Biodiversity Areas data are aggregated into the World Database on Key Biodiversity Areas, managed by BirdLife International. Specifically, data on Important Bird and Biodiversity Areas are available online at  http://datazone.birdlife.org/site/search and data on Alliance for Zero Extinction sites are available online at

https://zeroextinction.org. Both datasets, along with Key Biodiversity Areas identified through other processes, are available through the World Database on Key Biodiversity Areas, and along with the World Database on Protected Areas, are also disseminated through the Integrated Biodiversity Assessment Tool for Research and Conservation Planning.

The Ministry selected by the government as the focal point for this indicator to obtain the data from the cities. The indicator to be monitored twice a year until 2036.

**References:**

1.  UNEP, "COMMON GUIDELINES AND CRITERIA FOR PROTECTED AREAS IN THE WIDER CARIBBEAN REGION: Identification, Selection, Establishment and Management", CEP Technical Report: 37, 1996
2.  UN-HABITAT, 2019, "Resilience General Glossary English"
3.  https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf
4.  Dudley, N. (Editor) (2008). Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. x + 86pp. WITH Stolton, S., P. Shadie and N. Dudley (2013). IUCN WCPA Best Practice Guidance on Recognising Protected Areas and Assigning Management Categories and Governance Types, Best Practice Protected Area Guidelines Series No. 21, Gland, Switzerland: IUCN. xxpp. ISBN: 978-2-8317-1636-7
5.  The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**49.Percentage of local governments (LG) that adopt and implement local disaster risk reduction strategies in line with national strategies.**

**Definition:**

This indicator measures the percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies. A local disaster risk reduction and resilience strategy is a planning tool to integrate and mainstream a disaster risk reduction approach within local development, and to guide and make coherent local plans and actions[114].

**Rationale:**

Member States envisaged cities and human settlements that implement disaster risk reduction and management, minimize their vulnerability, develop resilience, preparedness and responsiveness to natural and man-made hazards and nurture mitigation of and adaptation to climate change (NUA §13). In this vein, they committed themselves to promoting the sustainable management of natural resources in cities and human settlements in a manner that protects and improves the urban ecosystem and lessens greenhouse gas emissions and air pollution and encourages disaster risk reduction and management, by supporting the development of disaster risk reduction strategies and periodical assessments of disaster risk caused by natural and human-made hazards, including standards for risk levels, while fostering sustainable economic development and protecting all residents through environmentally sound urban and territorial planning, infrastructure and basic services (NUA §65).

The Sendai Framework for Disaster Risk Reduction 2015 – 2030 places a great deal of emphasis on strength and resilience by anticipating and planning for disaster risk to better protect people, their livelihoods, their socioeconomic assets and ecosystems. Planning for disasters requires better coordination at all levels of government (central, subnational and cities). Responsibilities must be assigned in advance for all public and private stakeholders. The Framework recommends that local authorities, cities and local communities be empowered by the central government and given appropriate decision-making responsibilities, resources and incentives[115].

**Computation Method**

Member States count the number of local governments that adopt and implement local disaster risk reduction strategies (DRR) strategies in line with the national strategy and express it as a percentage of the total number of local governments in the country[116].

$$\% \ of \ local \ governements \ that \ adopt \ and \ implement \ local \ DRR \ strategies \ in \ line \ with \ national \ strategies$$
$$= 100 \times \frac{Local \ governments \ that \ have \ adopted \ and \ implemented \ local \ DRR \ Strategies \ in \ line \ with \ national \ strategies}{Total \ number \ of \ local \ governments}$$

Data to be provided at by local authorities.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator to count the number of local authorities that have adopted and implemented local disaster risk reduction strategies.
The monitoring of the indicator every two years until 2036.

**Reference**

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[114] https://www.uncclearn.org/sites/default/files/inventory/unisdr_-_57399_drrresiliencepublicreview.pdf
[115] Sendai Framework for Disaster Risk Reduction 2015 – 2030, page 13, https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
[116] The method is that same as for SDG indicator https://unstats.un.org/sdgs/metadata/files/Metadata-11-0b-02.docx

1.  Sendai Framework for Disaster Risk Reduction 2015 – 2030, page 13, https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf

2.  https://gar.undrr.org/chapters/chapter-11-national-and-local-disaster-risk-reduction-strategies-and-plans

3.  https://unstats.un.org/sdgs/metadata/files/Metadata-11-0b-02.docx

4.  The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

5.  Technical guidance for monitoring and reporting on progress in achieving the global targets of the Sendai Framework for Disaster Risk Reduction, https://www.unisdr.org/files/54970_techguidancefdigitalhr.pdf

**50.Percentage subnational/local government budgets dedicated to climate change mitigation and adaptation actions.**

**Definition:**

This indicator measures the proportion of subnational/local governments with budgets dedicated to climate change mitigation and adaptation actions. Mitigation actions reduce greenhouse gases emissions while the adaptation actions address impacts of climate change.

**Rationale:**

Member States supported access to different multilateral funds, including the Green Climate Fund, the Global Environment Facility, the Adaptation Fund and the Climate Investment Funds to secure financial resources for climate change adaptation and mitigation plans, policies, programmes and actions for subnational and local governments, within agreed arrangements. Members States agreed to cooperate with subnational and local financial institutions, as necessary to develop climate finance infrastructure solutions and to create appropriate mechanisms for identifying catalytic financial instruments, consistent with any national framework in place to ensure fiscal and debt sustainability at all levels of government (NUA §143).

The indicator measures the number of subnational/local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework and will contribute to sustainable development[117]. Regular measurement and reporting of this indicator will focus all stakeholders' attention on for budget allocations dedicated to climate change mitigation and adaptation actions. Thus, highlighting the number of cities that have budget dedicated to climate change mitigation and adaptation actions should in general lead to more cities having budget allocations for these very important actions.

*Concepts:*
*Climate change adaptation (CCA):* Increased ability to adapt to the adverse impacts of climate change, foster climate resilience and lower greenhouse gas emissions development, in a manner that does not threaten food production [Source: UNEP][118]. In the context of this indicator, CCA refers to measures that a local government takes to improve its resilience to observed and anticipated impacts of climate change. CCA activities to decrease vulnerability can be programs of work covering water, agriculture, infrastructure, health, etc., as well as capacity building and climate policy direct budgetary support in relation to addressing climate change vulnerability[119].

*Climate change mitigation*: Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impact of climate change. [SOURCE: UNFCCC][120]. Climate change mitigation (CCM) includes any strategy or action taken to remove Green House Gas (GHG) emissions released into the atmosphere, or to reduce their amount. Thus, CCM activities cover renewable energy projects, energy efficiency and fuel switch, forestry and land use, sustainable urban transport and sequestration projects, and technical assistance, capacity building and policy support in relation to reducing GHG emissions[121].

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[117] This indicator is related to "Indicator 11.b.1: Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030". However, note that this indicator specifically asks about a dedicated budget at the subnational and local levels of government. The existence of a budget will ensure that disaster risk reduction strategies are implemented at those levels of government.
[118] UN-HABITAT, 2019, "Resilience General Glossary English"
[119] UNCDF, UNEP &UNDP, "Financing Local Responses to Climate Change",
https://www.undp.org/content/dam/rbap/docs/Research%20&%20Publications/democratic_governance/RBAP-DG-2013-Financing-Local-Response-Climate-Change.pdf

[120] *Ibid*
[121] Ibid

**Computation Method:**

$$\% \,of\, local\, governments\, with\, dedicated\, budgets\, for\, CCM\, and\, CCA\, actions = \\ 100 \times \frac{Local\, governments\, with\, dedicated\, budgets\, for\, CCM\, and\, CCA\, actions}{Total\, number\, of\, local\, governments}$$

Data to be provided at subnational and city level.

Examples of financing local governments to implement climate change adaptation and mitigation projects are in Bhutan, Niger and Tuvalu. Community implementation/contracting: In Bhutan, small projects valued at less than about USD 23,000 were implemented under the Community Contracting Protocol. In Niger, women for constructing anti-soil erosion adaptation measures. In Tuvalu, small projects with climate change consideration are implemented by kaupules[122].

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator will monitor how many city and subnational governments have budgets dedicated to climate change mitigation and adaptation actions then compute the percentage that have dedicated budgets. The indicator to be monitored every two years until 2036.

The ministry should attach an annex to value of the indicator:

| Name of local government /city | Number of CC Mitigation and Adaptation projects | Total Cost of the projects |
|---|---|---|
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Grand Total |  |  |

**References:**

1. https://ar5-syr.ipcc.ch/topic_adaptation.php
2. http://www.fao.org/3/i2855e/i2855e.pdf
3. https://sustainabledevelopment.un.org/content/documents/639992-Adams-Climate%20Change%20Responses_Mitigation%20and%20Adaptation%20for%20Whom.pdf
4. UN-HABITAT, 2019, "Resilience General Glossary English"
5. UNCDF, UNEP &UNDP, "Financing Local Responses to Climate Change", https://www.undp.org/content/dam/rbap/docs/Research%20&%20Publications/democratic_governance/RBAP-DG-2013-Financing-Local-Response-Climate-Change.pdf
6. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
7. UNCDF, "Financing local adaptation to climate change: Experiences with performance-based climate resilience grants" page 65, https://www.uncdf.org/Download/AdminFileWithFilename?id=4085&cultureId=127&filename=local-experiences-report-web-eng-lr-aug18pdf

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[122] UNCDF, "Financing local adaptation to climate change: Experiences with performance-based climate resilience grants", page 65
https://www.uncdf.org/Download/AdminFileWithFilename?id=4085&cultureId=127&filename=local-experiences-report-web-eng-lr-aug18pdf

**51 Percentage of cities with multi-hazard mapping**

**Definition:**

This indicator seeks to determine the proportion of cities that have multi-hazard maps in a country. Multi-hazard maps integrate different hazard-related information for a city to present a composite picture of natural hazards in varying magnitude, frequency and areas of effect[123].

**Rationale:**

In the New Urban Agenda, Member States committed themselves to strengthening the resilience of cities and human settlements with ecosystem-based approaches and by mainstreaming holistic and data-informed disaster risk reduction and management at all levels to reduce vulnerabilities and risk in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 (NUA §77).

The Sendai Framework for Disaster Risk Reduction 2015-2030 is a worldwide agreement to prevent disaster risks and reduce their negative impact. Its objective is to improve social and economic resilience; as well as reducing the adverse effects of climate change and man-made hazards. Over the past two decades, the frequency and intensity of natural hazards (like hurricanes/cyclones) has increased substantially. These disasters cause many deaths, loss of livelihoods, destroy infrastructure and the environment. Disasters wipe out economic progress and perpetuate poverty. Hence, reducing cities' vulnerability to hazards reduces the risk of economic progress being wiped out and poverty increasing. For example, multi-hazard maps can be used to zone areas in such a way that no residential and commercial building are built in areas that can flood. Therefore, multi-hazard maps are key to improving a city's resilience.

*Urban resilience*: Ability of any urban system, with its inhabitants, in a changing environment, to anticipate, prepare, respond to, and absorb shocks, positively adapt and transform in the face of stresses and challenges, while facilitating inclusive and sustainable development.[124]

*Concepts*
*Multi-hazard early warning systems*
Early warning is a major element of disaster risk reduction. It can prevent loss of life and reduce the economic and material impacts of hazardous events including disasters. Multi-hazard Early-warning systems offer messages about impending hazards that could or may cause disasters must reach all citizens including emergency response organizations, communities-at-risk, public safety organization, and others. To be effective, early warning systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently and ensure that there is a constant state of preparedness and that early action is enabled.

**Computation Method:**

Does your city have multi-hazard maps?

| Yes | |
|-----|--|
| No | |

If yes, have these multi-hazard maps been updated in the past five years?

| Yes | |
|-----|--|
| No | |

Data to be collected at city level then aggregated at the national level.

$$Percentage\ of\ cities\ with\ multihazard\ maps = \frac{number\ of\ cities\ with\ multihazard\ maps}{total\ number\ of\ cities}$$

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[123] https://www.preventionweb.net/files/13932_ACF1.pdf
[124] UN-HABITAT, 2019, "Resilience General Glossary English"

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point will collect and aggregate the information. The monitoring of the indicator will be every two years until 2036.

**References:**
- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- Sendai Framework for Disaster Risk Reduction 2015-2030, https://www.unisdr.org/we/coordinate/sendai-framework
- https://www.preventionweb.net/files/13932_ACF1.pdf
- UN-HABITAT, 2019, "Resilience General Glossary English"

**52 Does the country have a multi-hazard monitoring and forecasting system?**

**Definition:**

This is an indicator of whether a country has a multi-hazard monitoring and forecasting system. Early warning is a key element of disaster risk reduction. The Paris Agreement states that early warning systems are key to enhancing adaptive capacity, strengthening resilience, reducing vulnerability and minimizing loss and damages from natural disasters associated with climate change[125].

A multi-hazard monitoring and forecasting system consists of monitoring and preparation of disaster risk assessments, detecting and forecasting hazards, mapping areas likely to be impacted, disseminating timely and accurate warnings, assigning roles to different levels of government and other actors in responding to hazard warnings.[126]

**Rationale:**

In the New Urban Agenda, Member States committed themselves to strengthening the resilience of cities and human settlements with ecosystem-based approaches and by mainstreaming holistic and data-informed disaster risk reduction and management at all levels to reduce vulnerabilities and risk in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 (NUA §77).

*Concepts:*
*Disaster risk assessment:* A qualitative or quantitative approach to determine the nature and extent of disaster risk by analyzing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods and the environment on which they depend.[127]

*Early warning system:* An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events.[128]

Multi hazard early warning systems address several hazards and/or impacts of similar or different type in contexts where hazardous events may occur alone, simultaneously, cascading or cumulatively over time, and taking into account the potential interrelated effects. A multi hazard early warning system with the ability to warn of one or more hazards increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities, involving multiple disciplines for updated and accurate hazards identification and monitoring for multiple hazards[129].

