urbanisation manual - Selected indicators for sustainable development goals by degree of urbanisation and functional urban area

Statistics Explained

9. Selected indicators for sustainable development goals by degree of urbanisation and functional urban area

This article forms part of an online methodological manual, *Applying the Degree of Urbanisation – A methodological manual to define cities, towns and rural areas for international comparisons: 2021 edition* .

The methodology described in this manual has been developed to facilitate the international comparison of cities and urban and rural areas. The UN's sustainable development goals (SDGs) include numerous indicators that should be compiled for individual cities or for urban and rural areas. This chapter shows that many of these indicators can already be calculated by degree of urbanisation using a wide variety of sources. These examples not only show the feasibility of this approach, but also underscore its interest. In particular, they show the benefit of compiling data separately for cities, towns and semi-dense areas, and rural areas. In most countries, these indicators follow a clear urban gradient with an increasing or decreasing performance as one moves from one end of the continuum, through towns and semi-dense areas, to the other end of the continuum.

The degree of urbanisation classification can be used with a wide variety of data sources. It can be integrated into household surveys: for example, the European Union labour force survey (EU-LFS) codes its respondents according to level 1 of the degree of urbanisation classification using the municipality in which the respondent lives. Face-to-face interviews are increasingly geo-coded, which makes the application of the degree of urbanisation even easier. For example, recent Demographic and Health Surveys (USAID/WHO) and the face-to-face World Poll (Gallup) are all geo-coded.

To ensure robust results, these surveys should have a large enough sample in each of the degree of urbanisation classes. As a result, it is easier to produce data by level 1 of the degree of urbanisation classification using surveys than by level 2 or by individual functional urban area. Therefore, producing SDG indicators by degree of urbanisation level 1 is considered the most suitable approach for international comparisons.

The degree of urbanisation classification can also be used with geospatial data, such as remote sensing and point locations. For example, air pollution, changes in the built-up area and the distance to the nearest health facility can all be calculated by degree of urbanisation. The examples below are organised by SDG and include one or more examples for most, but not all, goals. One of the many benefits of geospatial data is that they typically cover the entire territory. As a result, indicators can be reliably provided not only for level 1 of the degree of urbanisation classification, but also for level 2 and even for individual cities and functional urban areas.

SDG 1 – End poverty in all its forms everywhere

Securing tenure rights may help ensure sustainable social and economic opportunities that contribute to eradicating poverty and hunger. Such rights are considered key to responsible land governance, enhancing the productive use of land through efficient and effective appropriation.

Prindex collects data, by degree of urbanisation, about how secure people feel their property rights are. It shows that perceived tenure insecurity for the main property was generally higher among adults living in cities than it was for adults living in rural areas. Across all 76 countries for which data were collected, perceived tenure insecurity was, on average, 5 percentage points higher for adults living in cities compared with adults living in rural areas. Towns and semi-dense areas occupied an intermediate position: as perceived tenure insecurity was 2 percentage points higher than in rural areas, but 3 percentage points lower than in cities.

The data presented by Prindex are collected through interviews with a nationally representative sample of adults aged 18 years or older. The data presented refer to the main property that a respondent has rights to access or use. The indicator assesses perceived tenure security using the question: 'in the next five years, how likely or unlikely is it that you could lose the right to use this property, or part of this property, against your will?' People who consider it 'somewhat likely' or 'very likely' are classified as insecure. This indicator may be used to analyse progress towards SDG 1.4.2 – the proportion of the total adult population with secure tenure rights to land, with legally recognised documentation and who perceive their rights to land as secure; the only difference being that it refers to each individual's main property instead of tenured land. The analysis that is presented may be extended to other land or to property when referring to the publicly available raw dataset and its methodology (Prindex (2020)).

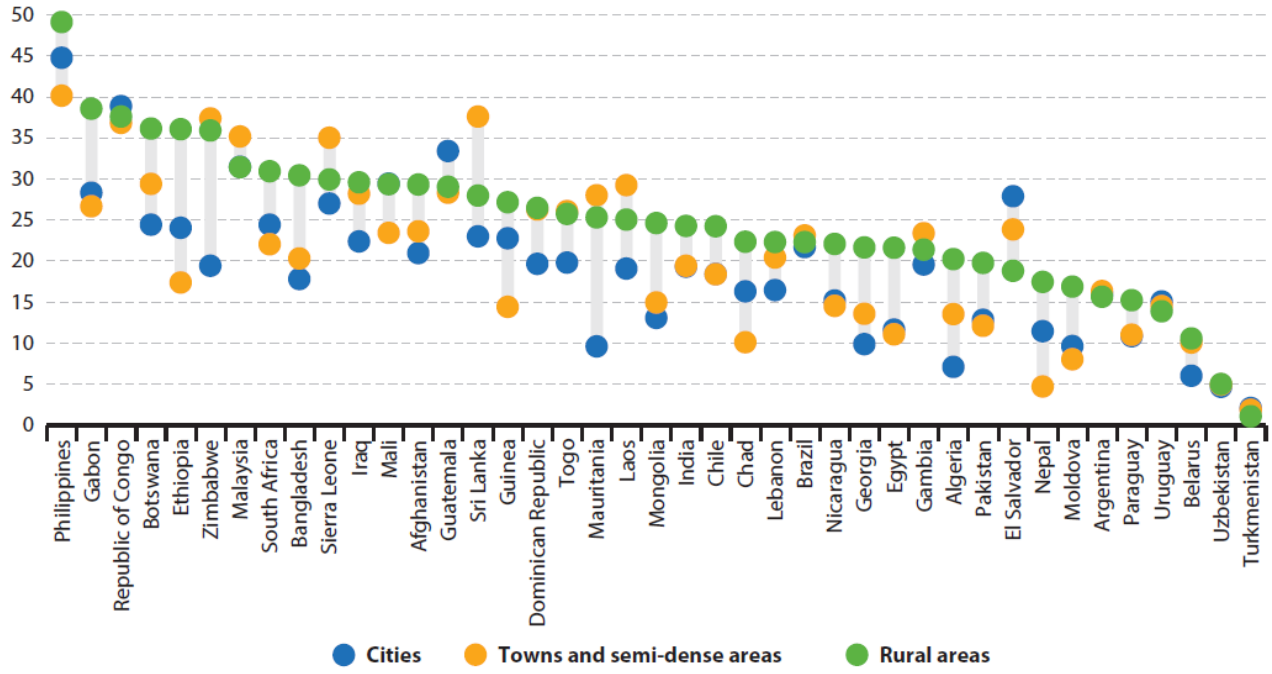


Figure 9.1: Share of adult population aged 18 years or older with tenure insecurity, by degree of urbanisation, selected countries, 2019 (%) Source: Prindex

Figure 9.2 shows the share of the population at risk of poverty for a number of European countries. A household is classified as being at risk of poverty if its income is below 60 % of the national equivalised median income after taxes and transfers. This is an example for SDG indicator 1.2.1: it reveals significant disparities in the situation along the urban-rural continuum. In around 40 % of European countries, the poverty rate was (considerably) higher in rural areas than in cities. This was most notably the case in countries with relatively low ratios of GDP per inhabitant, for example Bulgaria and Romania. In several western and northern European countries with higher levels of GDP per inhabitant, the risk of poverty was higher in cities than it was in towns and semi-dense areas, or rural areas. This was the case in Austria, Belgium, Denmark, the United Kingdom, the Netherlands, Germany, Norway and Switzerland.

Figure 9.2: Share of the population at risk of poverty, by degree of urbanisation, selected European countries, 2017 (%) Source: Eurostat (ilc_li43)

SDG 2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Statistics on moderate or severe food insecurity are based on the food insecurity experience scale (FIES), as developed by the Food and Agriculture Organization of the United Nations (FAO). An FIES survey module forms part of the World Poll (Gallup), from which national estimates of the prevalence of moderate and severe food insecurity may be produced. For each country, this indicator was computed on combined sub-samples for each year in which geo-referenced data were available. Therefore, the statistics presented are not intended to be representative of the population by degree of urbanisation.

Food insecurity is principally, but not exclusively, a rural problem: rural areas are often found to be significantly more food insecure than cities. Across the seven most food insecure countries shown in Figure 9.3, the prevalence of food insecurity at a moderate or severe level for the adult population living in rural areas was, on average, 11 percentage points higher than for the corresponding share recorded for people living in cities. For example, 73 % of the adult population living in rural areas of Botswana experienced this type of food insecurity during the period 2016-2018, compared with 60 % of adults who were living in cities.

