Status of the SDG implementation in German municipalities

Municipal contribution to the German Voluntary National Review

difu Deutsches Institut für Urbanistik

BertelsmannStiftung

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1 Introduction

1.1 The framework of reviewing SDG progress

"We, the Heads of State and Government and High Representatives, meeting at the United Nations Headquarters in New York from 25-27 September 2015 as the Organization celebrates its seventieth anniversary, have decided today on new global Sustainable Development Goals. […] On behalf of the peoples we serve, we have adopted a historic decision on a comprehensive, far-reaching and people-centred set of universal and transformative Goals and targets. We commit ourselves to working tirelessly for the full implementation of this Agenda by 2030. […] To support accountability to our citizens, we will provide for systematic follow-up and review at the various levels …" (United Nations, 2015, p.3ff.).

Five years after the ambitious 2030 Agenda with its 17 Sustainable Development Goals (SDGs) and 169 targets was adopted, Germany is going to release its second Voluntary National Review (VNR) in June 2021, as a basis for reviews at the High-level Political Forum in New York. According to §79 of the 2030 Agenda, VNRs should regularly review the country-led and country-driven progress at national and subnational levels. Moreover, they "aim to facilitate the sharing of experiences, including successes, challenges and lessons learned, with a view to accelerating the implementation of the 2030 Agenda" (United Nations, n.d.).

With this brief report, we intend to shed some light on Germany's progress towards reaching the global goals from a municipal point of view: Local authorities play a decisive role in implementing the 2030 Agenda, not only because one of the 17 global goals – SDG 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" – is specifically devoted to the local level. According to our own analyses (Jossin, Peters, Holz & Grabow, 2020), a large majority of the SDG targets[1] contain problems and challenges that are relevant to German municipalities and which, at least partially, must be implemented locally.

It should be noted that this report is not a Voluntary Subnational Review (VSR) as is currently being discussed in the United Cities and Local Governments (UCLG) network. A VSR would require more in-depth analyses and would also analyse all activities and progress on relevant levels between the national and the municipal – in Germany, most importantly the federal states. Likewise, this report does not intend to replace a more comprehensive VSR either. It may rather serve as a compact 'reading aid' for the German VNR from the local-level perspective.

1.2 Overview

Initially, we briefly outline the institutional framework for the localization of the 2030 Agenda before we focus on a descriptive overview on SDG-related activities on a municipal level in Germany, such as relevant networks, processes and instruments. Thus, this first chapter is devoted to qualitative information on the commitments and efforts German municipalities perform overall. As comprehensive data on the actual and explicit use of the principles of the 2030 Agenda and the SDGs are sparse, more general information on the significance and value of sustainable development in German municipalities is amended.

The second chapter of this report intends to illustrate some of the outcomes of these efforts in a quantitative way by means of descriptive statistical analyses, using the 'SDG Indicators for [German] Municipalities'. This set of indicators was developed in a multi-stakeholder working group (Bertelsmann Stiftung et al., 2020) and consists of indicators that are either provided with centrally assessable, municipal-level data – which are the

[1] In this analysis, the 169 targets were differentiated into 220 (sub-) targets to enable clear appraisal regarding the relevance of a target in terms of the topic as a problem in Germany, and in terms of the scope of action / tasks of local authorities. From 220 targets or subtargets, more than 74% (163) were evaluated as relevant to German municipalities.

ones relevant for this report and which can be assessed in the SDG Portal for Municipalities – or must be assessed individually. The data for these analyses are thus derived from data-provided SDG Indicators from 2010 to 2019 on the city level. The city level indicators contain data from towns and cities above 5,000 inhabitants. Two SDGs – 13 and 17 – cannot be analysed with municipal-level SDG Indicators due to a lack of centrally available data. In these two cases, alternative information and qualitative data are provided.

Thus far, three German cities have published their own Voluntary Local Reviews: Mannheim, Stuttgart and Bonn. These three reports will be briefly presented and compared in the third chapter.

The final part summarizes the report and focuses on two questions: What can be concluded about the 'state-of-the-art' monitoring of the SDGs in German municipalities; and what can be concluded about their status and progress in the SDG implementation overall?

1.3 SDG implementation on a subnational level

The implementation of the 2030 Agenda is highly influenced by the constitutional framework of the state: Germany is a democratic and social federal state by constitution. According to the German Basic Law ("Grundgesetz"), the German counties, cities, towns and villages, which we refer to as 'municipalities' in summary, are not a national level ("Staatsebene") on their own, but an administrative part of the 16 federal states. Article 28, Section 2 stipulates that German counties, cities, towns and villages are based on local self-government and that municipalities must be guaranteed the right to regulate all local affairs, within the limits prescribed by the laws. The guarantee of self-government extends to the bases of financial autonomy. At the same time, municipalities function as subordinate authorities of the Federal Republic of Germany and the federal states that delegate tasks to them. The national constitution and the constitutions of the federal states indirectly define their tasks, and therefore their scope of action, by structuring the municipal budgets in a product-oriented way ("Produktrahmenpläne"). Thus, these products define municipalities' obligatory tasks. However, there are also so-called voluntary tasks that each municipality can decide upon autonomously. These entail any tasks related to sustainability management and sustainable development in general. By contrast, Article 20a of the Basic Law ("mindful also of its responsibility towards future generations, the state shall protect the natural foundations of life and animals by legislation and, in accordance with law and justice, by executive and judicial action, all within the framework of the constitutional order") reflects policy related to sustainable development as an obligation on the national level.

However, given the above-mentioned fact that many of the SDGs and targets must, at least partially, be implemented on a local level, multi-level coordination and vertical integration of the policies and activities on all levels, as well as their alignment, is an important and demanding task. The German Sustainable Development Strategy, which was last revised in 2021, conceives sustainable development policy as a cross-sectional function. However, most of the German federal states have adopted or revised their own sustainability strategies with reference to the SDGs and have implemented diverse programs and efforts. Some of them specifically focus on supporting their municipalities in developing and implementing their own sustainability strategies. However, sustainable development is a voluntary task, and the capabilities of German municipalities, (not only) in terms of budget and personal resources, vary dramatically within and between federal states. Thus, the degrees of localization and implementation of the SDGs on the local level are quite diverse, as illustrated in the following chapter.

1.4 SDG implementation and sustainable development in German municipalities

Some German municipalities look back on a long tradition of sustainability development policies and activities – most notably since the rise of the “Local Agenda 21”. The Local Agenda 21 was derived from the Agenda 21, the UN action plan passed in Rio de Janeiro in 1992, by a network of municipalities. In Germany, some of these processes were initiated by local administration and politics. However, in many cases, efforts towards sustainability management arose from, or in cooperation with, grass-roots initiatives and civil society and were sometimes organized rather informally or non-systematically (e.g., Bertelsmann Stiftung 2016). Other milestones for involving more German municipalities in sustainability management may have been the Aalborg Charter, the adoption of the UN Millennium Goals and the first German National Sustainability Strategy in 2002.