*Urban resilience*: Ability of any urban system, with its inhabitants, in a changing environment, to anticipate, prepare, respond to, and absorb shocks, positively adapt and transform in the face of stresses and challenges, while facilitating inclusive and sustainable development.[130]

**Computation Method:**

Does the country have a multi-hazard monitoring and forecasting system?

| Yes | |
|-----|---|
| No | |

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[125] https://reliefweb.int/report/world/multi-hazard-early-warning-systems-checklist
[126] International Network for Multi-hazard Early Warning Systems, 2017, "Multi-hazard Early Warning Systems: A Checklist", page 3 and 4, https://reliefweb.int/report/world/multi-hazard-early-warning-systems-checklist
[127] General Assembly "Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction", A/71/644, https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf . The definition is taken from the report.

[130] UN-HABITAT, 2019, "Resilience General Glossary English"

If yes, has it been updated in the past five years?

| | |
|---|---|
| Yes | |
| No | |

Data to be provided at national level.

The Checklist for assessment that can be used includes

*1. Are there monitoring systems in place?*

- Monitoring network established that monitors hazards that impact the country
- Measurement parameters and specifications documented for each relevant hazard
- Technical equipment, suited to local conditions and circumstances, in place and personnel trained in its use and maintenance
- Monitoring data received, processed and available in an interoperable format in real time or near real time
- Monitoring data and metadata routinely curated with quality controls, archived and accessible for verification, research purposes and other applications
- Monitoring hardware and software maintenance conducted routinely and costs and resources considered from the beginning to ensure optimal operation of the system over time
- The system is able to combine and benefit from new and older technology allowing for exchange of data among countries with different technical capabilities

*2. Are there forecasting and warning services in place?*

- Data analysis and processing, modelling, prediction and warning products generated based on accepted scientific and technical methodologies and disseminated within international standards and protocols
- New data analysis and processing, modelling, prediction and warning products can be integrated easily in the system as science and technology evolve
- Warning centres are operational at all times (24 hours/day, seven days/week) and staffed by trained personnel following appropriate national and international standards
- Warning messages are clear, consistent and include risk and impact information and are designed with consideration for linking threat levels to emergency preparedness and response actions
- Software and data analysis for the received data updated periodically and to high security standards
- The state of the monitoring and data analysis systems continuously monitored for any data gaps, connection issues or processing issues
- Warnings generated and disseminated in an efficient and timely manner for each type of hazard
- Warning system(s) subjected to regular system-wide tests and exercises
- Process established to verify that warnings have reached the principal stakeholders and people at risk
- Mechanisms in place to inform people when the threat and its impacts have ended
- Operational processes, including data quality and warning performance, are routinely monitored and evaluated
- Fail-safe systems in place, such as power backup, equipment redundancy and on-call personnel systems
- Strategies developed to build credibility and trust in warnings (e.g. understanding difference between forecasts and warnings)
- False alarms minimized and improvements communicated to maintain trust in the warning system
- Warning and forecast archival processes and systems in place

*3. Are there institutional mechanisms in place?*

- Plans and documents for monitoring networks available and agreed upon with experts and relevant authorities
- Standardized process, and roles and responsibilities of all organizations generating and issuing warnings established and mandated by legislation or other authoritative instrument (e.g. memorandum of understanding (MOU), standard operating procedures)

- Agreements and interagency protocols established within country for exchange of monitoring systems data and baseline data needed for certain data products (e.g. bathymetric and topographic data for tsunami modelling)
- Agreements and interagency protocols established to ensure consistency of warning language and communication responsibilities where different hazards are handled by different agencies
- A multi-hazard coordination strategy established to obtain mutual efficiencies and effectiveness among different warning systems
- Warning system partners, including local authorities and the media, are aware of and respect which organizations are responsible for generation and issuance of warnings
- Cross-border exchange of warnings and observation data realized through bilateral/ multilateral agreements, especially for concerns such as tropical cyclones, floods, diseases, shared basins, data exchange, and technical capacity-building.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator.
The monitoring of the indicator is every two years until 2036.

**References:**

- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- Reliefweb, "Multi-hazard Early Warning Systems: A Checklist", https://reliefweb.int/report/world/multi-hazard-early-warning-systems-checklist
- General Assembly "Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction", A/71/644, https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf

## 53 The number of cities that have / percentage of urban population that is covered by multi-hazard early warning systems

**Definition:**

This indicator will monitor changes in the availability of and access to multi-hazard early warning systems, and disaster risk information and assessments to the people by 2036. Specifically, the number of cities and percentage of urban population that is covered by multi-hazard early warning systems.

Multi hazard warning systems are described in metadata for indicator 52.

**Rationale:**

Many urban centres and their inhabitants are vulnerable to natural and human-made hazards, such as earthquakes, flooding, storms, water and air pollution, diseases (including Corona virus pandemics) and sea level rise. In this context, Member States envisioned cities that adopted and implemented disaster risk reduction and management, reduced vulnerability, built resilience and responsiveness to natural and human-made hazards and fostered mitigation of and adaptation to climate change (NUA §13, 64, 65). One way to reduce the impact of natural and man-made disasters is to substantially increase the availability and access to multi-hazard early warning systems and disaster risk information and assessment to people.

*Concepts:*

*Multi-hazard early warning systems*
Early warning is a major element of disaster risk reduction. It can prevent loss of life and reduce the economic and material impacts of hazardous events including disasters. Multi-hazard Early-warning systems offer messages about impending hazards that could or may cause disasters must reach all citizens including emergency response organizations, communities-at-risk, public safety organization, and others. To be effective, early warning systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently and ensure that there is a constant state of preparedness and that early action is enabled.

**Computation Method:**

*The focal point in a country should obtain information on the following:*
What is the number of cities that have multi-hazard early warning systems?
What is the percentage of urban population that is covered by multi-hazard early warning systems?

$$Percentage\ of\ urban\ population\ that\ is\ covered\ by\ multihazard\ early\ warning\ systems$$
$$= \frac{urban\ population\ that\ is\ covered\ by\ multihazard\ early\ warning\ systems}{total\ urban\ population}$$

Data to be provided at national and city level.

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator will aggregate data on cities. The information should be sent to UNHABITAT.
The monitoring of the indicator is every two years until 2036.

**References:**

- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- https://library.wmo.int/doc_num.php?explnum_id=4463

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## 54 Existence of an enforced coastal and/or land management plan in the country

**Definition:**

The indicator seeks to determine the existence of an enforced national coastal land management plan in the country. Integrated coastal management and planning deals with the conservation and sustainable use of coastal and ocean resources and space. It utilizes a suite of tools including marine protected areas (MPAs), land-use control, marine zoning and permit systems, conflict resolution, planning and fisheries management[131].

Protected areas are clearly defined geographical spaces, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. Importantly, a variety of specific management objectives are recognized within this definition, spanning conservation, restoration, and sustainable use[132]:

- *Category Ia: Strict nature reserve*
- *Category Ib: Wilderness area*
- *Category II: National park*
- *Category III: Natural monument or feature*
- *Category IV: Habitat/species management area*
- Category V: Protected landscape/seascape
- Category VI: Protected area with sustainable use of natural resources

**Rationale:**

Many cities across the globe are located in coastal areas, delta regions and islands. These cities are particularly vulnerable to hurricanes/cyclones, flooding, subsidence and sea level rise (NUA §64). It is very important for such countries to have an enforced coastal land management plan. Such plans can mitigate the impacts of these hazards.

The rationale for this indicator is the same as the rationale for SDG Target 14.5, which places emphasis on safeguarding protected areas which are key to slowing the decline in biodiversity and ensuring long term and sustainable use of marine natural resources. The establishment of protected areas is crucial for achieving this objective[133].

Many SDG targets reflect many 2017-2020 policy objectives of World Commission on Protected Areas. Specifically, this indicator is closely linked with the following SDG targets[134]:

| SDG Target | Link to Protected Areas |
| --- | --- |
| 6.6 *"By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes"*. | This target encompasses protected coastal areas as well as forested water catchment areas. |
| 8.9 *"By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products"*. | Protected areas can draw nature tourists and create tourist related jobs. |
| 11.7 *"By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities"*. | Target 11.7 can be used to support the need for protected areas within urban areas. |

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[131] Robert Kay, "Integrated coastal zone planning in Asian tsunami-affected countries", FAO, http://www.fao.org/forestry/13146-0a106451cbf3486244897a4ee3dd7eeb5.pdf

[132] https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf

[133] *Ibid*

[134] International Union for Conservation of Nature (IUCN): World Commission on Protected Areas (WCPA). "Protected areas helping to meet the Sustainable Development Goals", https://www.iucn.org/sites/dev/files/natural_solutions_-_sdgs_final_2.pdf. Adapted from that document.

| SDG Target | Link to Protected Areas |
|---|---|
| *13.1 "Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries".* | Protected areas can mitigate climate change as well as be adaption to climate change. |
| 14.5 "By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information." | The existence of protected areas is key to achieving SDG target 14.5. This is one of the targets that is being renegotiated the timing "2020" will change. |
| *15.1 "By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements".* | A major way for achieving this Target in coastal areas is creation of protected areas. |
| *15.2 "By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally."* | Similarly, a key mechanism for achieving this Target in coastal areas is establishment of protected areas. |

**Computation Method:**

The indicator has two key components on land management which include; a coastal land management plan and a land management plan which may include coastal land for those that have it or no coastal land for countries where this is not applicable.

At the national level, short questionnaires will be sent to the focal point agencies or responsible ministry to confirm whether:

There is an enforced national coastal land management plan in the country?

| Yes | |
|---|---|
| No | |

If yes, has this plan has been updated in the past five years?

| Yes | |
|---|---|
| No | |

Data to be provided at national level.

Global level data will be available to show the proportion of countries that have an enforceable national coastal land management plan. This will be applicable among countries for which these plans are applicable or required. For example, countries without coastal lands will be excluded in the computations for the coastal land management plan computations.

**Data Sources and Frequency of Data Collection**

Data updates for this indicator will be sources from ministry's in charge of environmental or land management or Marine and coastal affairs. In general, protected area data are compiled by ministries of environment and other ministries responsible for the designation and maintenance of protected areas[135].

The monitoring and updates of the indicator will be every two years until 2036.

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[135] https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf

**References:**

- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- Robert Kay, "Integrated coastal zone planning in Asian tsunami-affected countries", FAO, http://www.fao.org/forestry/13146-0a106451cbf3486244897a4ee3dd7eeb5.pdf
- https://unstats.un.org/sdgs/metadata/files/Metadata-14-05-01.pdf
- International Union for Conservation of Nature (IUCN): World Commission on Protected Areas (WCPA). "Protected areas helping to meet the Sustainable Development Goals", https://www.iucn.org/sites/dev/files/natural_solutions_-_sdgs_final_2.pdf. Adapted from that document.

**55 Percentage reduction in annual final energy consumption in homes using smart monitoring systems.**
Extended indicator: applicable for countries where smart systems are being applied.

**Definition:**

Percentage reduction in annual final energy consumption in homes using smart monitoring systems. Smart home technologies control the timing and coordination of appliance use (including setting temperature in different parts of a home).

**Rationale:**

Member States recognized that urban form, infrastructure and building design are major sources of cost and resource efficiencies. In addition, economy of scale and agglomeration fosters energy efficiency sustainable growth in the urban economy (NUA §44).

Member States committed to ensure universal access to affordable, reliable and modern energy services by promoting energy efficiency and sustainable renewable energy and supporting subnational and local efforts to apply them in public buildings, infrastructure and facilities, by subnational and local governments utilizing local infrastructure and codes to promote uptake in end-use sectors, such as residential, commercial and industrial buildings. They also committed to encourage the adoption of building performance codes and standards, renewable portfolio targets, energy-efficiency labelling, retrofitting of existing buildings, among other modalities as appropriate, to achieve energy-efficiency targets. They also committed to prioritize smart-grid, district energy systems and community energy plans to improve synergies between renewable energy and energy efficiency (NUA §121).

194 countries adopted the Paris Agreement on Climate Change in 2015[136]. Developed country parties agreed to take the lead undertaking economy-wide absolute greenhouse gas emission reduction targets. Developing country parties would continue improving their mitigation efforts and were encouraged to move towards economy-wide emission reduction targets over time, considering their national circumstances. Many countries are encouraging their citizens to install Home energy management systems, which allow the owners to switch household equipment on and off remotely, so that they can consume energy more efficiently.

Residential energy consumption is the third largest use of energy in USA. However, 35% of that energy consumed in residences is wasted. Hence, there is a lot of scope for reducing energy usage through use of smart home technologies control the timing and coordination of appliance use.

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[136] Paris Agreement, https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

## Share (%)

- 7. TV, DVD, cable box...
- 8. Dishwasher 2%
- 9. Computer 1%
- 6. Electric oven 4%
- 5. Refrigerator 4%
- 4. Lighting 12%
- 3. Washer and dryer 13%
- 2.Water heater 14%
- 1. Cooling and heating 47%

Legend:
- ◻ 1. Cooling and heating
- ◻ 2.Water heater
- ◻ 3. Washer and dryer
- ◻ 4. Lighting
- ◻ 5. Refrigerator
- ◻ 6. Electric oven
- ◻ 7. TV, DVD, cable box
- ◻ 8. Dishwasher
- ◻ 9. Computer

Source: Connect4Climate, "What uses the most energy in your home?",
https://www.connect4climate.org/infographics/what-uses-most-energy-your-home

*Concepts*

*Smart energy monitoring systems*
Energy consumption management and monitoring systems are one of the most successful and promising applications of IoT and big data technology for the consumer markets. Home energy monitoring systems adopted by households, utility companies and energy suppliers already provide substantial benefits to the users from the economic, social and environmental points of view.