Rural areas were not systematically more food insecure than urban areas. For example, in Armenia, Mongolia, Bulgaria and Moldova there was little or no difference in the prevalence of food insecurity between adults living in cities and those living in rural areas. By contrast, food insecurity was significantly higher across the adult population living in the cities of Greece (22 %) than it was for the rural population (16 %).

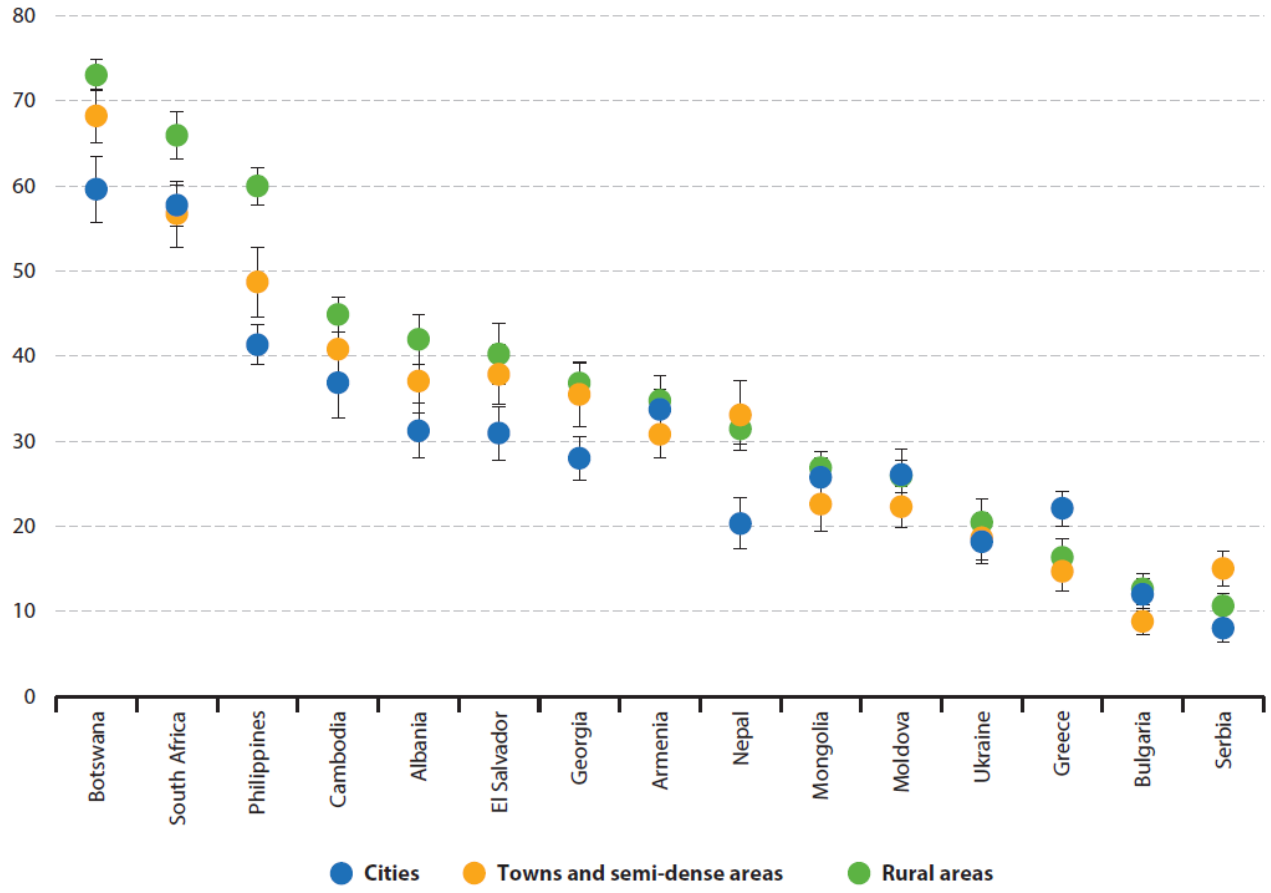


Figure 9.3: Share of the adult population aged 15 years or over facing moderate or severe food insecurity, by degree of urbanisation, 2016-2018 (%) Note: each data point is shown with error bars that indicate the 95 % confidence interval; in those cases where error bars by degree of urbanisation overlap, the differences between point estimates are not statistically significant. Source: FAO

Among countries with a high overall prevalence of food insecurity, the share of adults living in towns and semi-dense areas facing food insecurity was generally situated between the extremes observed for people living in cities and those living in rural areas. Food insecurity for adults living in towns and semi-dense areas was lower than the share recorded for people living in rural areas for seven of the countries shown in Figure 9.3, while there were nine where the prevalence of food insecurity among adults living in towns and semi-dense areas was higher than the share recorded for people living in cities.

Across the three classes of the degree of urbanisation, the prevalence of food insecurity was lowest for adults living in towns and semi-dense areas of six of the countries shown. By contrast, adults living in towns and semi-dense areas of Serbia were considerably more likely to face food insecurity (than those living in cities or in rural areas); this pattern was repeated (although it was far less pronounced) in Nepal.

SDG 3 – Ensure healthy lives and promote well-being for all at all ages

In most countries covered by the Demographic and Health Survey (USAID), infant mortality is notably higher in rural areas than in cities (see Figure 9.4). In six countries (Mali, Nigeria, Lesotho, Guinea, Cambodia and Angola) the infant mortality rate was at least 20 deaths per 1 000 live births higher in rural areas than it was in cities. In a few countries, cities had a higher infant mortality rate, but the difference tended to be smaller. In five countries (Mozambique, Haiti, Kenya, Zambia and Tanzania), the infant mortality was between 5 and 10 deaths per 1 000 live births higher in cities than in rural areas.

Note: this is not an SDG indicator, but it
is closely linked to the under-5 mortality rate and the neo-natal mortality rate (respectively SDG 3.2.1 and SDG 3.2.2).

Figure 9.4: Infant mortality rate, by degree of urbanisation, selected countries, 2012-2016 (per 1 000 live births) Note: the infant mortality rate is defined as the probability of a child dying before their first birthday and is expressed per 1 000 live births; the sample is limited to births that took place between one and five years prior to the interview. Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

Infant mortality may be influenced by the distance to the nearest health facility, which tends to be larger in rural areas than in cities; Figure 9.5 shows this distance for a selection of sub-Saharan countries.

As these data are very comprehensive, data can be calculated for level 2 of the degree of urbanisation classification. This reveals a very clear urban-rural gradient with distances increasing from cities to suburbs, to towns, to villages and so on. In cities, the nearest health facility was, on average, only 1.7 km away, less than a 30-minute walk. People living in suburbs were generally closer to a health facility (on average 2.5 km) than people living in dense and semi-dense towns (3.2 km and 3.8 km respectively). Within rural areas, those living in villages tended to live closest to the nearest health facility (4.7 km) followed by people living in dispersed rural areas (5.6 km), while people living in mostly uninhabited areas had the furthest distance to travel (12 km), equivalent to a three-hour walk.

Note: this is not an SDG indicator but it is closely linked to health worker density and distribution (SDG 3.c.1) and the proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis (SDG 3.b.3).