1.4.1 Political commitment to the SDGs on the local level

Did the adoption of the 2030 Agenda lead to an increase in the number of “active” municipalities? In fact, there is no representative data to answer this question retrospectively. However, a tool provided by the Association of German Cities and the Council of European Municipalities and Regions (CEMR) allows for a rough estimation of the ‘state-of-the-art’ level of activity: A specimen resolution "2030 - Agenda for Sustainable Development: Shaping Sustainability at the Municipal Level" published to facilitate commitment of local authorities to implementing the SDGs. The resolution consists of a general part on the significance of the SDGs, and a modifiable part for individual stipulations as to which SDGs are to be localized and in what way. It can be signed by cities, towns and counties alike. By signing the resolution, the municipalities become members of the “Club of the 2030 Agenda Municipalities”, a network with diverse possibilities for online collaboration, yearly networking meetings, and provision with and exchange of relevant information. The Club of the 2030 Agenda Municipalities is constantly growing: As Figure 1 depicts, the Club had around 175 member municipalities by April 2021; this includes not only larger cities, but also small towns and even rural municipalities, as well as counties (see Figure 2). However, taking the current membership figures against the background that there are almost 3,000 cities and towns of over 5,000 inhabitants or about 700 of over 20,000 inhabitants (Statistisches Bundesamt, 2020) shows that there is still a long way to go, especially because a council order says little about the state and the intensity of SDG implementation. On the other hand, we are aware of municipalities – both cities and counties – that were working with individual sustainability principles and goal systems a long time before the SDGs were published and who have given continuity in their sustainability monitoring preference over the uptake of the new global framework and national visibility and networking with the 2030 Agenda Club, although their activities actually do correspond to the global goals, more or less comprehensively.

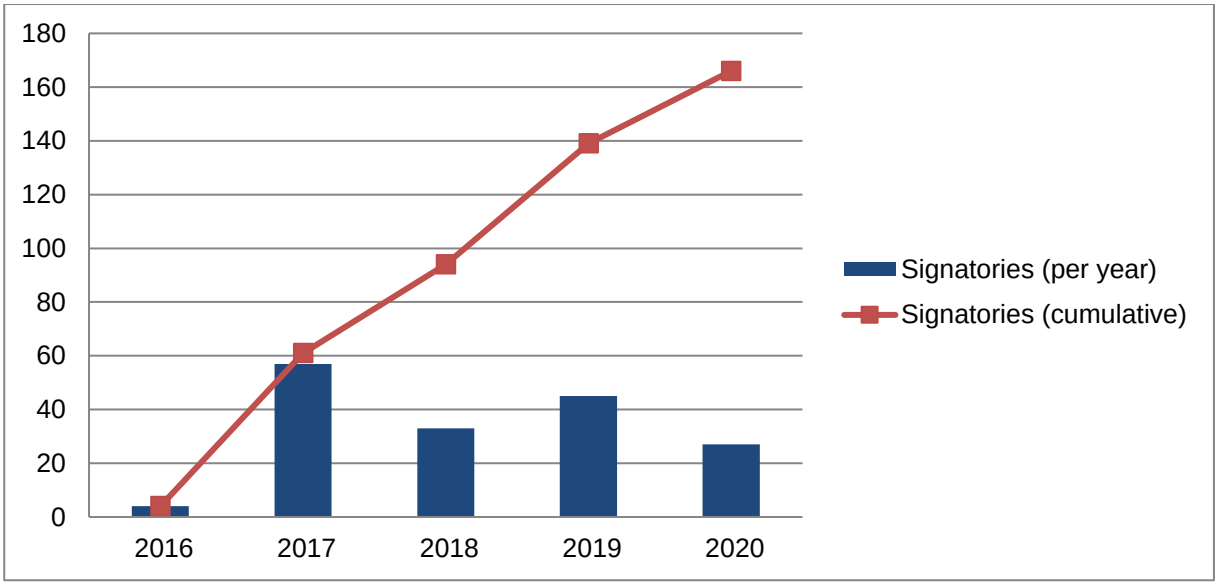
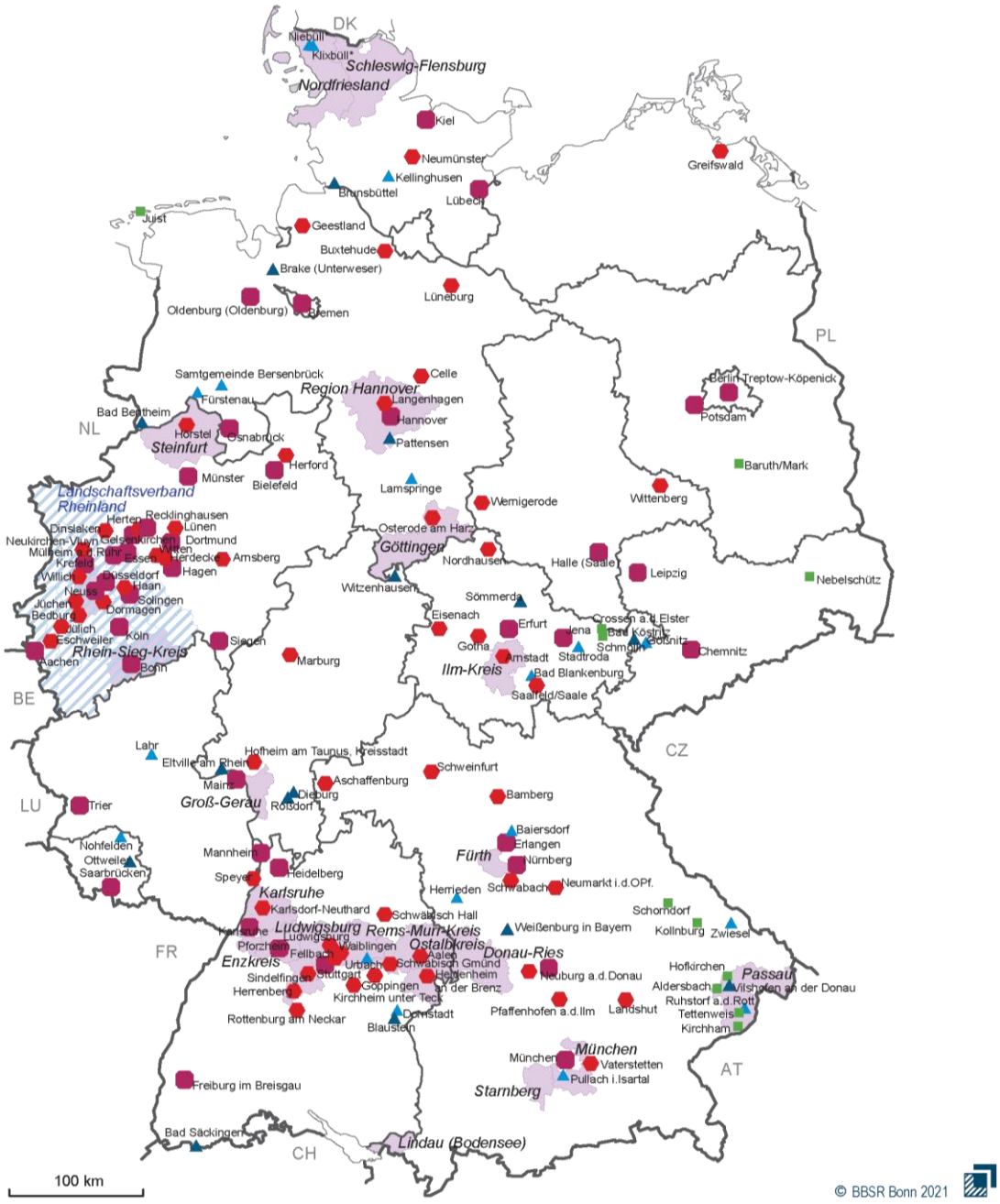