**Computation Method**

The energy supply companies to conduct surveys annually to find out the percentage of residential customers that have installed smart energy management systems and find out energy savings in comparison with before the smart energy management systems were installed.

$$\% \, reduction \, in \, annual \, final \, energy \, consumption \, in \, homes \, using \, smart \, monitoring \, systems$$
$$= 100$$
$$\times \frac{estimated \  reduction \, in \, energy \, consumption \, in \, homes \, that \, have \, installed \, smart \, monitoring \, systems}{Total \, energy \, consumption \  in \, homes \, prior \, to \, installation \, of \, smart \, monitoring \, sytems}$$

Data to be provided at national and city level

**Data Sources and Frequency of Data Collection**

Electricity supply companies and the Ministry selected by the government as the focal point for this indicator. Annual monitoring of the indicator until 2036.

**References:**

1. Paris Agreement, https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
2. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
3. Connect4Climate, "What uses the most energy in your home?", https://www.connect4climate.org/infographics/what-uses-most-energy-your-home

## 56 Share of street junction with traffic lights connected to traffic management systems

**Definition:**

Traffic congestion is a major cause of pollution in many big cities in the world. It leads to less economic output, less time for leisure and exercise as well as higher prevalence of respiratory diseases. Hence, lower quality of life of urban dwellers. In the New Urban Agenda, Member States advocated adoption of a smart-city approach that leverages digitization, clean energy and technologies as one of the solutions to traffic congestion. This indicator will monitor the number of eligible street junctions that have traffic lights connected to the traffic management system in the cities.

**Rationale:**

One strategy for managing the spatial growth of cities is for national, subnational and local governments to develop and adopt technology-based innovations in transport and transit systems to reduce congestion and pollution while improving efficiency, connectivity, accessibility, health and quality of life (NUA §118). Large cities install traffic lights that are connected to traffic management systems as a solution for reducing traffic congestion.

There are three major sources of traffic congestion:
1. Bad weather and road repairs;
2. Traffic demand (peak periods congestion);
3. Transportation infrastructure bottlenecks.

In the United States, transportation bottlenecks account for 40% of overall traffic congestion.

Figure 5: Traffic Management Phases: information gathering, information processing and service delivery[137]

*Concepts:*

*Traffic light system*

Traffic lights are signaling devices that are conceived to control the traffic flows at road intersections, pedestrian crossings, rail trains, and other locations. Traffic lights consist of three universal colored lights: the green light allows traffic to proceed in the indicated direction, the yellow light warns vehicles to prepare for short stop, and the red signal prohibits any traffic from proceeding.

The rapid increase of the number of automobiles and the constantly rising number of road users are not accompanied with promoted infrastructures with sufficient resources. Partial solutions were offered by constructing new roads, implementing flyovers and bypass roads, creating rings, and performing roads rehabilitation.

*Eligible junctions for traffic light system*

The conventional traffic system needs to be upgraded to solve the severe traffic congestion, alleviate transportation troubles, reduce traffic volume and waiting time, minimize overall travel time, optimize cars safety and efficiency, and expand the benefits in health, economic, and environmental sectors. For this indicator we assume that as a minimum all four-way intersections in the boundaries of the built up areas of the city should have traffic light systems installed.

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[137] The figure taken from Allan M de Souza, Celso ARL Brennand, Roberto S Yokoyama, "Traffic management systems: A classification, review, challenges, and future perspectives", International Journal of Distributed Sensor Networks, page 4, https://journals.sagepub.com/doi/full/10.1177/1550147716683612
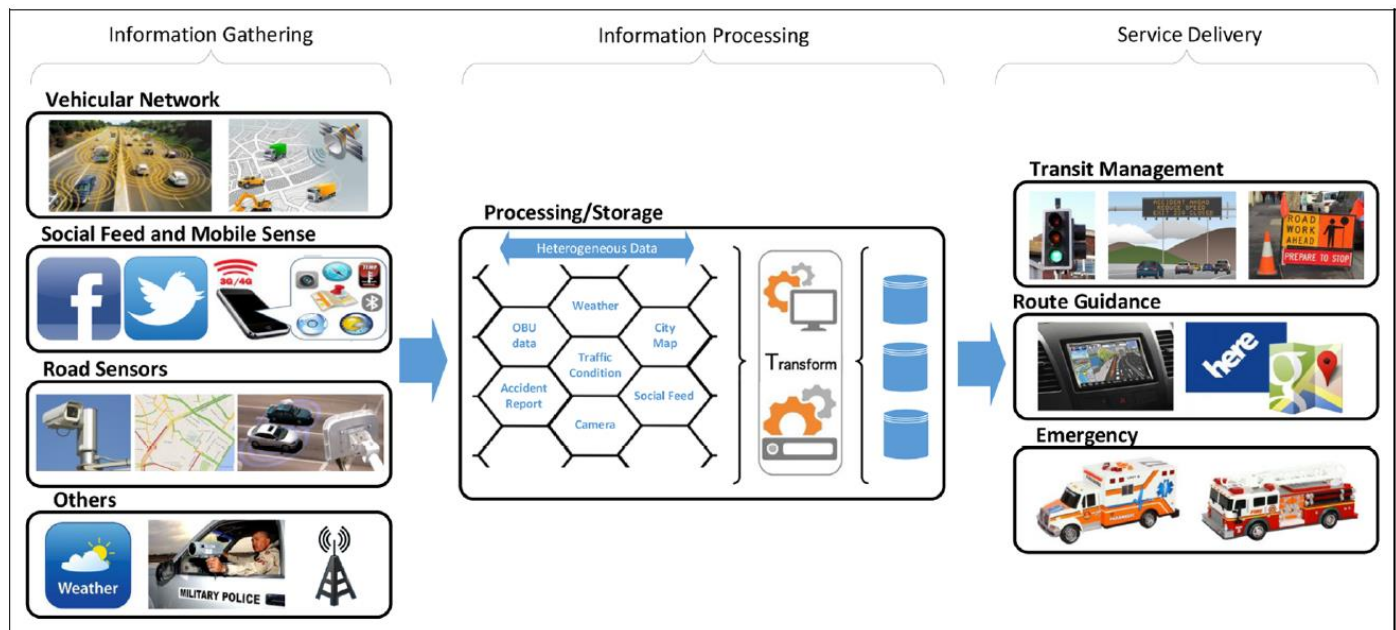
**Computation Method:**

$Share\ of\ street\ junction\ with\ traffic\ lights\ connected\ to\ traffic\ management\ systems\ will\ be\ computed\ as$

$$= 100 \times [\frac{Number\ of\ four-way\ or\ more\ street\ junctions\ with\ street\ traffic\ light\ systems\ installed}{Number\ of\ four-way\ or\ more\ street\ junctions\ in\ the\ built\ up\ area\ of\ the\ city}]$$

Data to be provided at city level and national level data will be aggregated from the cities available in the county or where possible countries can choose to use the national sample of cities to sample out the cities within the country that will be used to representatively report on progress of this indicator.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator.
The monitoring of the indicator is every two years until 2036.

**References:**

- U. S. Department of Transportation, "**2016 Urban Congestion Trends**: Using Technology to Measure, Manage, and Improve Operations", page 2, https://ops.fhwa.dot.gov/publications/fhwahop17010/fhwahop17010.pdf
- Allan M de Souza, Celso ARL Brennand, Roberto S Yokoyama, "Traffic management systems: A classification, review, challenges, and future perspectives", International Journal of Distributed Sensor Networks, page 4, https://journals.sagepub.com/doi/full/10.1177/1550147716683612
- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**57. Do local authorities exercise their authority and fulfil their responsibilities in accordance with such procedures and in such cases as provided for by the constitution or by law**

**Definition:**

The indicator monitors whether local authorities are run with adherence to laws such as by-laws, laws passed by the national parliaments and the constitution. In addition, whether the local authorities are run in a transparent manner and practice good governance.

**Rationale:**

Adherence to rule of rule of law in management of local authorities is a prerequisite for efficient management practices. The New Urban Agenda calls for metropolitan governance that is inclusive and based on legal frameworks (NUA §90). In the same vein, UNDP Users Guide to Measuring Local Governance[138] lists the following priorities for local governance: citizen participation to ensure inclusive decision making; non-discrimination of all partners; citizen participation at all stages of the policy process; records and information well-maintained and publicly available to facilitate citizen participation and transparency. Along the same lines, the Good Governance Guide[139] identifies the main characteristics of good governance as: accountability; transparency; adherence to rule of law; equitable and inclusive; participatory; effective and efficient.

The World Cities Report 2016 concluded that "Rules and Regulations provide security and stability for residents, promote social and economic inclusion, legal certainty and fairness in the urbanization process'[140]. Implementation and enforcement of urban policies depends on consistent application of rules and regulations. It identified lack of a clear legislative frameworks as major obstacles to effective design and implementation of urban policies. Rules and Regulations must be clear and revised regularly as circumstances change, and can encompass: (a) municipal finance; (b) environmental sustainability regulations; (c) urban governance and (d) equitable access to opportunities. Rules and regulations must have clear checks and balances to prevent abuse by well-connected citizens.

*Concepts:*

*Constitution:*
The Constitution is the basic principles and laws of a nation or state that determine the powers and duties of the government and guarantee certain rights to the people in it[141].

*By-law*
A by-law is a local a local ordinance or a municipal regulation.

*Law*
A rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority[142].

*Rule of Law:*
Rule of law in this context can be "adopting the rule of law that is most persuasive in light of precedent, reason and policy", alternatively "government by law : adherence to due process of law"[143]

**Computation Method:**

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[138] UNDP, *A Users Guide to Measuring Local Governance*, https://www.undp.org/content/undp/en/home/librarypage/democratic-governance/local_governance/a-users-guide-to-measuring-local-governance-.html, page 6
[139] Municipal Association of Victoria, *Good Governance Guide,* https://www.vlga.org.au/resources/good-governance-guide, page 7
[140] UNHABITAT, 2016, World Cities Report 2016, Urbanization and Development: Emerging Futures, https://unhabitat.org/world-cities-report, page 183
[141] https://www.merriam-webster.com/dictionary/constitution
[142] https://www.merriam-webster.com/dictionary/law
[143] Merriam-Webster Dictionary, https://www.merriam-webster.com/dictionary/rule%20of%20law#legalDictionary

Is supervision of local authorities exercised in accordance with such procedures and in such cases as provided for by the constitution or laws or by-laws?

| Yes | |
| --- | --- |
| No | |

Data to be provided at national and city level. For countries with several cities, it is recommended to use the national sample of cities[144] to estimate information at the city-level. The table below for responses to the same question at city level.

| Name of city | Yes | No |
| --- | --- | --- |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

The national level respondent can compute the percentage of cities that respond with "Yes".

Percentage of local authorities that exercise their authority and fulfil their responsibilities in accordance with such procedures and in such cases as provided for by the constitution or by law $= \frac{Percentage\ of\ cities\ that\ respond\ with\ Yes}{Total\ number\ of\ cities}$

**Data Sources and Frequency of Data Collection**

At the national level, the respondent will be in the Ministry selected by the government as the focal point for this indicator. A senior level civil servant would be well placed to provide answers for this indicator.
At the city level, a director of a department in the city council can provide the information.
The monitoring of the indicator can be every five years until 2036.

**References:**
1. UNDP, *A Users Guide to Measuring Local Governance*, https://www.undp.org/content/undp/en/home/librarypage/democratic-governance/local_governance/a-users-guide-to-measuring-local-governance-.html, page 6

2. Municipal Association of Victoria, *Good Governance Guide*, https://www.vlga.org.au/resources/good-governance-guide, page 7

3. UNHABITAT, 2016, *World Cities Report 2016, Urbanization and Development: Emerging Futures*, https://unhabitat.org/world-cities-report, page 183

4. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

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[144] UNHABITAT, "NATIONAL SAMPLE OF CITIES: A Model Approach to Monitoring and Reporting Performance of Cities at National Level", https://unhabitat.org/sites/default/files/2020/06/national_sample_of_cities_english.pdf

**58 Percentage of the total budget that the local / sub-national government have discretion over to decide on priorities (financial autonomy)**

**Definition:**

Financial decentralization can serve as an effective policy tool for improving the quality and provision of public services, government accountability, and the efficient use of local financial resources. However, in order to achieve successful financial decentralization, central and local governments must be strategic in how they decentralize financial responsibilities to local governments both in terms of revenue generation and expenditures. Moreover, the decentralization of financial authority to subnational governments must consider both the local capacity of municipal governments and the legal and regulatory framework in which they will assume these responsibilities. Delegating local expenditure and revenue generation responsibilities to municipal governments connects the consumers of public goods and services directly with local government officials who determine how public funds are allocated and what tax policies are implemented. If strong institutions, good governance and a supportive legal and regulatory framework are in place, fiscal decentralization can support and enhance municipal finance. (UN-Habitat, 2017).

**Rationale:**

In the New Urban Agenda (NUA), Member States committed themselves to: support subnational and local governments in their efforts to implement transparent and accountable expenditure control instruments for assessing the necessity and impact of local investment and projects, based on legislative control and public participation, as appropriate, in support of open and fair tendering processes, procurement mechanisms and reliable budget execution, as well as preventive anti-corruption measures to promote integrity, accountability, effective management and access to public property and land, in line with national policies (NUA 138).

*Concepts:*

A sub-national government, being closer to the people, is, in theory, more capable compared than national governments to meet citizens' preferences and demands in public goods and services. Research generally supports that fiscal decentralization has been linked to a variety of outcomes (World Bank, 2008). Among those are:
- Economic growth
- Size of government
- Changes in public expenditure patterns
- Fiscal imbalances
- Governance and
- Service delivery

Financial responsibility is a core component of decentralization. If local governments and private organizations are to carry out decentralized functions effectively, they must have an adequate level of revenues – raised locally or transferred from the central government – as well as the authority to make decisions about expenditures (World Bank, 2001).

*Local government budgets with discretion*
Local government budgets discretion is defined as the ability of the local elected government to effectively utilize a certain share of the local budget without seeking any authorization from the national government. Such discretion has to accompany with accountability in order to ensure responsiveness to the demands of the local citizens. The local budget accountability, in turn, is affected by a number of institutional factors, standards, rules and norms at the national and sub-national levels.