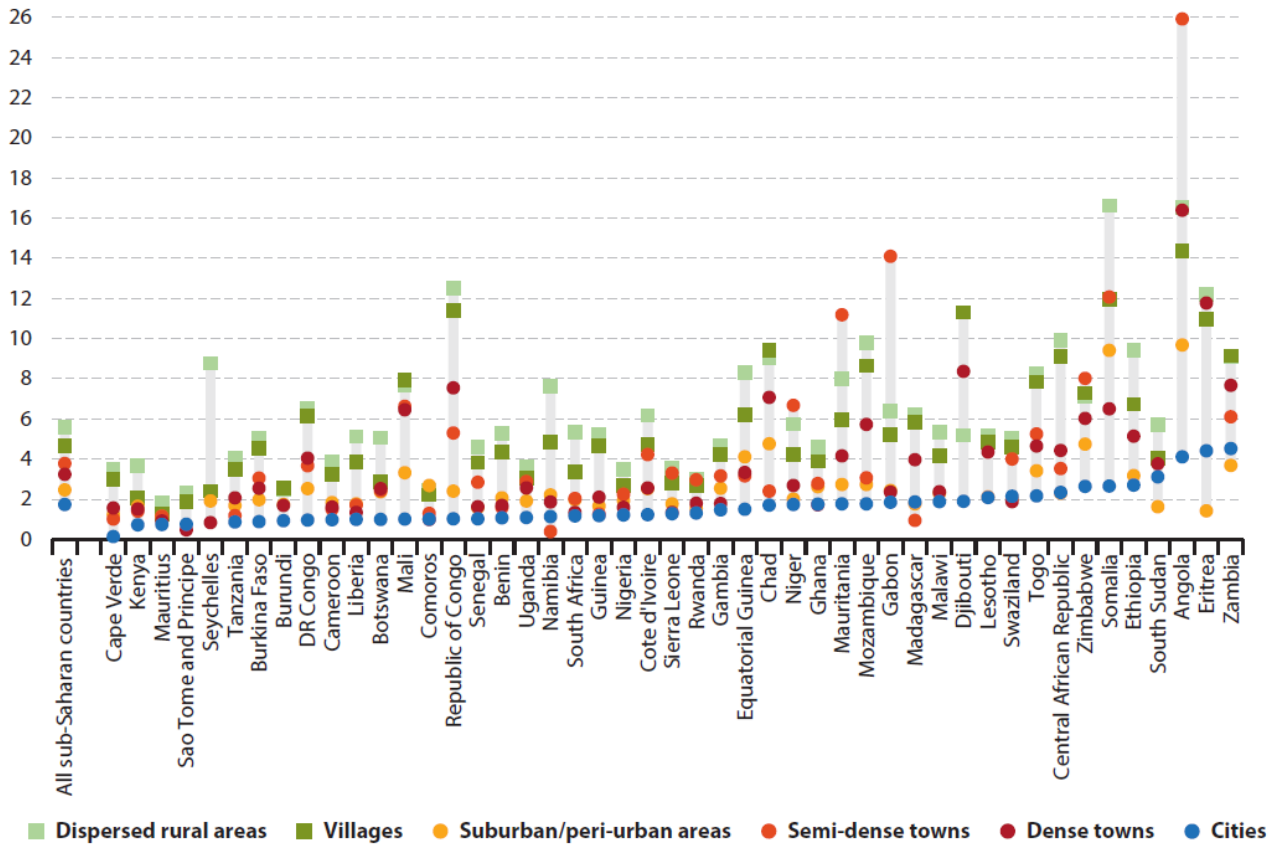


Figure 9.5: Average distance to the nearest health care facility, by degree of urbanisation, sub-Saharan countries, 2012-2016 (km) Source: JRC calculation using GHS-POP and data from Maina et al. (2019)

SDG 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

In virtually all of the countries shown in Figure 9.6, 16-year-olds living in cities are far more likely to have completed eight years of schooling compared with those living in rural areas. Across the selected countries that are shown, 55 % of 16-year-olds living in cities had completed eight years of schooling compared with only 31 % in rural areas. The share of 16-year-olds living in towns and semi-dense areas that had completed eight years of schooling was in between, at 41 %. The only exceptions (among those countries shown) to the pattern described above were: India and Bangladesh where the differences by degree of urbanisation were very small; Kenya where 16-year-olds living in towns and semi-dense areas were most likely to have completed eight years of schooling, followed by those living in rural areas with a slightly lower share recorded for those living in cities.

Note: this is not an SDG indicator, but it is closely linked to the proportion of children and young people (a) in grades 2/3; (b) at the end of primary education; and (c) at the end of lower secondary education achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex (SDG 4.1.1).

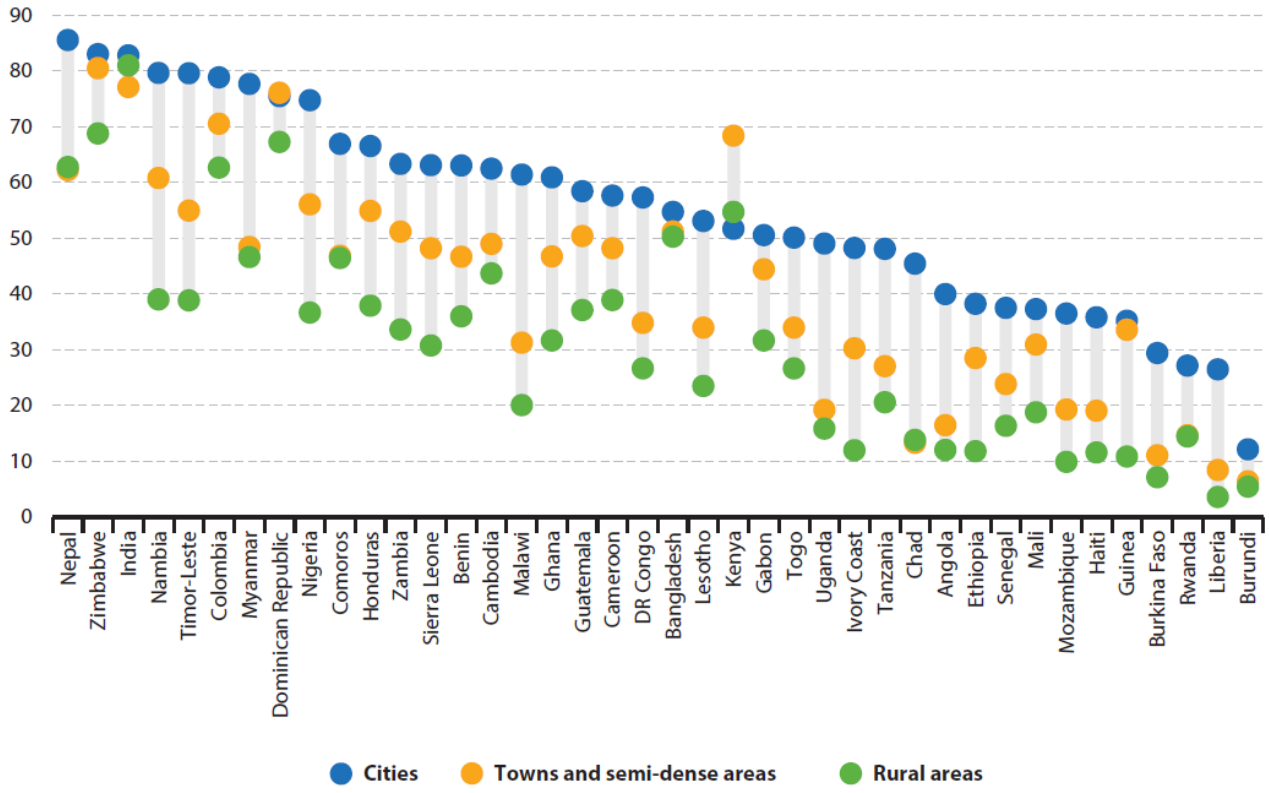


Figure 9.6: Share of 16-year-olds having completed eight years of schooling, by degree of urbanisation, selected countries, 2012-2016 (%) Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

SDG 5 – Achieve gender equality and empower all women and girls

Among the countries shown in Figure 9.7, on average 29 % of married women living in rural areas had experienced domestic violence, compared with 28 % for married women living in cities and 27 % for towns and semi-dense areas. In some countries, the share of married women having experienced domestic violence was considerably higher for those living in rural areas compared with those living in cities, for example in Uganda the difference was 19 percentage points and in Timor-Leste it was 17 points. In Mozambique, however, this pattern was reversed as married women living in cities were more likely to have experienced domestic violence than those living in rural areas (with a gap of 10 percentage points). This indicator captures SDG 5.2.1 with the only difference being that it does not ask if the domestic
violence experienced by married women occurred during the 12 months prior to the Demographic and Health Survey.