Figure 1: Number of municipal signatories of the specimen resolution from 2016 to 2020 (Source: SKEW 2021)



Municipal signatories of the specimen resolution „The 2030 Agenda for Sustainable Development: Building Sustainability at the Local Level“ of the Association of German Cities and the German Association of the Council of European Municipalities and Regions as of December 2020

according to BBSR types of municipalities	number
large cities (100,000 inhab. and more)	42
medium-sized towns (20,000 up to below 100,000 inhab.)	56
smaller-sized towns (10,000 up to below 20,000 inhab.)	15
small towns (5,000 up to below 10,000 inhab.)	18
rural municipalities	11
counties	22
associations	1

*Niebüll and Klixbüll are communities in Südtondern, which is classified as a small town.

Source: Engagement Global gGmbH - Service Agency Communities in One World (SKEW), Spatial Monitoring System of the BBSR
Geometry: municipalities and counties (generalised borders), 31/12/2019 © GeoBasis-DE/BKG
Author: A. Milbert

Figure 2: Municipal signatories of the specimen resolution on the 2030 Agenda (Source: BBSR 2021)

1.4.2 Programs for SDG localization

While the Club of the 2030 Agenda Municipalities is the only explicit network on the implementation of the SDGs on the municipal level, there are numerous other networks and programs devoted to municipal sustainable development in Germany. For example, the German Council for Sustainable Development (RNE) facilitates a 'sustainable city' dialogue between the mayors of over 30 German cities that also occasionally publishes statements, joint position papers or more detailed 'roadmaps' related to municipal sustainability policy. In a position paper from 2017 (Rat für Nachhaltige Entwicklung, 2017), the mayors recognized the global goals and welcomed the government's intention to operationalize the SDGs in the National Sustainability Strategy, and demanded better legal and financial basic conditions for local SDG implementation. However, there is no public document that sheds light on the current role of the local-level implementation of the 2030 Agenda overall in this dialogue. In general, RNE continues to demand significant support for local-level SDG implementation from the national government and the federal states (Rat für Nachhaltige Entwicklung, 2020). Moreover, the Council has also established a similar dialogue for chief administrative officers of German counties.

The program "Globally Sustainable Municipalities" by the Service Agency Communities in One World (SKEW) of Engagement Global, which is in turn financed by the German Ministry for Economic Cooperation and Development, contributes to systematic SDG implementation processes in selected pilot municipalities with a specific focus on municipal development policy. The program supports cohorts of about five to 15 municipalities in the development of a sustainability strategy aligned with the SDGs and with consideration of the National Sustainability Strategy and the respective federal state's sustainability strategy. The program was first developed in the federal state of North Rhine-Westphalia, where SKEW is currently establishing a third cohort. Moreover, the program is also implemented in the federal states of Baden-Württemberg, Bavaria, Brandenburg, Lower Saxony, Rhineland-Palatinate, Saarland, Schleswig-Holstein, and Thuringia (Die Bundesregierung, 2021).

Bertelsmann Stiftung has been supporting an impact-oriented sustainability management in other pilot municipalities across Germany since 2015, with a focus on the SDGs as of 2017 (see also Chapter 1.4.4). Moreover, in 2021, it has commissioned the German Institute of Urban Affairs to coach municipalities in systematic SDG implementation and monitoring. In this project, "sustainability-active" municipalities will be supported as well as newcomers.

1.4.3 National surveys on SDG-related activities

In summer/fall of 2017, a representative survey in the German population funded by Bertelsmann Stiftung showed that 15% reported that they know the 2030 Agenda well or quite well, and about half of the population had no knowledge of it at all (Schneider-Haase, 2017). A parallel survey by Bertelsmann Stiftung among almost 1,000 local politicians in municipalities over 5,000 inhabitants – that is, cities, towns, and counties – revealed a similar pattern (Honold, 2017): About 10% indicated having looked at the 2030 Agenda in detail, with few of them representing a municipality which had already signed the above-mentioned resolution, while 57% were only aware of its existence, and almost one third of the sample had not even heard of the SDGs. Unfortunately, these surveys were not updated more recently and we are not aware of other nation-wide studies by others regarding the knowledge, perception, and use of the 2030 Agenda in local authorities overall. A yearly inventory among the mayors of German cities with more than 50,000 inhabitants by the German Institute of Urban Affairs ("OB-Barometer"; Kühl & Hollbach-Grömig, 2021) assesses the perceived current importance, and the expected significance for the upcoming 5 years, for different topics and tasks in urban development. The data from early 2020 showed a fivefold increase in the present importance of climate change or climate adaptation and a more than threefold rise in regard to its estimated prospective relevance (see Figure 3 and 4) – potentially influenced by the Fridays-For-Future movement, an increasing number of municipalities declaring a climate emergency, and the public debate as a whole. The latest survey from 2021 showed that this trend has proven robust and has increased even more, despite the COVID-19 pandemic. Moreover, climate protection was still perceived as the most important topic for the near future in 2021.