**Computation Method**

$$\% \, of \, total \, budget \, that \, the \, local \, governments \, have \, discretion \, over \, to \, decide \, on \, priorities$$
$$= 100 \left[ \frac{Total \, budget \, that \, the \, local \, governments \, have \, discretion \, over \, to \, decide \, on \, priorities}{Total \, local \, government \, finances} \right]$$

Total local finances = Own source revenue + central government transfers to the local authority + grants and loans from donors, banks etc. + other sources of financial resources

Data to be provided at city level and other sub-national levels as appropriate.

**Data Sources and Frequency of Data Collection**

Municipal authorities, metropolitan authorities, county governments, district governments.
At the national level, all this data from local governments will be aggregated by national focal point nominated by respective governments.
The monitoring of the indicator can be annual until 2036.

**References:**

1. UN-Habitat, 2017, https://unhabitat.org/books/finance-for-city-leaders-handbook-2nd-edition/
2. World Bank, 2008, Fiscal Decentralization, http://web.worldbank.org/archive/website01061/WEB/0__CO-11.HTM
3. World Bank, 2001, Intergovernmental Fiscal Relations,
http://www1.worldbank.org/publicsector/decentralization/fiscal.htm
4. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**59 Percentage of the local / sub-national government's financial resources generated from endogenous (internal) sources of revenue**

**Definition:**

Local authorities in all parts of the world play an increasingly important role in the delivery of fundamental basic public services. But they also face huge challenges. The fundamental problem confronting most local authorities, especially those managing cities in developing countries, is the widening gap between the availability of financial resources and municipal expenditure needs. Most cities in developing countries depend largely on central government transfers and to a lesser extent on revenues derived from own sources. Own sources of revenue include property taxes, charges and fees, betterment levies, vehicle and transportation taxes, local business taxes, excise and sales taxes, income taxes, and natural resource taxes (UN-Habitat, 2014, 2017).

**Rationale:**

In the New Urban Agenda (NUA), Member States committed themselves to:

Mobilize endogenous resources and revenues generated through the capture of benefits of urbanization, as well as the catalysing effects and maximize impact of public and private investments in order to improve the financial conditions for urban development and open access to additional sources recognizing that, for all countries, public policies and the mobilization and effective use of domestic resources, underscored by the principle of national ownership, are central to our common pursuit of sustainable urban development, including implementation of the New Urban Agenda (NUA §132).

Support appropriate policies and capacities that enable sub-national and local governments to register and expand their potential revenue base; such as through multi-purpose cadastres, local taxes, fees, and service charges, in line with national policies, while ensuring that women and girls, children and youth, older persons, persons with disabilities, indigenous peoples and local communities, and poor households are not disproportionately affected (NUA §134).

Promote capacity development programmes on the use of legal land-based revenue and financing tools as well as on real estate market functioning for policymakers and local public officials focusing on the legal and economic foundations of value capture, including quantification, capturing, and distribution of land value increments (NUA §152).

*Concepts:*

For a viable and responsible fiscal future, cities in developing countries must use significant sources of tax revenues as well as nontax revenues in the form of user charges and fees. Adequacy of own revenues is the key to improved ability to deliver needed goods and services and to better accountability of local officials to their constituents. Own revenues need to be complemented with intergovernmental transfers to address differences in expenditure needs and fiscal capacity across cities and also for cities to support the implementation of central government programs.
There are both conventional and innovative sources of local government financing. Key issues that need to be addressed include what are the best-suited sources of tax revenue for cities in developing countries, can charges and fees become a more meaningful part of city budgets in developing countries and what is role various charges and fees play in city budgets in developing countries

**Computation Method:**

$$\% \; of \; revenue \; collected \; from \; endogenous \; sources \; = 100 \; \times \; \left[ \frac{\text{Revenue generated from internal sources}}{\text{Total local government finances}} \right]$$

Own source revenue = Total revenue a local authority collects from property taxes + charges and fees + betterment levies + vehicle and transportation taxes + local business taxes + excise and sales taxes + income taxes + and natural resource taxes

Total local finances = Own source revenue + central government transfers to the local authority + grants and loans from donors, banks etc. + other sources of financial resources

Data to be provided at the city level

**Data Sources and Frequency of Data Collection**

Municipal authorities, metropolitan authorities, county governments, district governments
At the Global level, all this data can be obtained from local authorities.
Annual monitoring until 2036.

**References:**

1. UN-Habitat, 2014, https://unhabitat.org/the-challenge-of-local-government-financing-in-developing-countries/
2. UN-Habitat, 2017, https://unhabitat.org/books/finance-for-city-leaders-handbook-2nd-edition/
3. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 60: Quality of law

**Definition:**

This indicator is for monitoring whether the governance structure has effective/supportive legal and policy frameworks that enhance the government ability to implement urban policies

**Rationale:**

This indicator monitors the existence of legal and policy frameworks that ensure that there are forums that allow effective participation of groups in decision-making, planning and follow-up processes as well as implementation of effective local and metropolitan multilevel governance. It also monitors whether there exists appropriate political, fiscal and administrative decentralization based on the principle of subsidiarity (NUA §41, 89 and 90).

The future of cities must be one shaped by laws that address the lived experience of households and firms. These laws must: offer a reasonable trade-off between the costs and benefits of compliance; reflect the current context; be the product of consultative, inclusive processes; be economically and politically inclusive while creating the basic preconditions for economic growth; protect the interests of the public (with a focus on the poor) when confronted by stronger commercial and political interests; promote stable and sustainable urban governance; and build strong social contracts between state and non-state actors.

*Concepts*
A quality law will be measured through:
a)  Do subsidiary[145] laws consistently state their objectives and cite the statutory source for the objectives? (Regulatory measures/laws/by-laws in this area have consistent objectives based on clear policies).
b)  Clarity of: decisions made; criteria to apply; identity of the decision makers; and time frames (Processes are clearly defined and outcomes of decisions do not involve any discretion.)
c)   Organization of institutional roles and responsibilities (Institutional roles and responsibilities in this sector are concentrated in one efficient institution or in several well-coordinated institutions.)
d)   Clarity in standard of drafting (Legislative texts are written in clear and unambiguous language, understandable by professionals and common citizens.)
e)   Capacity for implementation (Human and financial resources are adequate for the successful implementation of the legislative framework in this area.)

**Computation Method:**

Tick the correct answer:
a)   Do subsidiary laws consistently state their objectives and cite the statutory source for the objectives? (Regulatory measures/laws/by-laws in this area have consistent objectives based on clear policies).

| Yes | |
|-----|--|
| Somewhat | |
| No | |

b)   Clarity of: decisions made; criteria to apply; identity of the decision makers; and time frames (Processes are clearly defined and outcomes of decisions do not involve any discretion.)

| Yes | |
|-----|--|
| Somewhat | |
| No | |

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[145] Subsidiary legislation, in this context, legislation by a local authority, such legislation includes orders in council, rules, regulations, statutory instruments or by-laws.

c) Organization of institutional roles and responsibilities (Institutional roles and responsibilities in this sector are concentrated in one efficient institution or in several well-coordinated institutions.)

| | |
|---|---|
| Yes (well-coordinated) | |
| Somewhat | |
| No | |

d) Clarity in standard of drafting (Legislative texts are written in clear and unambiguous language, understandable by professionals and common citizens.)

| | |
|---|---|
| Clear | |
| Not clear | |

e) Capacity for implementation (Human and financial resources are adequate for the successful implementation of the legislative framework in this area.)

| | |
|---|---|
| Adequate | |
| Not adequate | |

Data to be provided at national and city level.

**Data Sources and Frequency of Data Collection:**

At the national level, the respondent will be in the Ministry selected by the government as the focal point for this indicator. A senior level civil servant would be well placed to provide answers for this indicator.
At the city level, a director of a department in the city council can provide the information.
The monitoring of the indicator can be 5 years until 2036.

**References:**

https://unhabitat.org/sites/default/files/2020/05/ulr-report_final_lr.pdf

Arimah, B. C. and Adeagbo, D. (2000). "Compliance With Urban Development and Planning Regulations in Ibadan, Nigeria". Habitat International. Volume 24. pp279–294.

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**61: Published performance delivery standards at the sub-national level**

**Definition:**

One way to ensure that local and subnational governments deliver services at an acceptable level of quality is for these governments to publish their performance delivery standards on their websites in advance. The citizens can then be able to verify whether those performance delivery standards are met during the course of the year.

**Rationale:**

Member States committed to promoting capacity-development programmes to assist subnational and local governments in financial planning and management, focusing on environmental sensitivity and anti-corruption measures, embracing transparent and independent oversight, accounting, procurement, reporting, auditing and monitoring processes, among others, and to review subnational and national performance and compliance, taking into account age- and gender-responsive budgeting and the improvement and digitalization of accounting processes and records, in order to foster results-based approaches and increase medium- to long-term administrative and technical capacity (NUA §151).

Performance benchmarking and periodic monitoring is central to improving performance. Local governments can be held accountable for their performance[146]. A major challenge measuring efficiency and effectiveness is the lack of market prices for services delivered by local governments. Mizell (2008) concludes that performance indicators enhance the efficiency and effectiveness of local governments. Indicators can also monitor whether national or local objectives are being achieved in terms of quality, quantity and equity of the services being produced. City and subnational governments provide different services depending on countries. In Ireland, an annual report on performance indicators is produced and submitted to the Minister of Local Government Management. It is also available to wider audience who can download it on the department website. [147]

Local governments can use the indicators to monitor their performance and determine whether they are meeting their performance standards. They can also compare their performance with that of local governments/ city councils. The indicators can form the basis of budget allocations and identification of best practices. Hence, a lack of performance indicator systems is often a lost opportunity for sharing best practices. An example of municipal performance indicators is the "Municipal Performance Index 2019: Assessment Framework"[148] by Ministry of Housing and Urban Affairs – Government of India.

**Computation Method**

Does your city or sub-national government have published performance delivery standards that are published on its official website?

| Yes | |
|-----|---|
| No | |

Is data on the performance indicator updated monthly/quarterly during the fiscal year?

| Yes | |
|-----|---|
| No | |

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[146] Phillips, L. (2018), "Improving the Performance of Sub-national Governments through Benchmarking and Performance Reporting", OECD Working Papers on Fiscal Federalism, No. 22, OECD Publishing, Paris, https://doi.org/10.1787/ffff92c6-en.

[147] Mizell, L. (2008), "Promoting performance – Using indicators to enhance the effectiveness of sub-central spending", OECD Working Papers on Fiscal Federalism, No. 5. http://dx.doi.org/10.1787/22265848.

[148] Ministry of Housing and Urban Affairs – Government of India, IFC-Institute of Competitiveness, "Municipal Performance Index 2019: Assessment Framework", https://smartnet.niua.org/eol19/pdf/MPI_Methodology.pdf

$$\% \; of \; subnational \; governments \; and \; cities \; with \; Published \; performance \; delivery \; standards$$
$$= 100 \times [\frac{subnational \; governments \; and \; cities \; with \; Published \; performance \; delivery \; standards}{Total \; subnational \; governments \; and \; cities}]$$

Data to be provided as national level. Lists of cities that published performance delivery standards and those that do not should also be provided.

**Data Sources and Frequency of Data Collection**

The Ministry responsible for urban issues is the focal point for this indicator, it can survey or check the cities websites to find out which ones have published performance delivery standards.
The monitoring of the indicator can be annual until 2036.

**References:**
1.  Phillips, L. (2018), "Improving the Performance of Sub-national Governments through Benchmarking and Performance Reporting", OECD Working Papers on Fiscal Federalism, No. 22, OECD Publishing, Paris, https://doi.org/10.1787/ffff92c6-en.

2.  Mizell, L. (2008), "Promoting performance – Using indicators to enhance the effectiveness of sub-central spending", OECD Working Papers on Fiscal Federalism, No. 5. http://dx.doi.org/10.1787/22265848.

3.  Ministry of Housing and Urban Affairs – Government of India, IFC-Institute of Competitiveness, "Municipal Performance Index 2019: Assessment Framework", https://smartnet.niua.org/eol19/pdf/MPI_Methodology.pdf

4.  The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**62 Number of countries, regional governments and cities in which plans and designs are publicly accessible to residents (on-line) and can be consulted at all times**

**Definition:**

Well planned and implemented urban and territorial plans can bring sustainable development to both developing and developed countries. This indicator measures "Number of countries, regional governments, and cities in which plans and designs are publicly accessible to residents (on-line) and can be consulted at all times"

**Rationale:**

Member States committed to promoting participatory age- and gender-responsive approaches at all stages of the urban and territorial policy and planning processes, from conceptualization to design, budgeting, implementation, evaluation and review, rooted in new forms of direct partnership between Governments at all levels and civil society, including through broad-based and well-resourced permanent mechanisms and platforms for cooperation and consultation open to all, using information and communications technologies and accessible data solutions (NUA §92).

One way of maintaining the public support for plans as well as ensuring public participation is for the urban and territorial plans to be publicly accessible online. This ensures transparent and accountable governance, and urban inhabitants are able to provide feedback on the plans, which in turn allows them to take ownership of plans (NUA §86).

*Concepts*
*Urban plans and designs*
*Urban planning* is the act of planning the structures of a city, including its policies, infrastructure, neighborhoods, building codes, and regulations. Urban planning, by definition, is the "planning of city strategies, structures and policies." The focus is more technical and political, and is on the strategy, structure, and policy level.

On the other hand, *urban design* is the creation of city features based on plans. It includes everything from public space to infrastructure, as well as transportation, landscapes, and community accommodations. Urban design, by definition, is the "design of city features." It is focused on design and user experience and operates at the features and systems level. These two different terms operate on a different level with unique focuses, although they share many of the same goals. They both work towards creating sustainable and flexible spaces that improve the quality of life for people living, working, and traveling to the area.

**Computation Method**

A focal point in ministry can go through websites of all cities and the ministry in charge of local governments to find out which ones have urban and territorial plans on their websites.