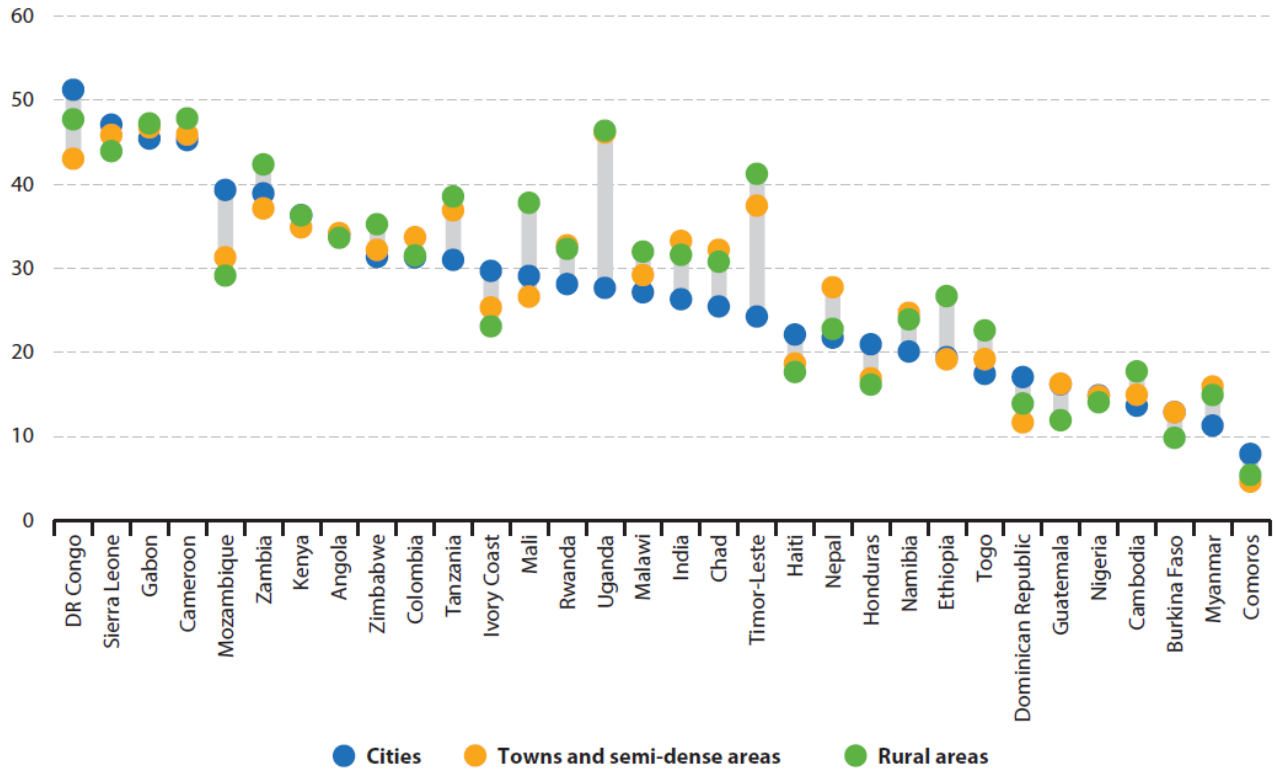


Figure 9.7: Share of married women who have been the victim of domestic violence, by degree of urbanisation, selected countries, 2012-2016 (%) Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

SDG 6 – Ensure availability and sustainable management of water and sanitation for all

Figure 9.8 shows that in most countries included in the Demographic and Health Survey a higher share of households in cities had access to safely managed drinking water than the share recorded for households in towns and semi-dense areas, which in turn had a higher share than for households in rural areas. On average, across all of the countries shown, 56 % of households in cities had access to safely managed drinking water compared with 26 % of households in rural areas, while households in towns and semi-dense areas had an intermediate share (37 %). This indicator corresponds to SDG 6.1.1.

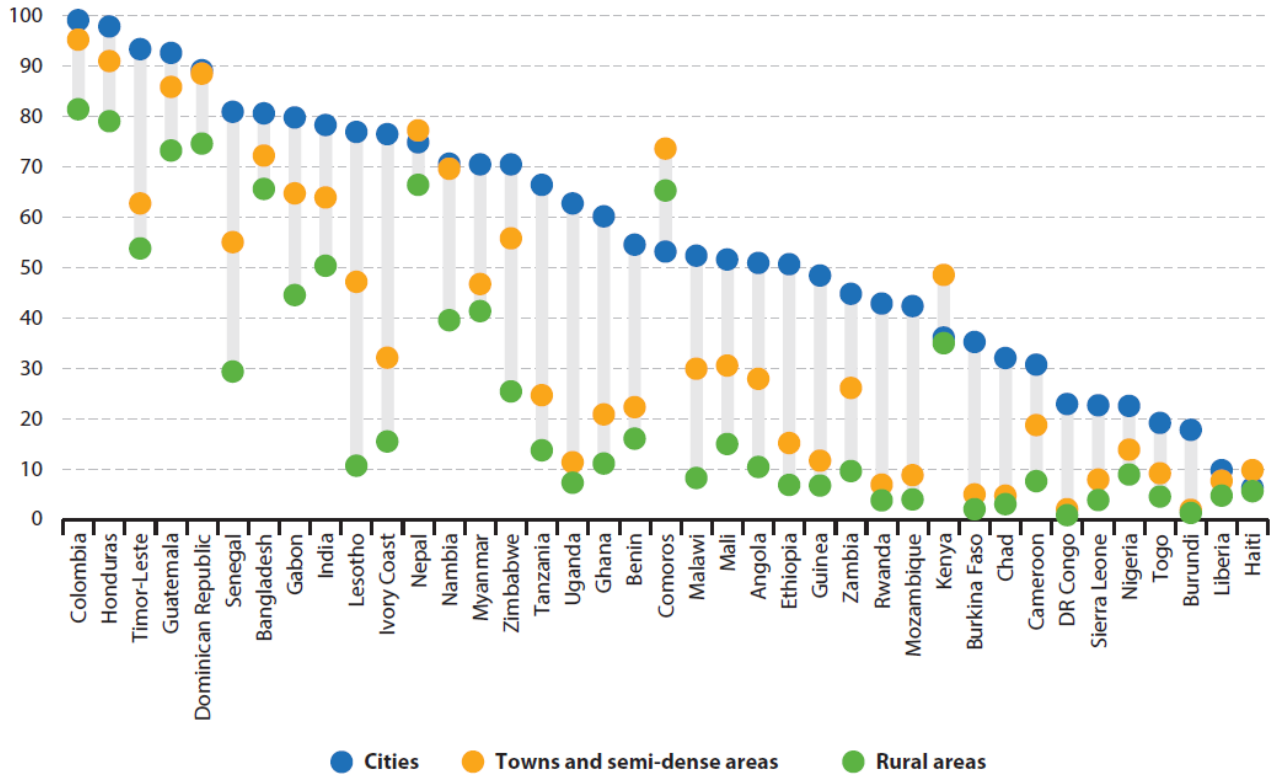


Figure 9.8: Share of households having access to safely managed drinking water, by degree of urbanisation, selected countries, 2010-2016 (%) Note: safely managed drinking water is defined by the DHS-WHO Joint Monitoring Programme as all improved water sources that take zero minutes to collect or are on the premises; improved water sources encompass all piped water and packaged water, as well as protected wells or springs, boreholes, and rainwater. Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

SDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

The share of households in cities with access to electricity was generally much higher than that recorded for households in rural areas. On average, across all of the countries shown in Figure 9.9, 73 % of households in cities had access to electricity compared with 31 % in rural areas. Households in towns and semi-dense areas had an intermediate share (45 % had access to electricity). In 11 out of the 39 countries shown in Figure 9.9, the share of households in rural areas with access to electricity was within the range of 0-10 %. This indicator corresponds to SDG 7.1.1.