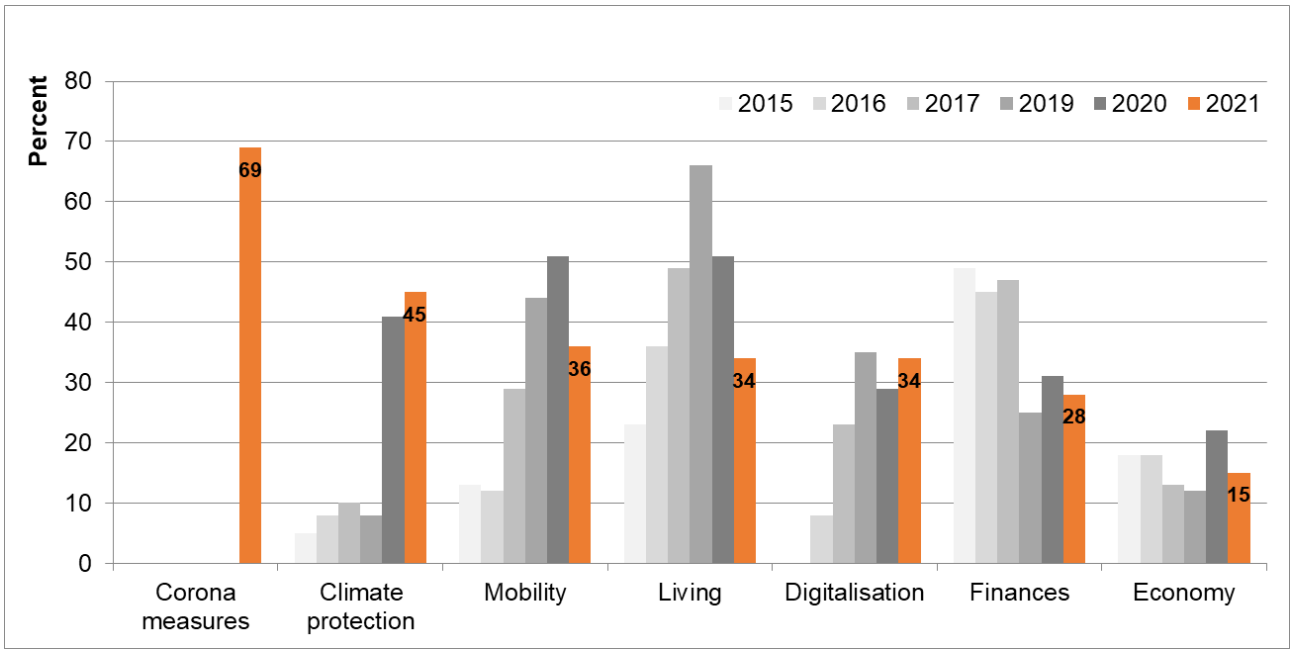


Figure 3: Percentage of mayors deliberately naming the respective task as one of the most important in their city (N = 137 in 2021); questions without answer specifications; multiple answers possible (Source: OB-Barometer 2021)

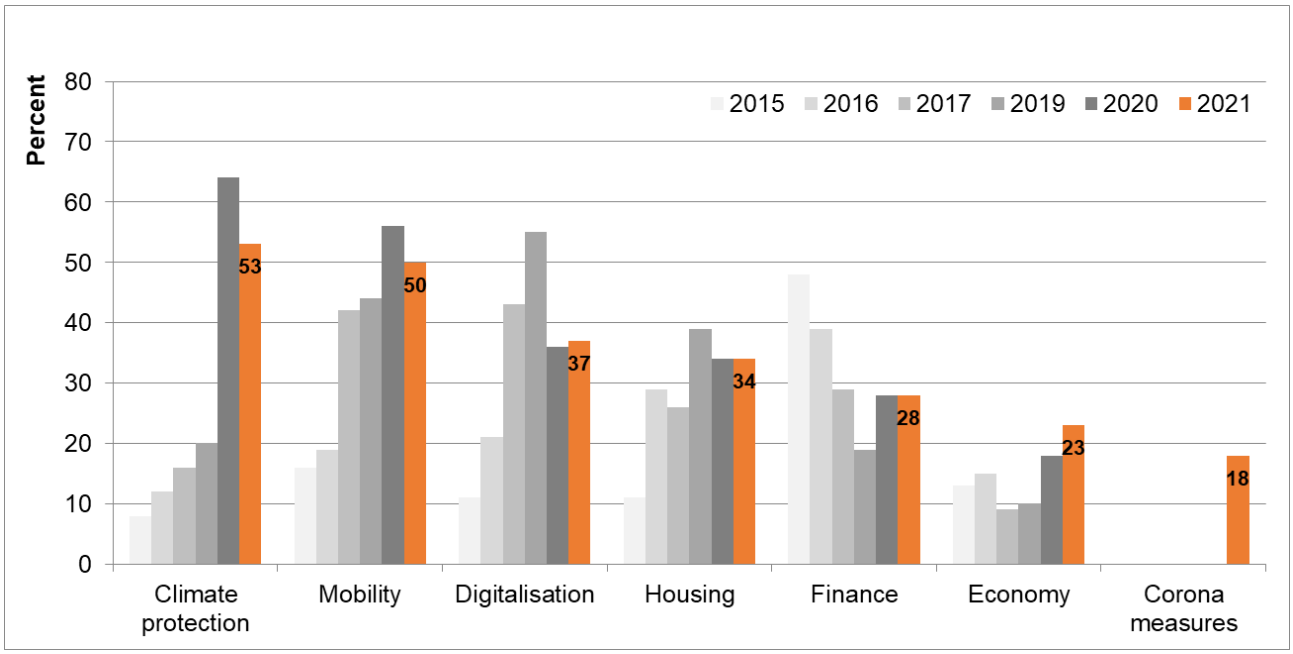


Figure 4: Percentage of mayors deliberately naming the respective topic as one gaining importance for cities in the near future (N = 137 in 2021); questions without answer specifications; multiple answers possible (Source: OB-Barometer 2021).

The German Sustainability Award for Cities and Municipalities is a yearly competition for cities and towns – excluding the counties – in three different categories: Big cities above 100,000 inhabitants; medium-sized towns between 20,000 and 100,000 inhabitations; and small towns and rural communities. Each year, it is awarded to one municipality per size category, following an assessment process that is entered via self-application by an extensive online questionnaire and, since 2020, also via nomination by jury members. A few of these questions shed some light on the intensity with which the applying municipalities are working with the

SDGs. Therefore, we analyzed the respective data from 2020[2] with permission from the responsible foundation, Stiftung Deutscher Nachhaltigkeitspreis.