Data to be provided at the national, provincial and city level. Some countries may have urban plans at provincial or state level, while others may not have provincial plans.

| Name of country/region/city | Is the Urban Plan on its website? | |
| --- | --- | --- |
| | Yes | No |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Compute the percentage of cities with their urban plans posted online.

$$\textit{Percentage of cities with their urban plans on their website}$$
$$= 100 \times [\frac{\textit{Number of cities with their urban plans on their website}}{\textit{Total number of cities}}]$$

Where regional/provincial or state governments are important, compute the percentage that have their urban plans posted online.

For countries with several cities, it is recommended to use the national sample of cities approach[149] to estimate information at the city-level.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator.
The monitoring of the indicator can be every two years until the 2036.

**References**

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

UNHABITAT, "NATIONAL SAMPLE OF CITIES: A Model Approach to Monitoring and Reporting Performance of Cities at National Level", https://unhabitat.org/sites/default/files/2020/06/national_sample_of_cities_english.pdf

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[149] UNHABITAT, "NATIONAL SAMPLE OF CITIES: A Model Approach to Monitoring and Reporting Performance of Cities at National Level", https://unhabitat.org/sites/default/files/2020/06/national_sample_of_cities_english.pdf

**63 Number and percent of new population "accommodated" in a plan or city extension.**
Extended indicator: applicable for countries that have resources to estimate new population in a plan or city extension.

**Definition:**

This indicator measures the number and percent of new population "accommodated" in a plan or city extension or infill. Member states agreed to promote compact city designs that make provision basic services, such as mass transit, viable. Compact cities can be achieved through "infills" and planed city extensions.

**Rationale:**

The New Urban Agenda supports sustainable management and use of natural resources and land, appropriate compactness and density, polycentrism and mixed uses, through infill or planned urban extension strategies, as applicable, to trigger economies of scale and agglomeration (NUA §97). In this vein, it promotes planned urban extensions and infill retrofitting of urban areas, as appropriate, including the upgrading of slums and informal settlements while preventing and containing urban sprawl (NUA §51).

International Guidelines on Urban and Territorial Planning recommends using urban and territorial planning to increase densities of parts of cities that are lightly populated utilizing infill or planned extension strategies to achieve economies of scale, reduce travel needs and the costs of service provision, and enable a cost-effective public transport system[150].

*Concepts*

*City Extension Planning* - an urban planning tool that proposes a spatial structure for the growth of a city that can support its socioeconomic and environmental sustainability by ensuring an orderly expansion and densification of existing and future neighborhoods.

*Urban Extension* - This is the area surrounding or adjacent to existing urban built-up areas, with a high possibility of extending the built-up area.

*Planned City Extension (PCE)* - It is an alternative to unplanned urban expansion, creating a well-planned supply of serviced buildable plots to accommodate population growth and economic development without the loss of affordability or the creation of informal settlements. PCE sets the stage for sustainable urban growth. It is also sometimes called "Urban Growth Area" which are areas delineated in a comprehensive plan within which urban development is encouraged, and outside of which development is discouraged. Both aim to ensure urban containment by promoting planned, compact, integrated, connected and orderly development patterns. It uses a three-pronged approach incorporating urban design, urban legislation, and urban economy and finance.

**Computation Method:**

Enumerate the population in infill or planned extensions, then express it as percentage of the total population of the city.

$$Percentage\ of\ the\ population\ in\ infill\ or\ planned\ extensions$$
$$= 100 \times [\frac{population\ in\ infill\ or\ planned\ extensions}{population\ of\ the\ city}]$$

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[150] UN-HABITAT, 2015, "International Guidelines on Urban and Territorial Planning", HS Number: HS/059/15E, page 19

Data will be provided  at city level. National level aggregates will be generated from city level averages based on the number of cities available for every country.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point to obtain the data from each city.
The indicator to be monitored twice a year until 2036.

**Reference**

UN-HABITAT, 2015, "International Guidelines on Urban and Territorial Planning", HS Number: HS/059/15E, page 19, https://unhabitat.org/books/international-guidelines-on-urban-and-territorial-planning/ .

http://unhabitat.org.ph/wp-content/uploads/2016/07/PCE-Guidebook_June-20_rue.compressed.pdf

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

**64 Number of urban planners per 100,000 persons**

**Definition:**

The New Urban Agenda calls for planning and managing spatial urban development. There must be enough urban planners in a country to prepare and implement urban plans. In this regard, the New Urban Agenda calls for improved capacity for urban planning and design and the provision of training for urban planners at all levels of government (NUA §102). This indicator monitors the number of urban planners per 100,000 persons.

**Rationale:**

Sustainable urbanization cannot occur without urban plans. Urban planners are essential for preparation and implementation of urban plans. This indicator will gauge whether a country has the urban planning capacity to implement urban and territorial plans. The New Urban Agenda calls for implementation of integrated planning that leads to high quality of life and sustainable environment and introduces innovations that results in better living environments (NUA §94).

Cities account for the majority of the economic production in most countries. Cities have also led economic development during industrialization. However, poorly planned urbanization leads to increased pollution, urban sprawl, and environmental degradation. Consequently, in the New Urban Agenda, Member States emphasized the need for urban planning that focuses on sustainable development, inclusive growth, participatory planning and good governance.[151]

Planned urbanization requires that a country should have a critical mass of urban planners to prepare urban and territorial plans and participate in enforcing adherence to those city plans. This indicator will be used to monitor the number of planners registered in a country. It is these planners who will prepare the urban plans and implement them.

Proper Implementation of urban and territorial plans requires political will, legal and institutional frameworks, efficient urban management, good coordination. In addition, there must be sufficient qualified urban planners, continuous monitoring and timely adjustment as necessary.

*Concepts:*
*Urban planners*
The roles of planners can vary somewhat, but the overall goal is to help develop urban area/cities into functional, thriving communities that can accommodate the population and offer a pleasant place to live and work. The goal is to improve the community with consideration to things such as the environmental impact, economic development and social issues. Some urban planners work in a general planning role while others specialize in certain issues, such as historic preservation or transportation planning.

**Computation Method:**

There are several the ways getting a list of urban planners. They include requesting information from the national association of urban planners, as well as local and central governments departments that employ urban planners as well as firms that carry out urban planning consultancies.

Data to be provided at national level.
Disaggregate the number of urban planners by public or private sector.
Compute total number of planners per 100,000 persons.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator. Some data can come from the cities directly and urban planning associations.

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[151] UN-HABITAT, "World Cities Report 2016", abridged version, page 27

The monitoring of the indicator can be every two years until 2036.

**References:**

UN-HABITAT, 2015, 'Guidelines on Urban and Territorial Planning', page 27, HS/059/15E, https://unhabitat.org/books/international-guidelines-on-urban-and-territorial-planning/

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

UN-HABITAT, "World Cities Report 2016", abridged version, page 27

### 65. Existence of national structure or office or committee for implementing the New Urban Agenda

**Definition:**

UN-HABITAT recommends that the preparation of the Report on the Implementation of the New Urban Agenda should be led by the ministry dealing with urbanization in a country. National Habitat Committees (NHC) and National Urban Forums (NUF), where they exist, should either play a major role or lead the preparation of the Report [152].

The indicator seeks to determine whether there is an office or committee or taskforce for implementing the New Urban Agenda. It is also important that the New Urban Agenda has been integrated into the national urbanization and infrastructure plans.

**Rationale:**

The New Urban Agenda encourages the implementation of sustainable urban and territorial planning, including city-region and metropolitan plans, development of sustainable regional infrastructure projects that increase economic growth, promotion of inclusive economic growth in both rural and urban areas (NUA §96). The commitments that Member States made should be integrated into the city-region, metropolitan and territorial plans.

*Concepts*

*National committee for NUA implementation.*
In the New Urban Agenda 2016 outcome document, Member States are requested to carry out a periodic follow-up to and review of the New Urban Agenda, ensuring coherence at the national, regional and global levels, in order to track progress, assess impact and ensure the Agenda's effective and timely implementation, accountability to our citizens and transparency, in an inclusive manner (paragraph 161). To ensure this, countries are expected to set up national coordinating committees or taskforces. This team is what is categorized as the national committee for New urban agenda implementation in the context of this indicator.

**Computation Method:**

The Ministry responsible for urbanization to send documents to UN-HABITAT that state the office, committee or taskforce responsible for implementing the New Urban Agenda and demonstrating that the New Urban Agenda has been integrated into city-region, metropolitan and national urban plans.
Provide data at national, and where applicable at the regional and city level.
For countries with several cities, it is recommended to use the national sample of cities approach[153] to estimate information at the city-level.

**Data Sources and Frequency of Data Collection:**

The Ministry responsible for urban development and housing .

**References:**

1. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
2. UN-HABITAT, 2019, "The Guidelines for Reporting on the Implementation of the New Urban Agenda", page 4
3. UNHABITAT, "NATIONAL SAMPLE OF CITIES: A Model Approach to Monitoring and Reporting Performance of Cities at National Level",
   https://unhabitat.org/sites/default/files/2020/06/national_sample_of_cities_english.pdf

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[152] UN-HABITAT, 2019, "The Guidelines for Reporting on the Implementation of the New Urban Agenda", page 4,
[153] UNHABITAT, "NATIONAL SAMPLE OF CITIES: A Model Approach to Monitoring and Reporting Performance of Cities at National Level", https://unhabitat.org/sites/default/files/2020/06/national_sample_of_cities_english.pdf

**66. Stable existence of "transfer formula" in the last 5 years, without major changes, meaning reductions of more than 10%.**

**Definition:**

Usually, local governments receive support in the form of intergovernmental transfers, whereby national governments allocate a portion of their revenue to their local counterparts (UN-Habitat, 2017).

**Rationale:**

In the New Urban Agenda (NUA), Member States committed themselves to promoting sound and transparent systems for financial transfers from national governments to subnational and local governments based on the latter's needs, priorities, functions, mandates and performance-based incentives, as appropriate, in order to provide them with adequate, timely and predictable resources and enhance their ability to raise revenue and manage expenditures (NUA §135).

Member States also acknowledged the importance of local governments as active partners in the follow-up to and review of the New Urban Agenda at all levels and encourage local governments to develop, jointly with national and subnational governments, as appropriate, implementable follow-up and review mechanisms at the local level, including through relevant associations and appropriate platforms (NUA §163).

*Concepts:*
Intergovernmental transfers are the dominant source of revenues for subnational governments in most developing countries. The design of these transfers is of critical importance for efficiency and equity of local service provision and fiscal health of subnational governments (World Bank, 2001). Intergovernmental transfers can be conditional or unconditional[154]. Conditional transfers are sometimes specific purpose transfers, they include: (i) Matching Open-Ended transfer; (ii) Matching Closed-Ended transfer; and (iii) Non-matching transfer.

Matching Open-Ended transfer: For a unit of money transferred by the national government to support a particular purpose, the local government must match the amount transferred or put up an agreed percentage of the amount transferred by the national government.

Matching Closed-Ended transfer: the national government specify some maximum amount that it will contribute.

Non-matching transfer: the national government offers a fixed sum of money with the stipulation that it be spent on a specified public good, such as education or health etc. The local government does not have to match the contribution of the central government

Unconditional transfer: It is a lump sum grant to the local government that the local government can use as it pleases.

**Computation Method**

Has there been a stable "transfer formula" in the last 5 years, without major changes, meaning reductions of more than 10%?

| Yes | |
|-----|--|
| No | |

The Ministry that is the focal point for getting information on this indicator should collect data on all cities and subnational governments and compute the percentage of cities that answer "Yes".

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[154] Jun Ma, 1997, "Intergovernmental Fiscal Transfers in Nine Countries", World Bank
http://www1.worldbank.org/publicsector/LearningProgram/Decentralization/ITFNineCountries.pdf

$$\% \ of \ cities \ and \ subnational \ governments \ that \ have \ a \ stable \ formula$$
$$= 100 \times \frac{cities \ and \ subnational \ governments \ that \ have \ a \ stable \ formula}{Total \ number \ of \ cities \ and \ subnational \ governments}$$

Data to be provided at city level and for subnational governments.

**Data Sources and Frequency of Data Collection**
Municipal authorities, metropolitan authorities, county governments, district governments. At the national level, all this data will be collected from cities and subnational governments by the Ministry nominated by respective government to collect this information. Annual monitoring of the indicator until 2036.

**References:**

UN-Habitat, 2017, "Finance for City Leaders Handbook", https://unhabitat.org/books/finance-for-city-leaders-handbook-2nd-edition/

World Bank, 2001, "Intergovernmental Transfers/Grants Design",
http://www1.worldbank.org/publicsector/decentralization/fiscal.htm

Jun Ma, 1997, "Intergovernmental Fiscal Transfers in Nine Countries", World Bank
http://www1.worldbank.org/publicsector/LearningProgram/Decentralization/ITFNineCountries.pdf

**67. Existence of at least one municipal finance or infrastructure fund available for local governments**

**Definition:**

Municipal finance matters for the sustainability of local government provision of goods and services. Local governments are uniquely suited to respond to challenges of poverty, education, water and the environment; an over-reliance on central government and international institutions risks the danger that responses become out of touch with local people and therefore harder to implement. Without strong and consistent revenue flows, it is not possible to develop sustainable towns and cities. One implication of this is that municipal authorities will lack the resources that they need to effectively plan for the impact of urbanization. This is likely to have a negative effect both on the livelihoods of citizens but also on the way in which high levels of in-migration impact the environment. In turn, this can have long-term implications for residents' quality of life and for the ability of the area to attract investment in the longer term. Therefore, developing more effective municipal financing or infrastructure funds are essential (UN-Habitat, 2017).