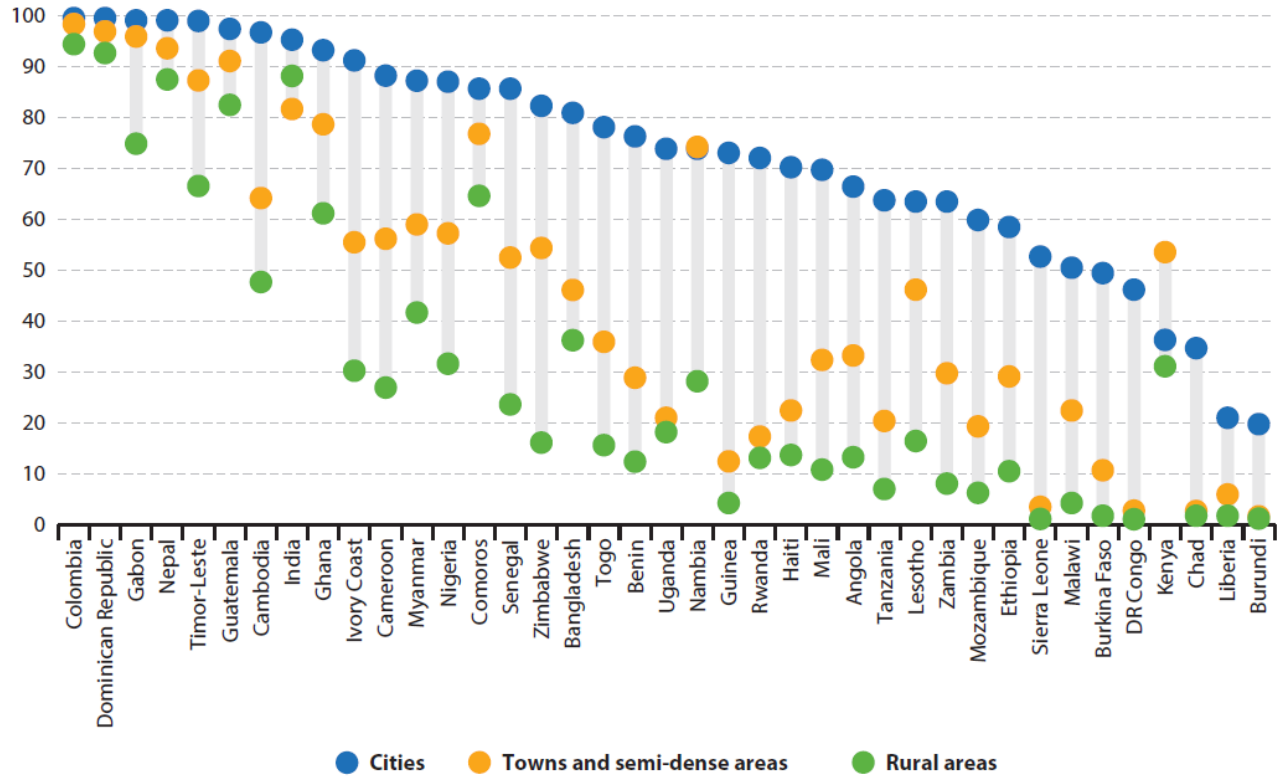


Figure 9.9: Share of households having access to electricity, by degree of urbanisation, selected countries, 2016 (%) Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

SDG 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Financial services can help people to escape poverty: for example, they can make it possible for people to invest in education, to finance health care or to start a business. Having a bank account is a first important step to accessing such services or taking such initiatives. A bank account also makes it easier to manage payments safely.

However, most people in low-income countries do not have a bank account. The share of the adult population (persons aged 15 years or over) living in low-income countries with a bank account was highest in cities (30 % of adult city-dwellers had a bank account; see Figure 9.10). A much lower share (18 %) of the adult population in rural areas of low-income countries had a bank account. By contrast, the share of the population with a bank account in high-income countries was above 80 % for all three classes by degree of urbanisation. In the two groups of middle income countries, adults living in
rural areas were also less likely to have a bank account than people living in towns and semi-dense areas or in cities.

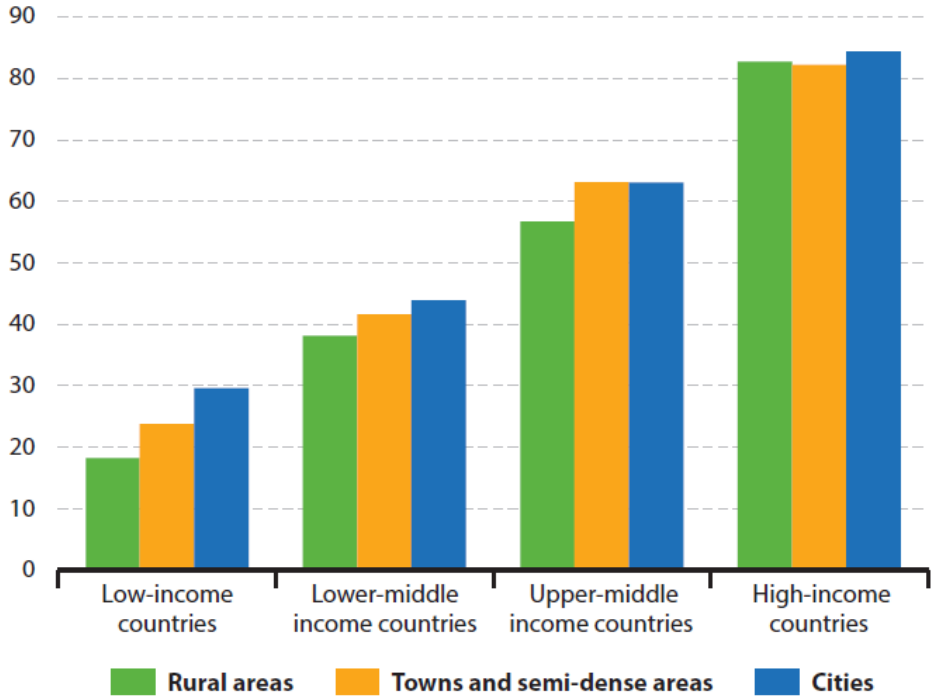


Figure 9.10: Share of the population aged 15 years or over with a bank account, by degree of urbanisation and income group, 2017 (%) Source: Global Findex (2017)

Figure 9.11 shows that in most European countries the share of young people (aged 15-24 years) neither in employment nor in education or training (the NEET rate) was often considerably higher for young people living in rural areas than it was for those living in cities; this was most notably the case in Bulgaria, Greece, Romania and Hungary. However, in six of the countries shown, the NEET rate was higher for young people living in cities than it was for young people living in towns and semi-dense areas or in rural areas; this was most notably the case in Belgium and Austria, and was
also observed in Slovenia, Malta, the United Kingdom and the Netherlands. This indicator corresponds to SDG 8.6.1.

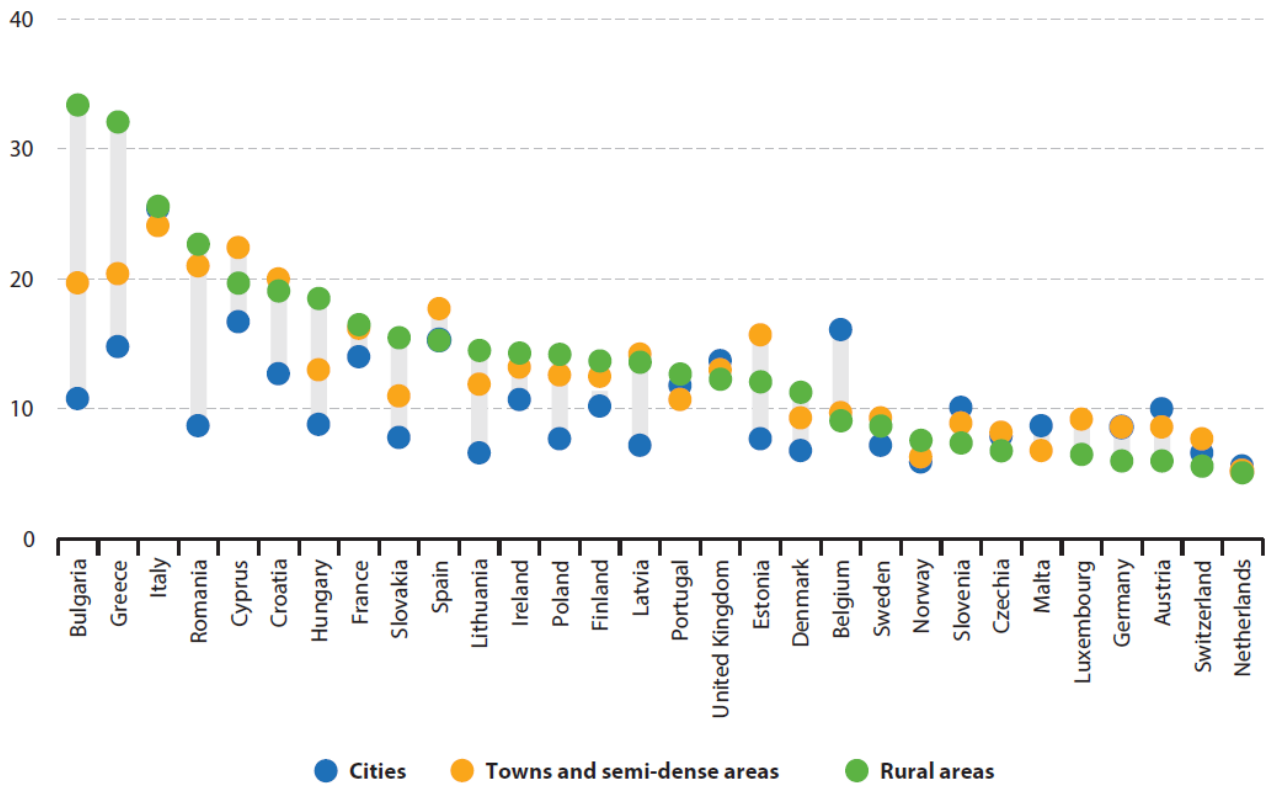


Figure 9.11: Share of young people (aged 15-24 years) neither in employment nor in education or training, by degree of urbanisation, selected European countries, 2018 (%) Source: Eurostat (edat_lfse_29)

SDG 9 – Proportion of population covered by a mobile network, by technology

Mobile phone ownership has increased over the last few decades. Nevertheless, only half the rural population living in low-income countries owned a mobile phone, compared with almost three quarters of city-dwellers living in low-income countries (see Figure 9.12). The gap in mobile phone access between rural areas and cities narrows as average income levels increased. Nevertheless, in high-income countries there remained a 5 percentage point gap in mobile phone ownership in favour of city-dwellers. Note that this indicator differs from the core SDG indicator 9.c.1 in that it measures mobile phone ownership and not the population covered by a mobile network.