One part of the application document lists 24 different challenges for German municipalities aligned to the 17 SDGs. The applicants are asked to indicate 1) which of the listed challenges the municipality masters best or, put more simply, which are the three strengths, and 2) which are biggest weaknesses. For both questions, a maximum of three indications are permitted. A third question asks from which of the challenges the municipality has derived explicit goals and strategies, without limiting the number of indications. With respect to the individual strengths, SDG 7 (here: 'Installation of renewable energies') was indicated most often, that is, by 43%. SDG 13 ('Greenhouse gas emissions and climate adaptation') and SDG 9 ('Innovation: shape future with new solutions') were also common strengths in 38%, or 30% of the cases respectively. Regarding their own weaknesses, the fiscal account situation as part of SDG 16 (45%), the rise of settlement and traffic area (25%) and sustainable mobility and traffic infrastructure (20%) as two aspects of SDG 11 were chosen most often. The SDGs or topics that were explicitly targeted least often by adopted goals and strategies were SDG 1 ('Poverty', 20%), employment protection as a facet of SDG 8 (18%) and criminality as part of SDG 16 (10%).

Finally, another question asks applicants whether their municipality has developed, or is currently developing, its own general principle or strategy for sustainable development – and, if so, whether it refers to the SDGs. In the entire sample, 65% affirmed they were strategically working with the SDGs.

1.4.4 SDG monitoring activities

Since 2017, a multi-stakeholder working group 'SDG Indicators for Municipalities' has been developing instruments for the systematic monitoring of municipal SDGs. The Association of German Cities initiated the project at the beginning of 2017 and is moderating the working group with representatives of the participating organizations. The German Association of Counties, the German Association of Towns and Municipalities as well as the Council of European Municipalities and Regions support the project work and – like the Association of German Cities – are advocating the application of the SDG Indicators in their respective member municipalities. The German Institute of Urban Affairs is in charge of developing and refining the SDG Indicators with funds from Bertelsmann Stiftung. Bertelsmann Stiftung is responsible for the overall organization of the project, the publication of the project results and the provision of data via the portals www.wegweiser-kommune.de and www.sdg-portal.de. The Federal Institute for Research on Building, Urban Affairs and Spatial Development is involved in the development and refinement of the indicators and provides data via the portal www.inkar.de. The Service Agency Communities in One World of Engagement Global supports the project work in terms of content and promotes the work of the Bertelsmann Stiftung with funding from the German Federal Ministry for Economic Cooperation and Development.

The two most important products from our working group are an SDG indicator set and the SDG Portal. The indicator catalogue consists of 120 municipal SDG Indicators, applicable for all cities, counties and communities, with detailed profiles, data analyses and additional support for application. Its aim is to support impact-oriented sustainability management and it is conceptualized as a toolbox that can be adapted according to individual needs and monitoring objectives. From the 120 indicators, 54 indicators are provided in the three data portals for about 3,000 German counties, cities, and towns over 5,000 inhabitants – most importantly, the SDG Portal. The SDG Portal aims to provide a simple and intuitive tool for a quick assessment of the states and dynamics in the provided SDG Indicators in a specific municipality and – potentially – in comparison to other municipalities or higher-level data. It also offers various additional functions aimed at supporting the implementation of the SDGs, amongst them good practice examples, recommended courses of action in tackling individual challenges, and reporting functionalities. In 2018, a previous and even simpler version of the current SDG Portal was awarded the UN SDG Action Award (Top 3) at the SDG Global Festival of Action of the United Nations. Moreover, it was transferred to Italy in 2020, and more international scaling is currently

[2] Absolute numbers of participation in the competition per year are not published.

being prepared. In February 2021, the SDG Portal had about 10,000 users per month, about one third of these using it several times per month.

In addition, we know of many German municipalities who are working with the products that arose from the SDG working group in their local sustainability management and SDG monitoring, specifically the SDG Indicators and the corresponding provided data as well as related publications.

With the “Berichtsrahmen Nachhaltige Kommune” (Reporting Frame Sustainable Municipality), a more comprehensive and binding tool for the monitoring and evaluation of local sustainability strategies – and potentially, SDG implementation strategies – is currently being developed by RNE and SKEW and tested in selected pilot municipalities as of March, 2021. The Reporting Frame is thus far structured in alignment with specific areas of action that were derived from its original equivalent, the German Sustainability Code for companies and other organizations, and is therefore not a targeted SDG implementation product in the first place. However, the SDG Indicators provided in our data portal are recommended for data-based monitoring activities, and SDG icons are assigned to the areas of action as an additional aid (see Rat für Nachhaltige Entwicklung, n.d.).

2 SDG Indicators for Municipalities

The following presentation of indicator values is based on the indicator catalogue 'SDG Indicators for Municipalities' (see Chapter 1; Bertelsmann Stiftung et al., 2020). It defines the above-mentioned 120 sustainable development indicators for the local level, each valid for at least one target that was assessed as relevant for German municipalities. About half of the 120 indicators are provided with data for all German municipalities with more than 5,000 inhabitants ('Type I indicators'). The values of these indicators are depicted in a 10-year time period from 2010 to 2019, providing an overview of positive and negative developments in specific areas of action. Due to a lack of data availability, SDG 13 and 17 are not covered with Type I indicators from the project. In these cases, survey and proxy data are shown instead to give an impression.

In general, local data in Germany is available at the municipal or county level, which is reflected in the representation of the indicator values in the graphs. The data could be divided into three or five categories:

Data availability		**Category / level**	**Calculation**	**Remarks**
County level	Municipal level	**Germany**	Mean value (provided by the primary data owner)	For some indicators, Germany-wide values are not provided
		County	Mean value for German counties (N = 294)	Generally including county-affiliated medium-sized and small cities; medium-sized and small cities without county affiliation ("county-free") are not included **The county affiliation depends on the historical context rather than the city size**. However, the majority of county-free cities have more than 100,000 inhabitants.
		Large cities	Mean value for cities with more than 100,000 inhabitants (N ≈ 80*)	Data on county level: county-affiliated cities with more than 100,000 inhabitants are not included (< 10 cities) Data on municipal level: county-affiliated cities with more than 100,000 inhabitants can be separated and are thus included (< 10 cities)
		Medium-sized cities	Mean value for cities with 20,000 to 100,000 inhabitants (N ≈ 700*)	Data on municipal level: precise classification according to city size possible; see above
		Small cities	Mean value for cities with 5,000 to 20,000 inhabitants (N ≈ 2,150*)	Lower city boundary value of 5,000 inhabitants is considered for each single year

* The actual number of municipalities depends on the number of inhabitants and fluctuates accordingly.

Mean values were chosen against the background of data availability and integrability with other reports. Due to the sample type with already relativized indicators and the sample size of 80 to 2,000 municipalities per category, the unweighted mean values are sufficiently meaningful and show only marginal deviations from the respective median values.