**Rationale:**

In the New Urban Agenda (NUA), Member States committed themselves to supporting effective, innovative and sustainable financing frameworks and instruments enabling strengthened municipal finance and local fiscal systems in order to create sustainable urban development in an inclusive manner (NUA §15, c, iv). They also committed to supporting the creation of robust legal and regulatory frameworks for sustainable national and municipal borrowing, on the basis of sustainable debt management, supported by adequate revenues and capacities and the establishment of appropriate financial intermediaries for urban financing, such as regional, national, subnational and local development funds or development banks, including pooled financing mechanisms, which can catalyze public and private, national and international financing. In addition, they would promote risk mitigation mechanisms such as the Multilateral Investment Guarantee Agency, while managing currency risk (NUA §139). Member States would also encourage the use of official development assistance, which promotes additional resource mobilization from all available sources, public and private, for sustainable urban and territorial development (NUA §145).

*Concepts:*
For the sustainability of cities, their ability to raise revenues from sources under their control is critical in the medium to long term. The costs that local governments face are likely to increase every year in line with the processes of urbanization taking place around the world. Thus, raising local revenues is among the most pressing challenges facing city leaders today. It would normally be assumed that a growing population increases the tax base proportionately, with a greater number of local residents simply paying in line with the greater number of services provided. However, this common assumption has been proven wrong. First, changing demographics go hand-in-hand with changes in lifestyle, economic specializations, and income distribution. These shifts mean that citizens do not always have the same needs from their local governments as before and will change how they contribute to the funding of local government services. Second, an increase in the local population does not usually lead to immediate adjustments by central governments in the amounts transferred to the local level. As the "front line" when it comes to delivering public goods and services, local governments often need to respond immediately to changing circumstances while there are time lags in altering rates of national government transfers (UN-Habitat, 2017)

In the face of this dilemma, municipal revenues are city leaders' best assets. Because they are under the control of local authorities themselves, they can be made to shift in proportion to changing demographics and lifestyles in a way that strengthens the provision of public services. As a population changes, local governments are able to change too. Local Governments need to achieve sustainable sources of finance to be able to invest in urban infrastructure and offer basic services.

*Municipal Development Fund:*
Municipal Development Funds (MDFs) lend to regional and local governments for financing urban infrastructure and services . The initial capital is provided by the central government, these funds are generally non-refundable. In cases where the initial capital is refundable, the MDF has often been financially unstable. Some noteworthy MDFs are the Public Works Loan Board (UK) and the Crédit Foncier (France).  Two MDFs have evolved into such noteworthy

institutions as Columbia's Financiera de Desarrollo Territorial (FINDETER) and the Development Bank of Southern Africa (DBSA)[155].

**Computation Method:**

Is there at least one municipal finance or infrastructure fund available for local governments?

| | |
|------|---|
| Yes | |
| No | |

Data to be provided at national level.

**Data Sources and Frequency of Data Collection**

Ministry responsible for municipalities.

**References:**

UN-Habitat, 2017, "Finance for City Leaders Handbook", https://unhabitat.org/books/finance-for-city-leaders-handbook-2nd-edition/

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

Mona Serageldin, David Jones, François Vigier and Elda Solloso, 2008, "Municipal financing and urban development", UNHABITAT, Human Settlements Global Dialogue Series, No. 3, https://unhabitat.org/sites/default/files/download-manager-files/Municipal%20Finance%20and%20Urban%20Development.pdf

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[155] Mona Serageldin, David Jones, François Vigier and Elda Solloso, 2008, "Municipal financing and urban development", UNHABITAT, Human Settlements Global Dialogue Series, No. 3, https://unhabitat.org/sites/default/files/download-manager-files/Municipal%20Finance%20and%20Urban%20Development.pdf

**68. Percentage of local/sub-national government's financial resources generated from financial intermediaries such as multilateral institutions, regional development banks, subnational and local development funds, or pooled financing mechanisms.**

**Definition:**

Local authorities in all parts of the world play an increasingly important role in the delivery of fundamental basic public services. But they also face huge challenges. Most cities in developing countries depend largely on central government transfers and to a lesser extent on revenues derived from own sources of revenue (property taxation and service charges). To effectively address the challenge of mobilizing adequate financial resources, urban authorities in developing countries should also use mechanisms such obtaining loans and or grants from financial intermediaries (e.g. multilateral institutions, regional development banks, subnational and local development funds) and pooled financing mechanisms (UN-Habitat 2014, 2017).

**Rationale:**

In the New Urban Agenda (NUA), Member States committed themselves to:

Support the creation of robust legal and regulatory frameworks for sustainable national and municipal borrowing, based on sustainable debt management, supported by adequate revenues and capacities, by means of local creditworthiness as well as expanded sustainable municipal debt markets when appropriate; and to consider the establishment of appropriate financial intermediaries for urban financing, such as regional, national, sub-national, and local development funds or development banks, including pooled financing mechanisms, which can catalyze public and private, national, and international (NUA §139),

Consider establishing urban and territorial transport infrastructure and service funds at the national level, based on a variety of funding sources, ranging from public grants to contributions from other public entities and the private sector, ensuring coordination among actors and interventions as well as accountability (NUA §141),

Support access to different multilateral funds, including the Green Climate Fund, the Global Environment Facility, the Adaptation Fund, the Climate Investment Funds, among others, to secure resources for climate change adaptation and mitigation plans, policies, programmes, and actions for sub-national and local governments, within the framework of agreed procedures. We will collaborate with sub-national and local financial institutions, as appropriate, to develop climate finance infrastructure solutions and to create appropriate mechanisms to identify catalytic financial instruments, consistent with any national framework in place to ensure fiscal and debt sustainability at all levels of government (NUA §143).

*Concepts:*

*Municipal borrowing:* The capital market is the largest source of private capital in both equity and debt. It exists in various forms, including savings accounts, balances in commercial banks and savings societies, savings in national social security and pension funds, insurance life funds and compulsory savings schemes. Borrowing from the capital market is a way to generate additional revenue for municipalities. But to be able to borrow, cities need to first demonstrate they are creditworthy. Creditworthiness is a determining factor that investors and banks use to assess risks involved in lending to municipal governments. Borrowing from the capital market by issuing muncipal bonds

*Institutional investors:* Institutional investors such as pension funds and insurance companies in some countries finance infrastructure projects. Privately managed pension funds also do finance infrastructure projects. However, in many countries there do not exist necessary regulatory and supervisory mechanisms. In many cases, the existing regulatory frameworks are overly restrictive.

*Municipal development funds:* Municipal development funds are state institutions that lend to local authorities for financing urban infrastructure and services. They are financial intermediaries that assist local authorities in building self-sustainable municipal credit systems that can mobilize funds from both domestic and international capital

markets. Loan mechanisms that municipal development funds use are quite like the procedures employed by the World Bank and regional development banks in international lending. A big advantage of municipal development funds is that they can lend to many local authorities as well as provide small loans. It is important to recognize the fact that municipal development funds do not provide direct loans to finance poverty alleviation programmes. But they do contribute to poverty alleviation efforts through improved urban infrastructure and services and public spaces.

*Corporate bonds:* There is evidence that corporate bonds issuers are interested in operating in infrastructure sectors. In many African countries, corporate bonds are more likely to be used for infrastructure financing than local bank loans, government bonds or equity issues.

*Pooled Financing:* The aim of pooled financing is to provide credit enhancement facilities to local authorities based on their credit worthiness. This will enable them to access market borrowings through state-level pooled mechanism. Funds can be used to provide urba infrastructure and services.

**Computation Method**

$$\% \ of \ local \ government \ financial \ resources \ generation \ from \ financial \ intermediaries \ = \ 100\left[\frac{\text{Financial resources generated by local authority from financial intermediaries}}{\text{Total local govenment finances}}\right]$$

Data to be provided at the city level

**Data Sources and Frequency of Data Collection**

Municipal authorities, metropolitan authorities, county governments, district governments
At the Global level, all this data can be obtained from local authorities.
The monitoring of the indicator can be annual until 2036.

**References:**

UN-Habitat, 2014, https://unhabitat.org/the-challenge-of-local-government-financing-in-developing-countries/
UN-Habitat, 2017, https://unhabitat.org/books/finance-for-city-leaders-handbook-2nd-edition/
The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 69. Number of cities participating in city-to-city partnerships programmes

**Definition:**

This indicator counts the number of cities that are participating in at least one city-to-city programme such as the United Cities and Local Government (UCLG) (https://www.uclg.org/en/issues/city-city-cooperation), Eurocities[156] and SisterCities International (https://sistercities.org/). Sister cities are long-term partnerships between two communities in two countries[157].

**Rationale:**

Cities learn through exchanges with other cities through city networks and city-to-city exchanges. Members of SisterCities International work diligently towards promoting harmony and understanding through exchanges and initiatives in the fields of arts and culture, youth and education, business and trade, and community development. City-to-city and sister city relationships offer the flexibility to form connections between communities that are addressing mutually beneficial issues.

Member States committed to expand opportunities for city-to-city cooperation and North-South, South-South and triangular regional and international cooperation in order to contribute to sustainable urban development, developing capacities and fostering exchanges of urban solutions and mutual learning at all levels and by all relevant actors (NUA §146).

The Climate-Smart Municipalities Program pairs Minnesota cities with German cities to learn about climate resilience strategies. Through Sister Cities International, the U.S. and Germany share 100 sister city partnerships. Members of Sister Cities International also have access not only to the perspectives of their sister cities, but also to the perspectives of the entire SCI network of over 100,000 citizen diplomats.

A list of major regional and international city networks and platforms: Eurocities, the Euro-Latin American Alliance of Cooperation among Cities (AL-LAs), MedCities, Cities Alliance, the International Association of Educating Cities (IAEC), the World Association of the Major Metropolises (Metropolis), United Cities and Local Governments (UCLG), C40 Cities Climate Leadership Group (C40) and 100 Resilient Cities (100RC), and SisterCities International.

*Concepts:*
*City-to-city partnerships programmes*
The city-to-city programmes, are initiatives where cities and regions across the globe enter partnerships on sustainable development with mutual benefits and rewards for their citizens. Many of these programmes are an opportunity for local governments to learn from each other and set ambitious targets. It successfully demonstrates that cooperative approaches to sustainable urban development and regional innovation are crucial to support on-the-ground implementation of the NUA, using solutions aligned to the SDGs, while also facilitating cities and regions contributing to the Paris Agreement.

**Computation Method**

UN-HABITAT to count cities that are participating in at least one city-to-city partnership utilizing the membership lists of city-to-city programmes including: UCLG, SisterCities International, Eurocities, the Euro-Latin American Alliance of Cooperation among Cities (AL-LAs), MedCities, Cities Alliance, the International Association of Educating Cities (IAEC), the World Association of the Major Metropolises (Metropolis), C40 Cities Climate Leadership Group (C40) and 100 Resilient Cities (100RC), etc.

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[156] Eurocities is the network of 190 cities in 39 countries, representing 130 million people. It facilitates best-practice sharing, exchange of knowledge, experience and good practices between cities . Benefits of City-to-city include sharing solutions of the challenges faced by local governments and better connection to citizens and local stakeholders. https://eurocities.eu/about-us/

[157] SisterCities International, https://sistercities.org/

Data to be provided at city level.

**Data Sources and Frequency of Data Collection:**

UCLG, SisterCities International, Eurocities, the Euro-Latin American Alliance of Cooperation among Cities (AL-LAs), MedCities, Cities Alliance, the International Association of Educating Cities (IAEC), the World Association of the Major Metropolises (Metropolis), C40 Cities Climate Leadership Group (C40) and 100 Resilient Cities (100RC) *etc.*
Annual monitoring of the indicator until 2036.

**References:**

1. SisterCities International, https://sistercities.org/
2. United Cities and Local Government (UCLG) (https://www.uclg.org/en/issues/city-city-cooperation)
3. https://iuc.eu/na/resources/
4. Eurocities, https://eurocities.eu/about-us/
5. Agustí Fernández de Losada and Hannah Abdullah (coord.), "Rethinking the ecosystem of international city networks: Challenges and opportunities", Barcelona Centre for International Affairs, https://www.metropolis.org/sites/default/files/resources/Rethinking%20the%20ecosystem%20%20of%20international%20city%20networks.pdf
6. Rethinking City-to-City Partnerships under the 4th Industrial Revolution, https://www.unido.org/sites/default/files/files/2019-09/Bridge4Cities%20Issue%20Paper_Final.pdf

## 70. Number of public water and sanitation utilities participating in institutional capacity development programmes

**Definition:**

Local water and sanitation providers play an essential role in achieving the global water and sanitation targets. There is a widespread need to strengthen the institutional and human capacity of these essential public institutions. This indicator seeks to measure the number of public water and sanitation utilities engaged in capacity development programmes such as international training programmes, water operator partnerships, twinning partnerships, sustainable utility partnerships etc.

**Rationale:**

The New Urban Agenda (NUA) calls to "equip public water and sanitation utilities with the capacity to implement sustainable water management systems, including sustainable maintenance of urban infrastructure services, through capacity development, with the goal of progressively eliminating inequalities and promoting both universal and equitable access to safe and affordable drinking water for all and adequate and equitable sanitation and hygiene for all" (NUA §120).

Many public service providers struggle to confront the widening scope of social, environmental and economic challenges before them. Through tangible[158] and intangible[159] capacity development efforts, utilities are equipped to improve performance levels and adopt new skills and processes to address local water challenges and advance access to sustainably managed water and sanitation for all.

Having access to good quality water and sanitation services is essential for good quality of life. Public water operators supply water and sanitation services to most of the world's population. Some providers do not have the capacity to supply high quality water and sanitation services. Water quality is declining, and water scarcity now affects 40% of the global population. The freshwater ecosystems that sustain water services are under threat; many utilities rely on diminishing sources of water, while water is wasted in pipes and through lack of recycling and treatment. Consumption patterns are aggravating disparities and the potential for conflict around water.

But water operators can help one another. The Global Water Operators' Partnerships Alliance (GWOPA) helps water operators help one another to provide quality services to all. GWOPA is an international network created in 2009 to support water operators through Water Operator's Partnerships (WOPs).