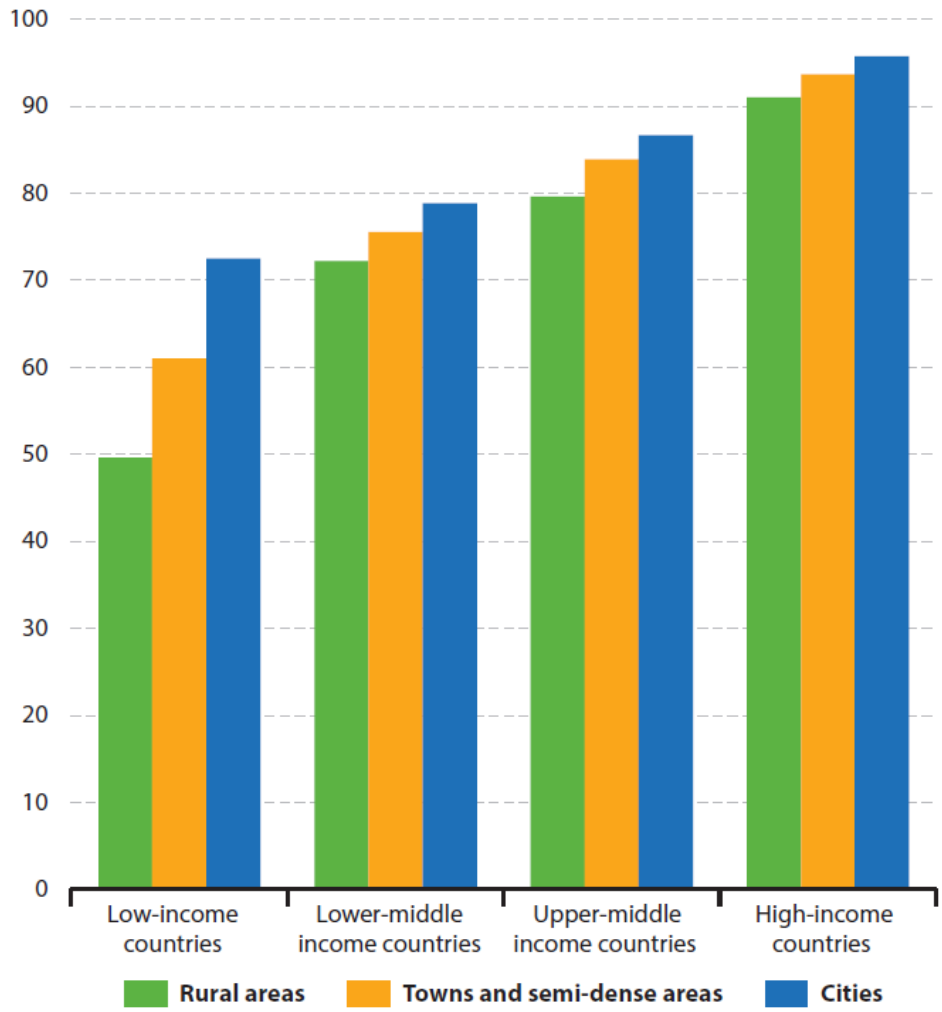


Figure 9.12: Share of the population aged 15 years or over with a mobile phone, by degree of urbanisation and income level, 2016-2018 (%) Source: Gallup World Poll

SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable

Access to public transport in cities is considered critical to encourage low-carbon mobility and ensure that people can get where they need or want to go. This is especially the case for those people who cannot drive, do not want to drive or cannot afford to drive. The core SDG indicator 11.2.1 measures the share of city-dwellers living within 500 m walking distance of a transport stop. A secondary indicator takes into account the frequency of departures and expands the distance under consideration so that transport stops within a 1 km radius by foot are taken into account if they provide access to a faster mode of transport (such as bus rapid transit, metro or rail). Figure 9.13 shows this secondary indicator.

The selected South American cities and most of the selected European cities had a relatively high level of access to public transport with a high frequency of departures. In the selected cities of North America and Oceania, access to public transport was somewhat lower (in particular in Houston and Atlanta), while the frequency of departures was generally lower than in European or South American cities. In the selected cities of Africa and Asia, the situation was more mixed. Some cities, including Cape Town, Taichung or Tel Aviv, offered a relatively high level of access combined with a relatively high frequency of de-
partures. In most other cities selected for Africa and Asia, less than half the population had access to public transport.