The data originate from official statistics or scientific monitoring projects and are therefore of high quality. The individual sources can be found in the SDG Portal or SDG Indicators for Municipalities brochure (Bertelsmann Stiftung et al., 2020).

2.1 SDG 1: End poverty in all its forms everywhere

Generally, Figures 5 to 7 show that large cities have the highest poverty rates in all age groups, whereas the small cities and counties have the lowest. The poverty rate among adults in the age group of the working population was relatively stable in the projected period between 2010 and 2019. In the last two years of measurement, child and youth poverty have dropped, but remain on an inadmissible level specifically in the large cities. While on a much lower level overall, elderly poverty has slightly but constantly increased within the last decade – pointing to ongoing challenges associated with demographic change.

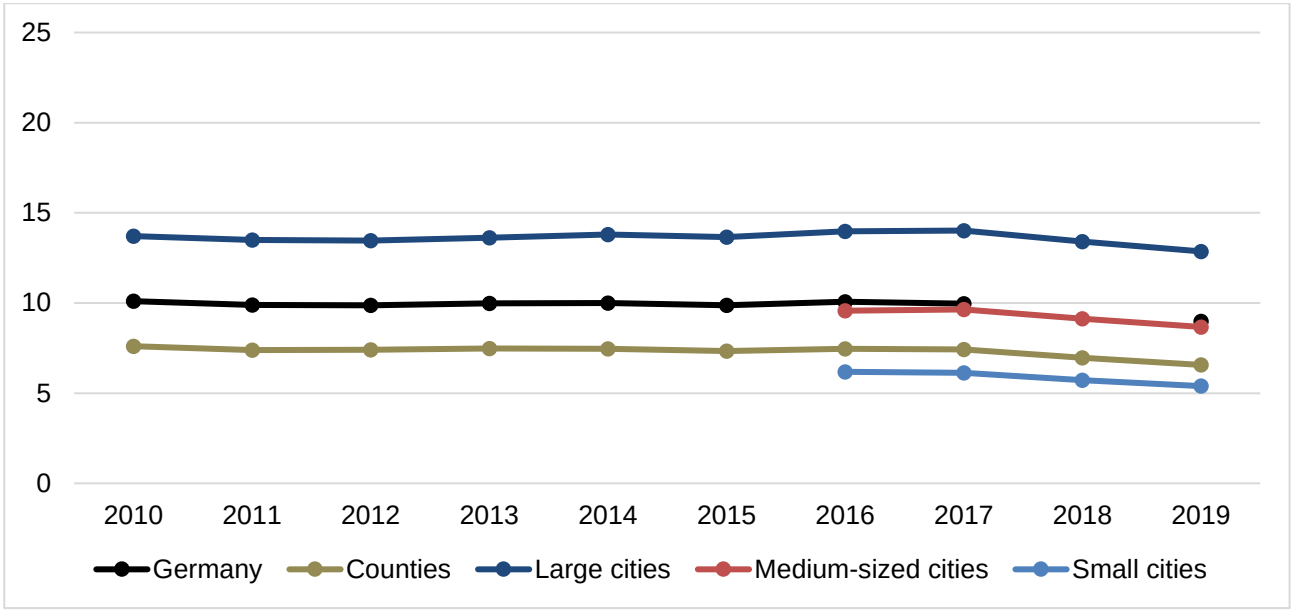


Figure 5: SGB II/SGB XII rate in percent

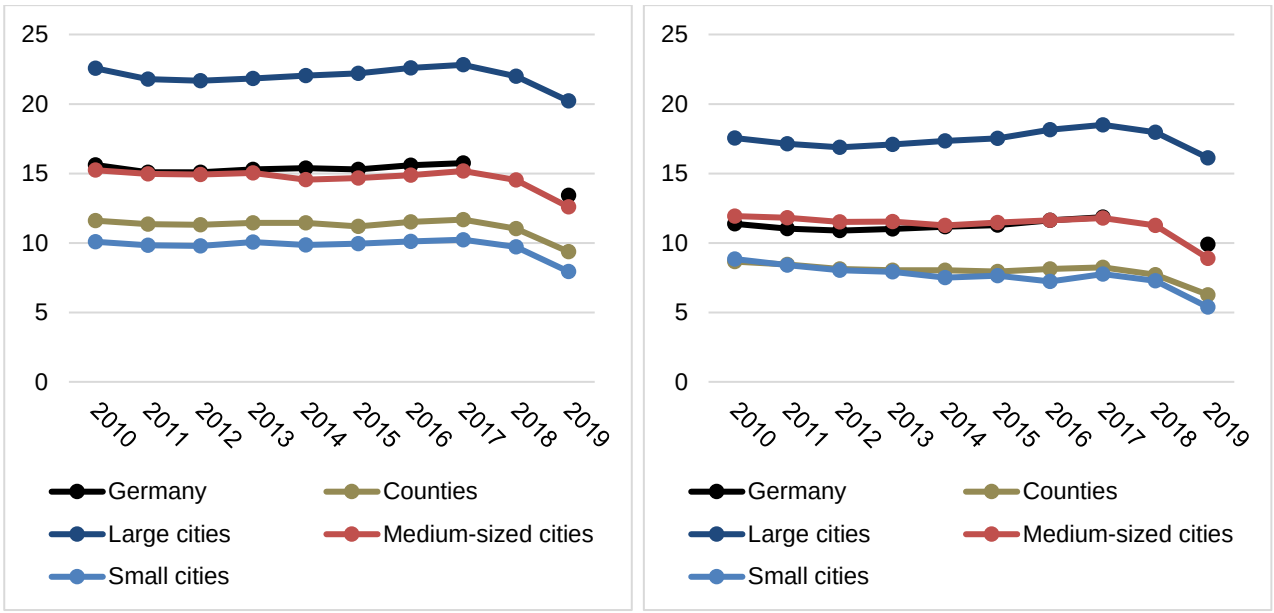


Figure 6: Poverty – Child poverty (left) and youth poverty (right) in percent

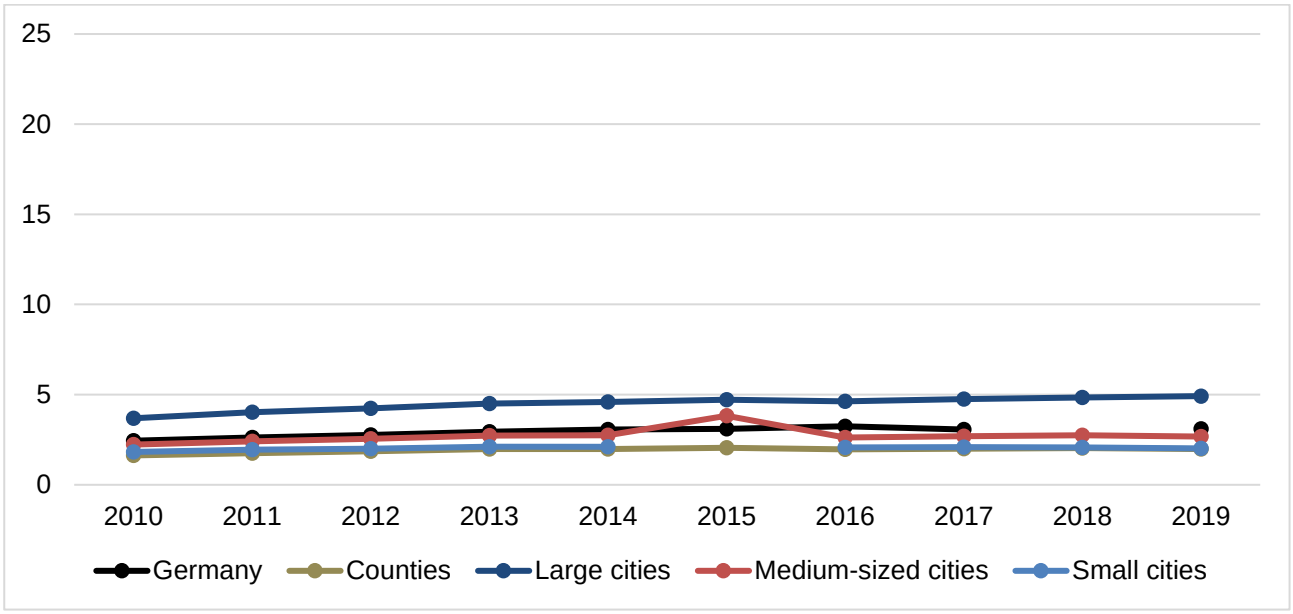


Figure 7: Poverty – Elderly poverty in percent

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