*Concept:*

*Public water and sanitation utilities*
Public water and sanitation utilities, both local government and state-owned, typically operate water supply systems, collectively accounting for the bulk of the global market. In several countries, the private sector also operates time-limited concessions and other public-private partnerships to deliver water services to citizens. Typically, the water and sanitation sector comprises (a) water supply—the abstraction, treatment, and distribution process for treating raw water and delivering the product (drinking water) to the customer, and (b) sanitation—the collection and treatment of wastewater so it can be safely discharged to the environment or reused.

*Water Operators Partnerships (WOPs):*

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[158] Capacities that may also be described as hard, technical, functional, and visible. *Learning Approaches in WOPs*. UNESCO IHE Delft/ UN-HABITAT GWOPA (2015) <https://gwopa.org/en/resources-library/learning-approaches-in-wops-framing-the-issues>

[159] Capacities that may also be described as soft, social, relational and invisible. *Learning Approaches in WOPs.* UNESCO IHE Delft/ UN-HABITAT GWOPA (2015) < https://gwopa.org/en/resources-library/learning-approaches-in-wops-framing-the-issues>

Water Operators' Partnerships (WOPs) are peer-support partnerships between water and sanitation service providers. WOPs work by harnessing the skills, knowledge and goodwill within a strong utility to build the capacity and improve the performance of another utility that needs assistance or guidance[160]. WOPs are carried out on a not-for-profit basis.

**Computation Method**
The indicator counts utilities that have participated in structured capacity building training programmes/partnerships, with the intent to implement sustainable water management systems.
Data to be provided at national level

**Data Sources and Frequency of Data Collection:**
UN-HABITAT will go through project record counts by UN-HABITAT programs, other UN agencies or partner institutions involved in capacity programmes/partnerships. The monitoring of the indicator will be every two years until the year 2036.

**References**

1. Global Water Operators' Partnerships Alliance (https://gwopa.org/en/)
2. https://iwa-network.org/press/the-urban-water-utility-of-the-future-the-roadmap-to-a-low-carbon-urban-water-utility/.
3. https://waterfm.com/water-utility-digital-world/
4. Learning Approaches in WOPs. UNESCO IHE Delft/ UN-HABITAT GWOPA (2015) https://gwopa.org/en/resources-library/learning-approaches-in-wops-framing-the-issues
5. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

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[160] https://gwopa.org/wops/about-wops/

**71 Percentage of cities and subnational governments with staff trained in formulation, and implementation of urban development policies**

**Definition:**

Cities are the engines that power modern economies. Cities develop well, develop faster and generate more output if they are well planned. Well-designed urban plans are a prerequisite for resource efficiency and sustainable cities. Well-qualified city/subnational staff are required to prepare integrated long-term cross-sectoral plans and to implement and implement such plans and policies.[161]

This indicator will measure the percentage of cities and regional governments with staff capability to formulate, implement, manage, monitor and evaluate of urban development policies.

**Rationale:**

Member States acknowledged the importance of local governments in the follow up to and review of the New Urban Agenda. In this vein, Member States encouraged local, national and subnational governments to develop implementable follow-up and review mechanisms at the local level. Member States would consider strengthening, their capacity to contribute in this respect as necessary (NUA §163).

Urban planning is key to cities achieving sustainable development. Such transformation does not occur spontaneously. First there has to be a vision, then an urban and territorial plan has to be prepared. Pressing issues, priorities and available resources are identified in the Plan[162]. Unplanned urbanization (unplanned spatial patterns) is inefficient and leads to inefficient use of resources, such unnecessarily long commutes, poor connectivity and traffic congestion.

Some of obstacles to urban planning are weak capacity to develop and implement plans, lack of good legal frameworks and lack of vision. It is best that cities adopt demand driven and modular frameworks that are implementable and can have impacts in the short to medium term. The capital and recurrent costs over the whole duration of the plan should be well estimated. The impact of the plan should be evaluated regularly, and necessary adjustments made. All these steps highlight the need for having adequately trained staff in planning and implementing city plans.

*Concepts:*
*Formulation, and implementation of urban development policies*
Urban development policies (UDP) or sometimes called a National Urban Policy (NUP) is a deliberate government-led process of coordinating and rallying various actors for a common goal/vision for the desired urbanization in a set period (e.g. 20-30 years horizon or more). In some context, NUP can be referred to as urbanization policy[163]. It is a multi-sectorial, multi-level, multi-stakeholder and human development centered process aimed at the transformation of urban areas and other human settlements. Actors include various ministerial departments, local authorities, private sector, civil society organizations, research and academia. Routinely, staff must be trained in the formulation and implementation of these NUP or urban development policies.

**Computation Method:**

*Percentage of cities and subnational governments with staff trained in formulation and implementation of urban development policies* $= 100 \times \dfrac{No.of\ cities\ with\ staff\ trained\ in\ formulation\ and\ implementation\ of\ urban\ development\ policies}{Total\ number\ of\ cities\ and\ subnational\ governments\ in\ a\ country}$

Provide data at national level.

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[161] UNHABITAT, "Urban Planning for City Leaders", https://unhabitat.org/urban-planning-for-city-leaders-2/
[162] *Ibid* page 13.
[163] UNHABITAT, "National Urban Policy: Framework for A Rapid Diagnostic"
http://www.urbangateway.org/icnup/sites/default/files/NUP_Framework_for_a_Rapid_Diagnostic.pdf

**Data Sources and Frequency of Data Collection:**
The Ministry selected by the government as the focal point for this indicator. The Ministry will collect information on the staff of cities capacity to formulate, implement, manage, monitor and evaluate of urban development policies. The monitoring of the indicator can be every two years until 2036.

**References**

UN-HABITAT, "Urban Planning for City Leaders", https://unhabitat.org/urban-planning-for-city-leaders-2/

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

UNHABITAT, "National Urban Policy: Framework for A Rapid Diagnostic"
http://www.urbangateway.org/icnup/sites/default/files/NUP_Framework_for_a_Rapid_Diagnostic.pdf

**72 Size of budget of local government associations**

**Definition:**

Local government associations represent local government, coordinate the positions of local governments in dealing with the central government to draw attention and resources to the associations' priority areas.

The core function of an association is to speak for and advocate for local governments' interests by means of participation in the national political dialogue, and the definition of public policies, as well as assisting members to carry out their legal competences and being a forum where municipalities can exchange best practices and learn from each other[164].

The indicator is "Size of the budget of local government associations" in USD

**Rationale:**

Member States committed to strengthening the capacity of national, subnational and local governments, including local government associations, in shaping organizational and institutional governance processes, enabling them to participate effectively in decision-making about urban and territorial development (NUA §148). In addition, Member States committed to support local government associations as promoters and providers of capacity development, recognizing and strengthening both their involvement in national consultations on urban policies and development priorities and their cooperation with subnational and local governments and their existing networks to deliver on capacity-development programmes. This will be achieved by means of peer-to-peer learning, subject-matter-related partnerships and collaborative actions, such as inter-municipal cooperation, on a global, regional, national, subnational and local scale, including the establishment of practitioners' networks and science policy interface practices (NUA §149).

Local government associations (LGAs) work towards strengthening local government's capabilities and providing support for specific issues that are of high priority most local government. It is important to have a substantial budget in order to advocate with adequate substantive support for the associations' positions.

| Sources of LGA Revenues[165] | |
| --- | --- |
| Internal sources | Membership fees |
| | Paid services |
| External sources | Donor support |
| | Central government support |
| | Other sources |

Donor and central government funds may be withdrawn or the central government may try to interfere in the policy making process of the LGA. The LGA should have a plan to survive when external sources of funding dry up.

*Concepts*
*Local government associations (LGA)*


The Local Government Association is the national membership body for local authorities. Its core membership is made up of local councils and local governments. The LGA is politically led and cross-party. As the national voice of local government, it works on behalf of councils to give local governments a strong, credible voice with national

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[164] International Cooperation Agency of the Association of Netherlands Municipalities, "Financial Management in a Local Government Association", https://www.local2030.org/library/324/Financial-Management-in-a-Local-Government-Association.pdf
[165] *Ibid*

government, to promote the positive reputation of the sector and to secure funding and powers on behalf of councils and the communities they serve.

*Financial sustainability:*
A local government association is financially sustainable when it receives enough revenues to carry out its fundamental function and deliver some core services up to a minimum acceptable level[166].

*Financial Independence:*
A local government association is financially independent when it is able to generate enough structural (internal) revenue in order to perform its key function – representing the interest of its members – and provide services up to a minimum acceptable level (in terms of quantity, quality and timing) that the members need, demand, and are willing to pay for[167].

**Computation Method**

Sum the budget of all local government associations, if there more than one. Present the budget in USD.

$$= \sum_i^n budget\ for\ ith\ local\ government\ association$$

n is total number of local government association in the country.
i is the counter for the local government association running from i=1 to n.

Data to be provided at national level.

**Data Sources and Frequency of Data Collection**

The Ministry selected by the government as the focal point for this indicator.
The monitoring of the indicator can be every two years until 2036.

**References:**
- Local Government Association, https://www.local.gov.uk/about
- https://www.uclg.org/en/taxonomy/term/1691
- The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
- International Cooperation Agency of the Association of Netherlands Municipalities, "Financial Management in a Local Government Association", https://www.local2030.org/library/324/Financial-Management-in-a-Local-Government-Association.pdf

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[166] *Ibid*
[167] Ibid

## 73. Number of people who have been trained in the use of land-based revenue and financing tools

**Definition:**

Land-based financing can make an important contribution to achieving sustainable and equitable cities and properly serviced communities. UN-Habitat and the Global Land Tool Network (GLTN) have developed the following tools under this theme:
1. A publication on Innovative Land and Property Taxation
2. A Trainer's Guide and accompanying Reader on seven Land-based Financing instruments
3. A Policy Guide on Valuation of Unregistered Land and Properties.

The indicator is for monitoring the number of people who are trained in the use of land-based revenue and financing tools by UN-Habitat or other institutions. The Reader defines, discusses and reviews the literature for each module, referencing 21 case studies from around the world.

**Rationale:**

Land is a revenue source of great potential. It has been successfully leveraged for hundreds of years in many countries and is now receiving increasing attention in many others. Tapping land as a revenue source tends to have fewer negative impacts than many other revenue tools. This because of the unique way it allows local authorities to combine financial, economic, spatial and social benefits. Additionally, it can help to build reciprocal relationships of accountability between citizens and government.

Key to local governments' financial autonomy is their ability to generate revenue. One of the innovative ways of raising local government revenue is the use of land-based revenue and financing tools developed by UN-HABITAT and its partners. A prerequisite of use of such tools is the availability of trained central and local government staff trained in their use. In this vein, the New Urban Agenda calls for promotion of capacity-development programmes for policymakers and local public officials on the use of legal land-based revenue and financing tools, focusing on the legal and economic foundations of value capture and distribution of land value increments (NUA §152).

*Concepts:*
*Land-based revenue and financing*

Land-based financing/revenue (LBF) is a collective name given to a range of instruments by which local governments expand their revenue base and generate funds that will help them realize their service delivery, infrastructure development, and maintenance goals and hence contribute to sustainable urbanization. Land-based financing or revenue (LBF) is an option for governments to generate revenues from private land by sharing the gains accrued in land value through public or private actions with the landowners. Use of land-based financing tools is premised on the fact that land is a key factor of production and an important source of financing for urban development, including infrastructure, social housing and basic services. It is also immovable and visible, and hence taxes and fees tied to land cannot be avoided by relocating to another place.

*Computation Method*
National teams will compile and share the counts of people trained in the use of land-based revenue and financing tools every two years.
Data to be provided at city and national level, this should include staff working at both national and local levels.

**Data Sources and Frequency of Data Collection**
Local and city authorities, GLTN, UN-HABITAT and partner institutions.
The monitoring of the indicator will be every two years until 2036.

**References:**
1. Global Land Tool Network, 'Land-based Financing', https://gltn.net/land-based-financing/
2. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

*Existing products that support the land-based finance work of UN-Habitat:*

3. *Leveraging land: Land-based finance for Local Governments*, including a Reader and a Trainer's Guide (in English but currently being translated into French), with an Implementation Guide in the pipeline. The *Reader* is available at https://gltn.net/download/leveraging-land-land-based-finance-for-local-governments-a-reader/. The *Trainer's Guide* is available at https://gltn.net/2016/12/05/leveraging-land-land-based-finance-for-local-governments-a-trainers-guide/

4. *Innovative Land and Property Taxatio*n, including a policy guide. Available at https://gltn.net/2011/10/31/innovative-land-and-property-taxation-eng-2011/

5. *Valuation of Unregistered Lands: A Policy Guide*. Available at https://gltn.net/2018/05/02/valuation-of-unregistered-lands-a-policy-guide/

6. *Property Theory, Metaphors and the Continuum of Land Rights.* Available at https://gltn.net/2016/10/27/property-theory-metaphors-and-the-continuum-of-land-rights/

7. *Fit-for-purpose Land Administration: Guiding principles for country implementation*. Available at https://gltn.net/download/fit-for-purpose-land-administration-guiding-principles-for-country-implementation/

8. *Training Package Toolkit: Tools to support Transparency in Land Administration.* Available at https://gltn.net/2016/03/29/training-package-toolkit-tools-to-support-transparency-in-land-administration/

**74. Percentage of cities/subnational staff trained in financial planning and management**

**Definition:**

The indicator measures local government staff trained up bachelor's degree level or certified public accountant (or equivalent) as a percentage of total local government staff.

Municipal finance consists of the revenue and expenditure of local government in urban areas. Good management of local government finances is a prerequisite for a local government to provide goods and services to its residents well.[168]

**Rationale:**

Member States committed to promoting capacity-development programmes to help subnational and local governments in financial planning and management, with emphasis on institutional coordination at all levels, including environmental sensitivity and anti-corruption measures, embracing transparent and independent oversight, accounting, procurement, reporting, auditing and monitoring processes, among others, and to review subnational and national performance and compliance, with particular attention to age- and gender-responsive budgeting and the improvement and digitalization of accounting processes and records, in order to promote results-based approaches and build medium- to long-term administrative and technical capacity (NUA §151).