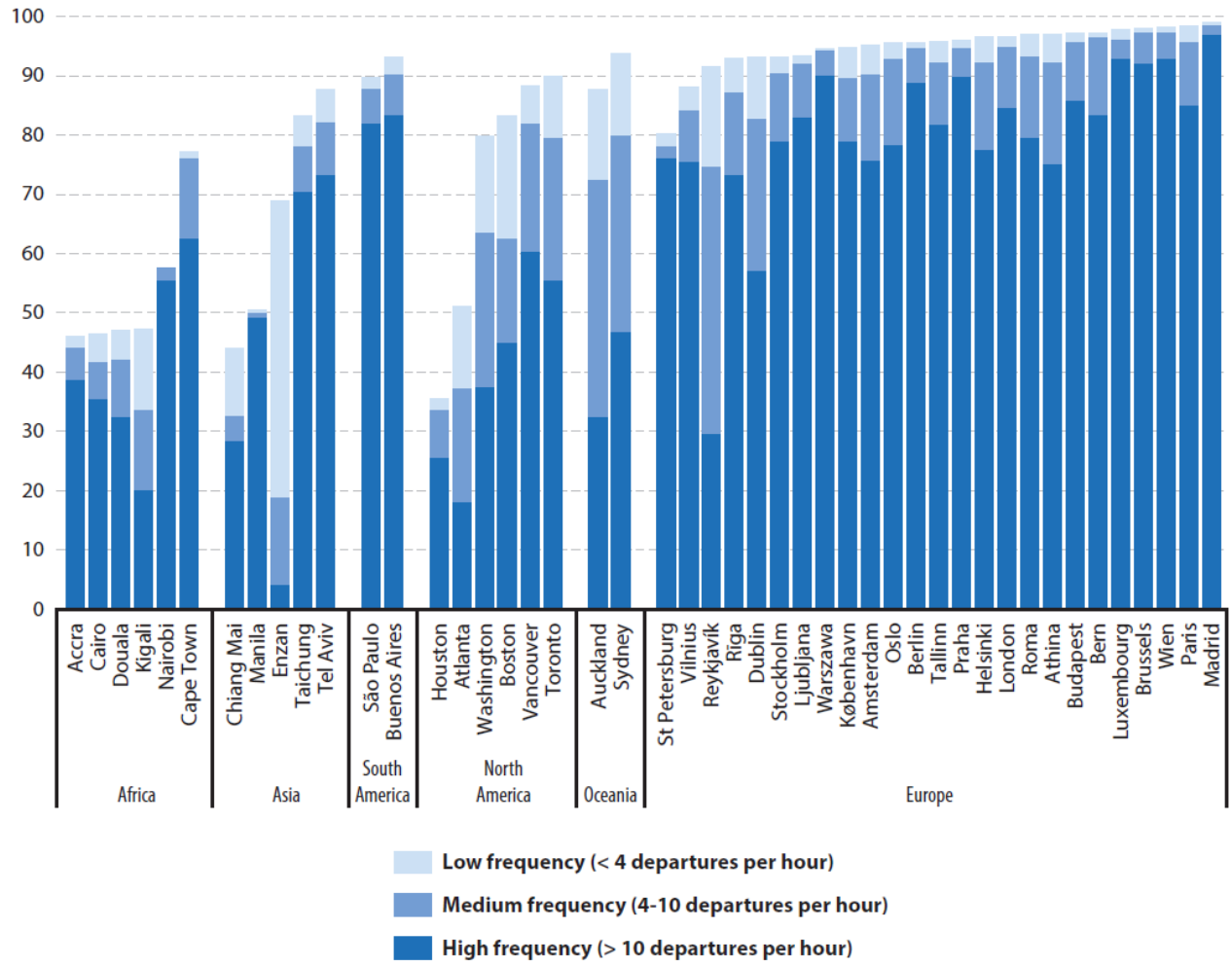
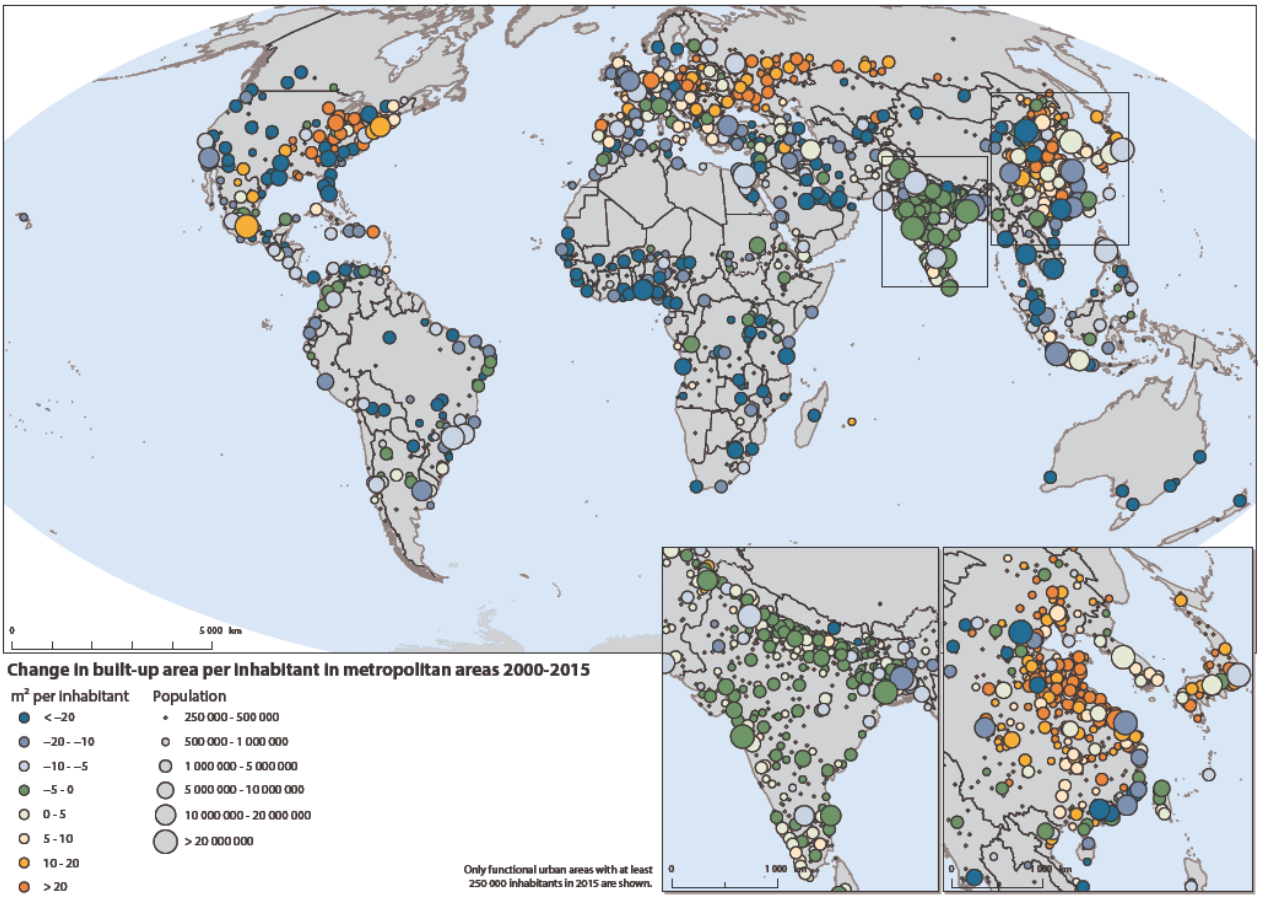


Figure 9.13: Share of city-dwellers with access to public transport by frequency of departure, selected cities, 2015-2019 (%) Source: European Commission and International Transport Forum calculated using General Transit Feed Specification (GTFS) data from various sources and population data from GHS-POP

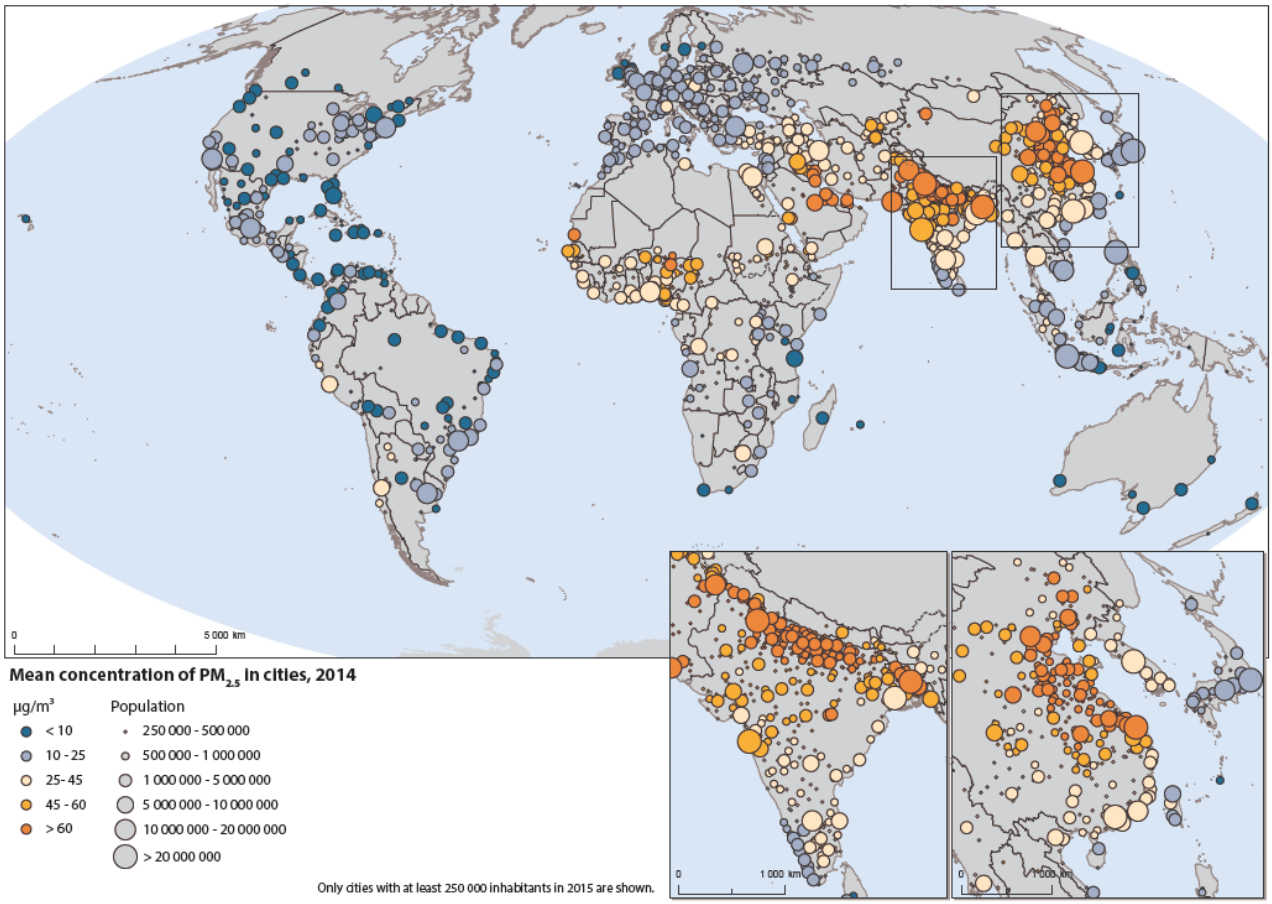
To measure sustainable urbanisation, SDG indicator 11.3.1 is based on the ratio between land use change and population change. The methodology proposed for this indicator is rather complex (a unitless ratio of two logarithmic changes derived from boundaries that change over time). The indicator presented in Map 9.1 is simpler. It compares the amount of built-up land per person for two points in time using the most recent metropolitan boundary. This means that the indicator has a more understandable unit (built-up land in m2per person) and the changes can be compared with the amount of built-up land per person for the first reference period. The amount of built-up land is a secondary indicator for SDG 11.3.1.