Figure 8 shows that nitrogen surplus of agricultural land does not follow a linear trend, but rose significantly between 2010 and 2019. Moreover, the trend is very similar between different kinds of municipalities. Obviously, this indicator alone does not sufficiently cover SDG 2, specifically in terms of food security and nutrition, but it clearly shows that more actions towards sustainable agriculture are urgently needed, irrespective of the municipal sizes and types.

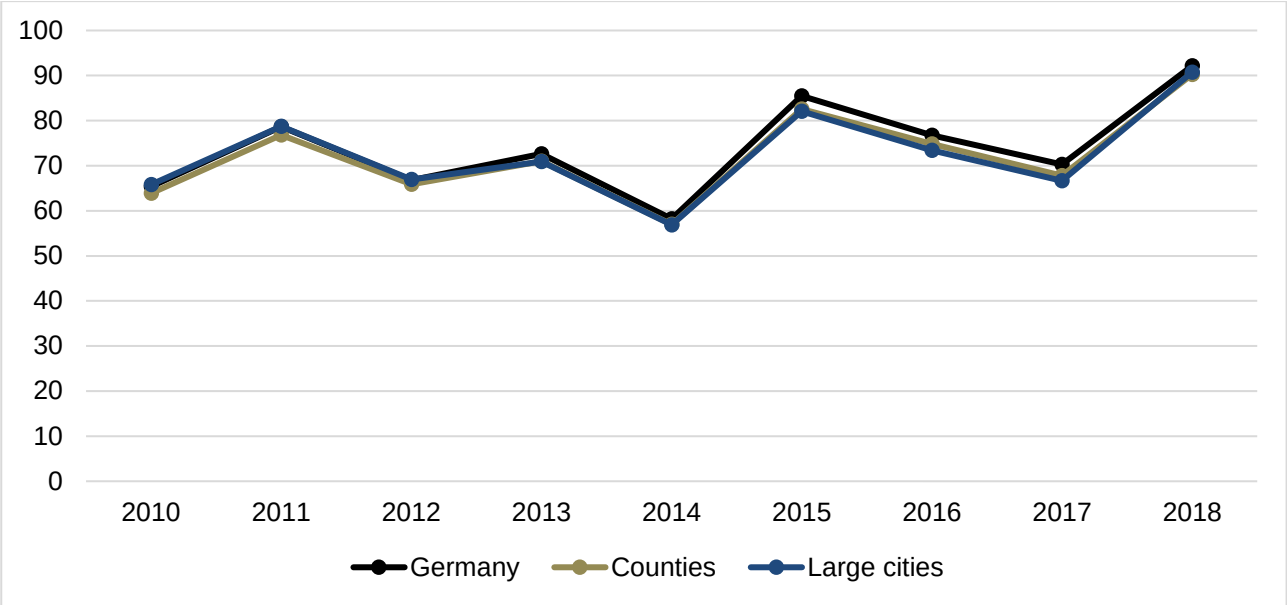


Figure 8: Nitrogen surplus in kg per hectare

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

In terms of overall health, the trends of female and male premature mortality rates (Figure 9) were quite stable over the last ten years depicted. With regard to the different indicators for health services, the number of available hospital beds and nursing home places (Figures 10 and 11) has hardly changed. Fairly positive trends in staff in nursing home places (Figure 12) and in (mobile) nursing services (Figure 13) between 2011 and 2016 did not persist in the last two years of monitoring. In contrast, there has been a consistently positive trend in air pollutant exposure – particulate matter concentrations have been declining in almost all areas for years (Figure 14).