One of the goals of the New Urban Agenda is to promote capacity development programmes of subnational and local governments in financial planning and management. A prerequisite of efficient local government financial administration is having qualified staff in the areas of financial planning and management as well as accounting.

*Concepts:*
*Financial planning and management*
Financial Planning is the process of estimating the capital required and determining its utilization. It is the process of framing financial policies in relation to procurement, investment and administration of funds of a city. Financial Planning is a vital part of Financial Management. In fact, planning is the first function of management.

*Strategic financial plan:*
A strategic financial plan provides a multi-year road map and action strategy to for a municipality to set priorities and achieve its goals. It includes a goal and major steps needed to achieve it. It is used to prioritize initiatives, resources, goals, and department operations and projects[169] . It is a document directing efforts and resources toward a clearly defined objective.

**Computation Method**

These two questions below should be posed to a senior staff member of city council or subnational government such as a director of a department.

a) $Percentage\ of\ city\ or\ subnational\ staff\ trained\ in\ financial\ planning\ and\ management = 100 \times$
$$\left[\frac{Number\ of\ city\ or\ local\ government\ staff\ trained\ in\ finance\ planning}{Total\ number\ of\ staff\ in\ a\ city\ or\ local\ govenment}\right]$$

b) Does the city or subnational government have sufficient staff trained in finance planning and management?

| | |
|---|---|
| Yes | |
| No | |

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[168] Marco Kamiya and Le-Yin Zhang (Editors), 2016, "Finance for City Leaders Handbook: Improving Finance to Deliver Better Services", ISBN Number: 978-92-1-132766-3, https://unhabitat.org/finance-for-city-leaders-handbook
[169] PA Municipal Administration Training Center, "Strategic Financial Planning for Municipal Government", https://www.pamatc.org/finance

Data to be provided at city and subnational level. The national focal point will aggregate part "a "to find a national average, the from answers to part "b", compute the number of cities responding as "Yes" as percent of the total.

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator will aggregate responses from cities and subnational governments.
Annual monitoring of the indicator until 2036.

**References:**

1. https://www.ifec.org.hk/web/common/pdf/publication/en/IEC-financial-planning-booklet.pdf
2. https://www.un.org/esa/ffd/wp-content/uploads/2016/09/Financing-Sustainable-Urban-Development-in-LDCs.pdf
3. Marco Kamiya and Le-Yin Zhang (Editors), 2016, "Finance for City Leaders Handbook: Improving Finance to Deliver Better Services", ISBN Number: 978-92-1-132766-3, https://unhabitat.org/finance-for-city-leaders-handbook
4. PA Municipal Administration Training Center, "Strategic Financial Planning for Municipal Government", https://www.pamatc.org/finance

**75. Percentage of cities utilizing e-governance and citizen-centric digital governance tools**

**Definition:**

e-Governance deals with the relationship and networks within government regarding the usage and application of Information and Communication Technologies (ICTs)[170]. It facilitates more efficient, more accountable government and inclusive democracy. In this context, government services can be grouped into: Government-to-Citizen (G2C); Government-to-business (G2B); Government-to-NGO (G2N); Government-to-Government (G2G) and Government-to-Employee (G2E).

"Citizen-centric eGovernment services are designed to deliver increasingly cost-effective, personalized and relevant services to citizens, but also serve to enhance the democratic relationship, and build better democratic dialogue, between citizens and their government, which then enhances the practice of citizenship within society"[171].

**Rationale:**

Member States committed to foster the development, 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 the private sector and people, to enhance effective urban planning and management, efficiency and transparency through e-governance, and use of information and communications technologies and geospatial information management (NUA 160).

Local governments are crucial to delivering sustainable development goals, especially goal 11 and other urban related goals. Local governments operate closer to citizens than central governments; hence they are more able to assist vulnerable groups and ensuring that "no one is left behind". Local government internet-based services improve residents' access to services and improve their participation in local decision-making[172].

E-governance can improve the speed of delivery and transparency of government services, it is beneficial to city governments, city residents, businesses, city employees and non-government organizations. Fast service delivery allows residents and businesses to have more time for productive work. E-governance tools can ensure that government services are delivered transparently. It much easier to hold governments accountable since the speed of delivery of services, including wait times, can be analyzed and action taken to speed up delivery.

The challenges of e-governance include cyber-crimes such as: denial of service; spoofing, tampering, repudiation, disclosure, etc. City governments have to invest in ICT infrastructure and capacity building of their ICT staff.

*Concepts:*

E-governance (Electronic governance) utilizes information and communication technology (ICT) to deliver government services efficiently and effectively online to citizens, businesses, and other organizations, thus improving government services. One example is e-participatory budgeting online forums in Belo Horizonte (Brazil) in 2008 and 2011: citizens discussed public projects proposed by the city council and voted for the ones that they preferred[173].

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[170] William Sheridan and Thomas B. Riley "Comparing e-Government Vs. e-Governance", 2010, https://www.geospatialworld.net/article/comparing-e-government-vs-e-governance/

[171] European Commission, "A Handbook for Citizen-centric eGovernment", https://joinup.ec.europa.eu/sites/default/files/document/2014-12/media1781.pdf

[172] Department of Economic and Social Affairs, "United Nations E-Government Survey 2018", chapter 7 "Improve Cities Resilience and Sustainability through e-Government Assessment", https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf?source=post_page--------------------------

[173] Samuel Barros and R. Sampaio, "Do Citizens Trust Electronic Participatory Budgeting? Public Expression in Online Forums as an Evaluation Method in Belo Horizonte", https://onlinelibrary.wiley.com/doi/epdf/10.1002/poi3.125

**Computation Method**

    a)   Does your city have self-service portal(s) (**official e-government portal**) for residents to make payments to the city/local government?[174] Please list all.

<br><br><br>

| If the city has online self-service portals, does it over the following services: | If yes, type 1, if No type 0 |
|---|---|
| Portal authentication | |
| Personal Data updating | |
| e-Procurement service | |
| Address change notification | |
| e-Payment | |
| e-Participatory budgeting | |
| Total score | |

The extent of e-Governance varies greatly among cities, it depends on the extent of internet usage.

    i.   Average total score for cities in your country = $\dfrac{\sum_i^n Total\ score\ for\ city\ i}{n}$

       Where n it the total number of cities in country, and i is the ith city.

    ii.   $Percentage\ of\ cities\ providing\ a\ service = 100\ \times\ \left[\dfrac{Number\ of\ cities\ providing\ a\ service}{Total\ number\ of\ cities\ in\ country}\right]$

It is national level indicator, Percentage of cities in a country.

**Data Sources and Frequency of Data Collection:**

The Ministry selected by the government as the focal point for this indicator will survey all cities in the country. The monitoring of the indicator can be every two years until 2036.

**References:**

1. Department of Economic and Social Affairs, "United Nations E-Government Survey 2018", chapter 7 "Improve Cities Resilience and Sustainability through e-Government Assessment", https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf?source=post_page--------------------------
2. Samuel Barros and R. Sampaio, "Do Citizens Trust Electronic Participatory Budgeting? Public Expression in Online Forums as an Evaluation Method in Belo Horizonte", https://onlinelibrary.wiley.com/doi/epdf/10.1002/poi3.125
3. http://egovernancedigest.com/2017/04/definition-of-e-governance/
4. William Sheridan and Thomas B. Riley "Comparing e-Government Vs. e-Governance", 2010, https://www.geospatialworld.net/article/comparing-e-government-vs-e-governance/
5. The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf
6. European Commission, "A Handbook for Citizen-centric eGovernment", https://joinup.ec.europa.eu/sites/default/files/document/2014-12/media1781.pdf

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[174] Examples portals: https://epayments.nairobi.go.ke/ ; https://portal.311.nyc.gov/make-a-payment/

### 76. Percentage of cities utilizing geospatial information systems

**Definition:**

The proportion of cities that utilize geospatial information systems (GIS) in their operations such as production of the New Urban Agenda Monitoring Framework indicators that require GIS techniques to produce. Geographic Information System (GIS) is a computer data system for capturing, storing, analyzing, and displaying geographically referenced information.

**Rationale:**

The New Urban Agenda encourages the use of digital platforms and tools such as GIS which improve long-term integrated urban and territorial planning and design, land administration and management and access to urban and metropolitan services (NUA §156). GIS staff update city and administrative boundaries such as neighbourhood and ward boundaries and limits and annexation areas resulting from city council actions. GIS staff also maintain and develop the waste water and storm water systems and update to the transportation layer and road centrelines[175].

The UN Conference on Sustainable Development in 2012 recognized the importance of geospatial information for monitoring and reliable geospatial information for sustainable development policymaking, programming and project operations[176]. The Conference also noted the importance of geospatial information when assessing economic and social damage during national disasters as well as its usefulness hazard and risk assessments. Consequently, it requested the international community to enhance international cooperation in support of disaster risk reduction in developing countries and support through their capacity building and training[177]. Geospatial information systems improve urban and territorial planning, land administration and access to urban services.

**Concept**
Geospatial information system
A GIS is an integrated system that combines hardware, software, and spatial data for the purpose of capturing, managing, analyzing, and displaying all forms of geographically referenced information. Geographic information systems are a special class of information systems that keep track not only of events (e.g. environmental disasters), activities (e.g. construction), and things (e.g. facilities, institutions, or natural resources), but also of where they happen or exist. Geographic information systems are used in government for decision making at all levels, from the national to the neighborhood level. Local government authorities are aware of the need to improve the quality of their products, processes, and services by using resources more efficiently. A GIS can be used to inventory resources and infrastructure, plan transportation routing, improve public service delivery, manage land development and administration, and generate revenue by increasing economic activity.

**Computation Method:**

| Does your city have the following: | Yes/No |
|---|---|
| Hardware: a dedicated computer | |
| GIS/ Remote Sensing Software: ArcGIS, QGIS or equivalent | |
| Staff Dedicated to GIS work and knowledgeable about GIS | |
| Data: a GIS database, staff continually updating maps, digitizing streets, waste water and storm water systems, parks etc. | |

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[175] Geodata Services, Inc. , 2016, "GIS Needs Assessment for the City of Missoula", https://www.ci.missoula.mt.us/DocumentCenter/View/44792/IT-New-Request-3-GIS-Manager-Attachment-PDF?bidId=
[176] UN Conference on Sustainable Development, 20 – 22 June 2012, Rio de Janeiro, Brazil, para 274, "The Future we want", https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf
[177] *Ibid*, para 187

Cities that respond yes to all four categories in the table above will be assessed as utilizing GIS.

*Laptop System Requirements for running GIS Software:*

| Categories | Minimum Requirements | Recommended Requirements |
|---|---|---|
| CPU Speed | 2.2 GHz | 4 cores or higher |
| Processor | Intel Pentium 4, Intel Core Duo, or Xeon | i3, i5, or higher |
| Storage Space* | 128GB SSD | 256GB SSD + HDD |
| Memory/RAM | 2GB | 8GB or higher |
| Display | 24-bit color depth | Anything higher |
| Screen Resolution | 1024×768 | Higher at normal size |
| Video/Graphics Adapter | 256 MB RAM | 1 GB RAM |

Source: System Requirements for a Laptop for ArcGIS, ArcGIS Pro & other GIS Software,
https://freedom251.com/best-laptops-for-arcgis-and-gis/
* With more storage space on a network or external drive.

*Percentage of cities utilizing geospatial information systems*
$$= 100 \times \left[ \frac{\text{Number of cities utilizing geospatial information systems}}{\text{Total number of cities in country}} \right]$$

Data to be provided at city level.

## Data Sources and Frequency of Data Collection

The Ministry selected by the government as the focal point for this indicator. The Ministry will conduct a survey that will find out which cities have GIS capabilities.
The monitoring of the indicator can be every two years until 2036.

## References:

UN Conference on Sustainable Development, 20 – 22 June 2012, Rio de Janeiro, Brazil, para 187 & 274, "The Future we want", https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf

https://unhabitat.org/sites/default/files/download-manager-files/GIS%20Handbook%20for%20Municipalities.pdf

Geodata Services, Inc. , 2016, "GIS Needs Assessment for the City of Missoula", https://www.ci.missoula.mt.us/DocumentCenter/View/44792/IT-New-Request-3-GIS-Manager-Attachment-PDF?bidId=

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf

## 77 Number of countries that have participated in capacity building workshops on New Urban Agenda indicators

**Definition:**

Countries will need to collect good and comparable data for monitoring implementation of the New Urban Agenda. One way for countries to acquire the capacity to collect this data on the indicators for monitoring implementation of the New Urban Agenda is by UN-HABITAT, other agencies and partners to conduct capacity building workshops on collection of data on indicators for monitoring the New Urban Agenda. Hence the need for to count the number of countries that have participated in capacity building workshops on New Urban Agenda indicators.

**Rationale:**

Local governments face demand to collect data related to urban planning, governance, delivery of basic services. Additionally, central and local government policymakers are increasingly making evidence-based decisions. Local governments implement sustainable urban plans that include disaster preparedness such as hazard mapping. The New Urban Agenda (NUA) calls for support to all levels of governments in the collection, disaggregation, and analysis of data for monitoring implementation the New Urban Agenda (NUA §158 & §159). Member States agreed that data sources monitoring the implementation of NUA should be from official national, subnational and local government sources.

**Computation Method**

The indicator counts countries that have participated in capacity building training workshops/meetings in collection of New Urban Agenda indicators.
Data to be provided at national level

Countries will be asked to confirm whether they have received any form of training or capacity building support on New Urban Agenda indicators.

**Data Sources and Frequency of Data Collection**

Data will be reported by the national coordinating agencies or ministries on level of capacity building supported to them on New Urban Agenda indicators. The monitoring of the indicator will be every two years until 2036.

**References:**

UN-HABITAT, "World Cities Report 2016", page 43, http://wcr.unhabitat.org/main-report/

The New Urban Agenda, http://habitat3.org/wp-content/uploads/NUA-English.pdf