Map 9.1 shows that most metropolitan areas in the world reduced their ratio of built-up land per inhabitant between 2000 and 2015 (those metropolitan areas shaded in green). Some metropolitan areas increased their amount of built-up land per inhabitant because their built-up land grew at a faster rate than their total number of inhabitants or because their total number of inhabitants declined, as was the case for many metropolitan areas of China, central Asia and eastern Europe. The data for metropolitan areas reducing their amount of built-up land per inhabitant should be interpreted cautiously and with regard to the initial level of built-up land. Those with very low amounts of built-up land per inhabi-
tant may be characterised by low levels of infrastructure and high numbers of inhabitants living in crowded conditions.



Map 9.1: Change in the ratio of built-up land per inhabitant, selected metropolitan areas, 2000-2015 Source: GHS-BUILT using boundaries from Moreno-Monroy et al. (2020)

The spatial concentration of people and economic activities in cities can lead to high levels of air pollution, which may potentially harm people's health and reduce their life expectancy, as well as having other consequences. Many cities in China and India had high concentrations of fine particulate matter (PM2.5– particles with a diameter of 2.5 micrometres (μm) or less) of at least 60 micrograms per cubic metre (μg/m3), which was six times higher than the World Health Organisation's limit for protecting human health (10 μg/m3).



Map 9.2: Annual mean concentration of fine particulate matter (PM2.5), selected cities, 2014 Source: JRC Urban Centre Database from Florczyk et al. (2019)

SDG 16 – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

People living in rural areas are more likely to feel safe when they are walking alone at night than city-dwellers. This information is covered by SDG indicator 16.1.4.

People living in rural areas felt safer walking alone at night than people living in cities for all four groups of countries based on average income levels (as shown in Figure 9.14). This urban gradient was clearly visible for low-, upper-middle and high-income countries. The gap in the proportion of people feeling safe between those living in rural areas and those living in cities was greater for high-income and upper-middle income countries than it was for low-income countries. In lower-middle income countries, people living in towns and semi-dense areas felt safer walking alone than people living in rural areas or in cities.

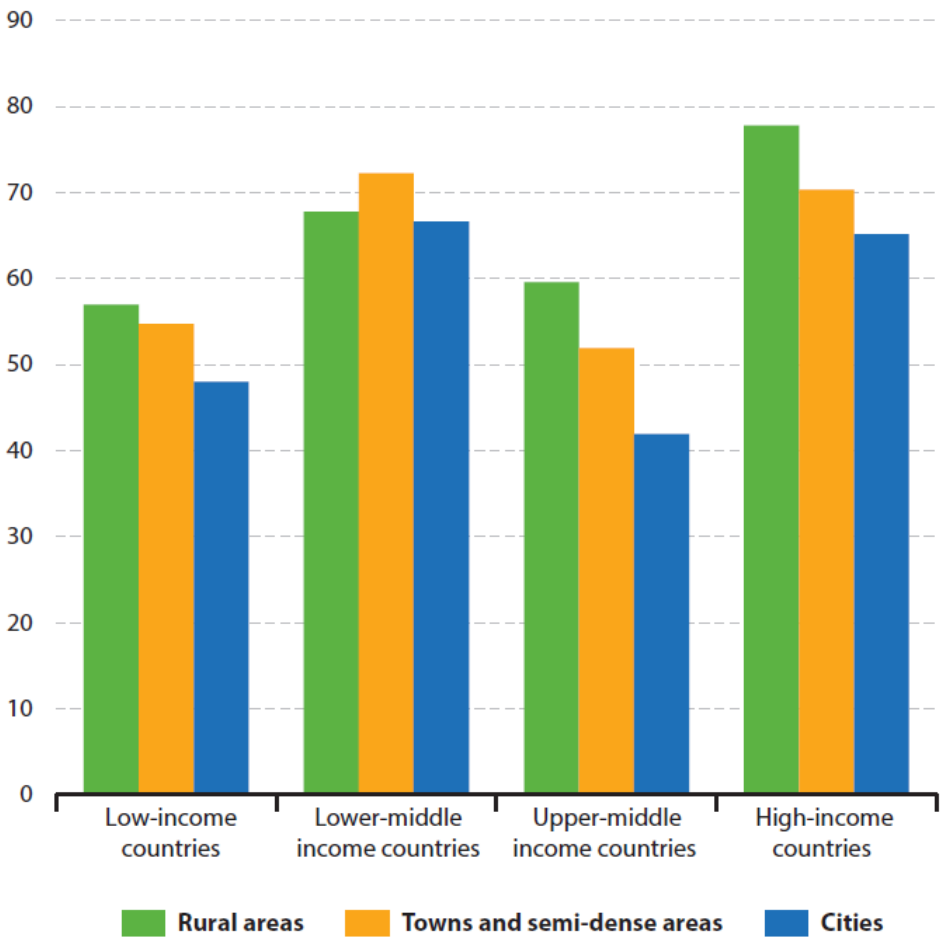


Figure 9.14: Share of the population aged 15 years or over who considered it was safe to walk alone at night, by degree of urbanisation and income group, 2016-2018 (%) Source: Gallup World Poll

SDG 17 – Strengthen the means of implementation and revitalise the global partnership for sustainable development

SDG indicator 17.8.1 concerns use of the internet. Cities typically have a higher share of internet use than rural areas (see Figure 9.15). The gap between cities and rural areas was biggest in low-income countries where, on average, 54 % of people aged 15 years or over in rural areas used the internet in the seven days prior to the Gallup World Poll survey, compared with 75 % in cities. As the average income level in a country goes up, the gap in internet use between rural areas and cities tends to narrow. Nevertheless, a 5 percentage point gap remained for high-income countries.

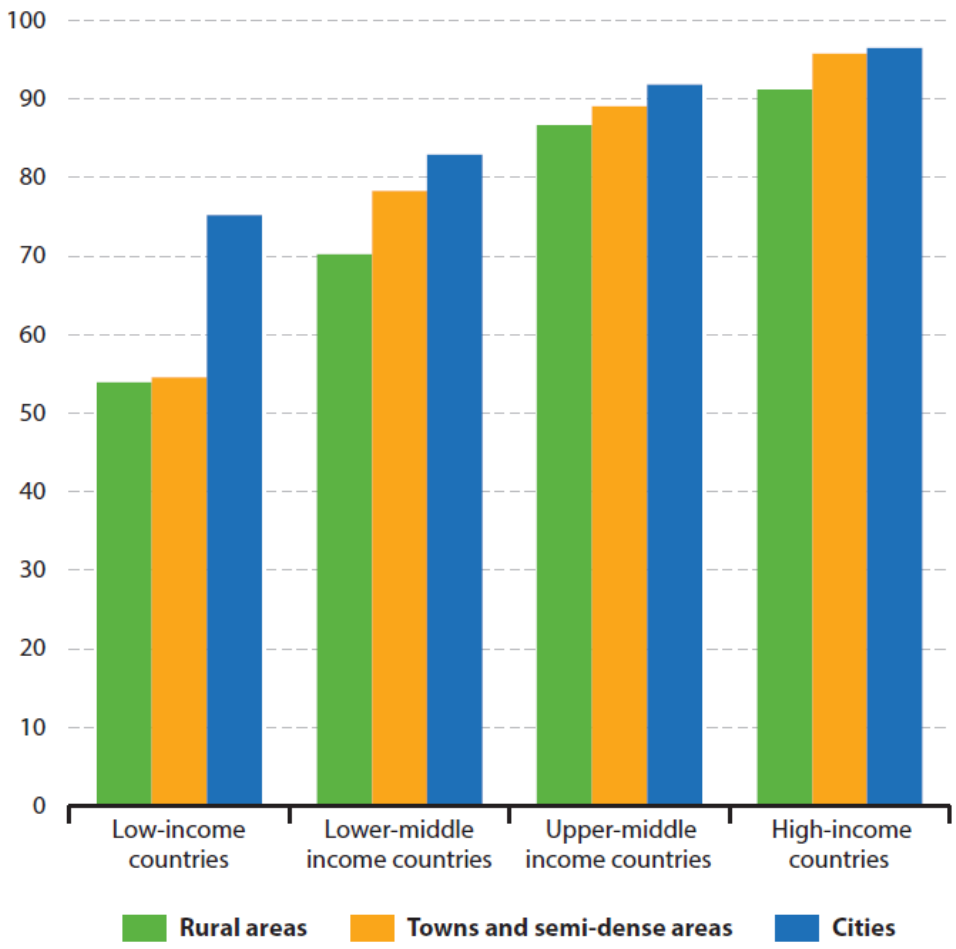


Figure 9.15: Share of the population aged 15 years or over having made use of the internet in the previous seven days, by degree of urbanisation and income group, 2016-2018 (%) Source: Gallup World Poll

External links

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