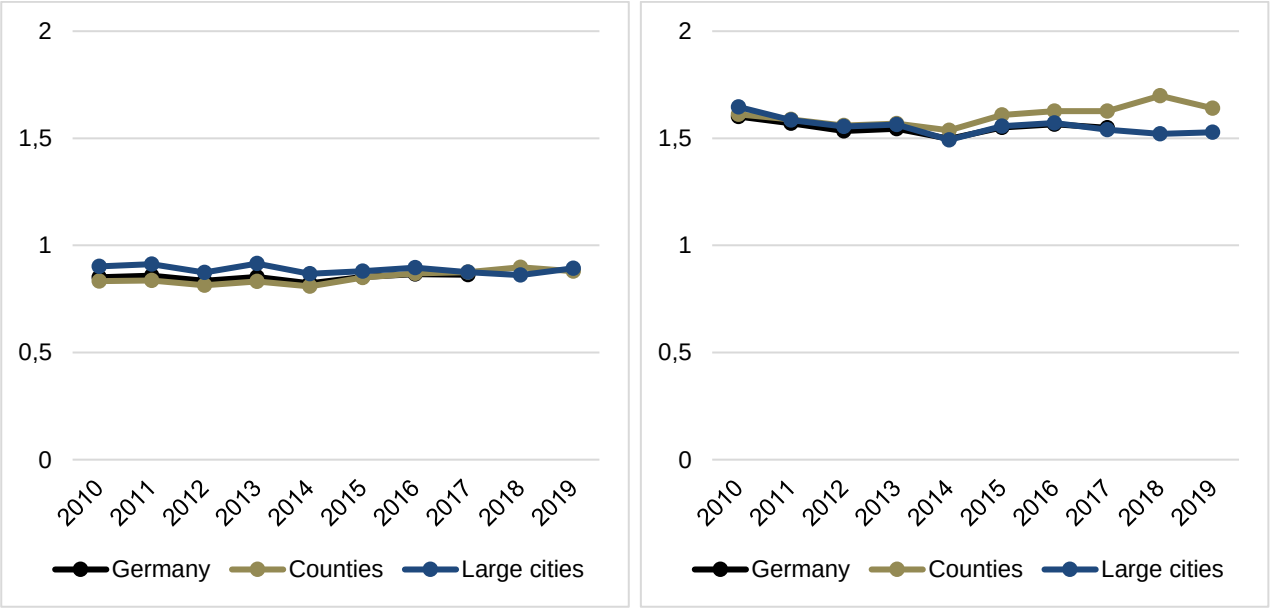


Figure 9: Premature mortality – Women (left) and men (right) in number of death per 1,000 female / male inhabitants

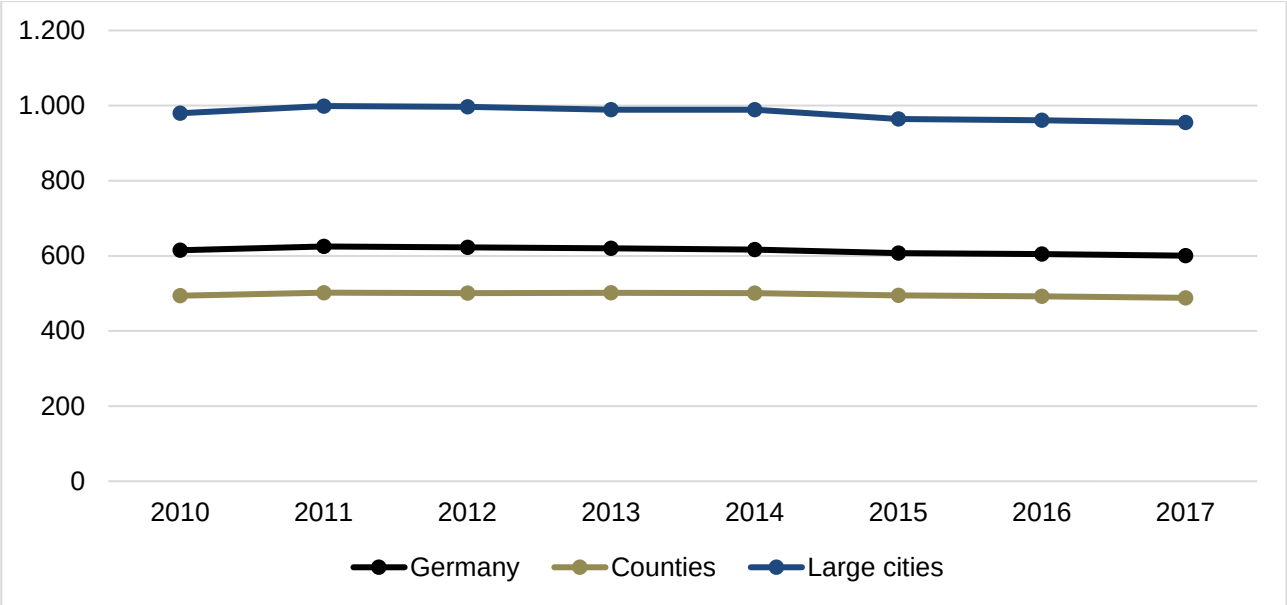


Figure 10: Hospital provision in hospital beds per 100,000 inhabitants

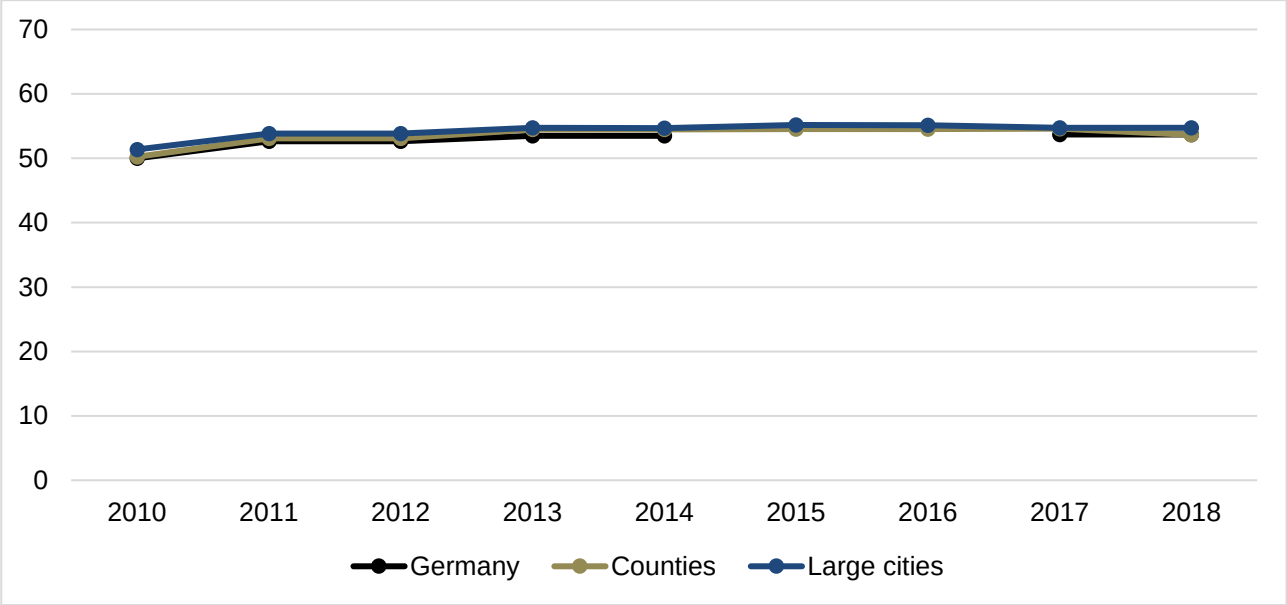


Figure 11: Nursing home places per 1,000 inhabitants aged min. 65 years

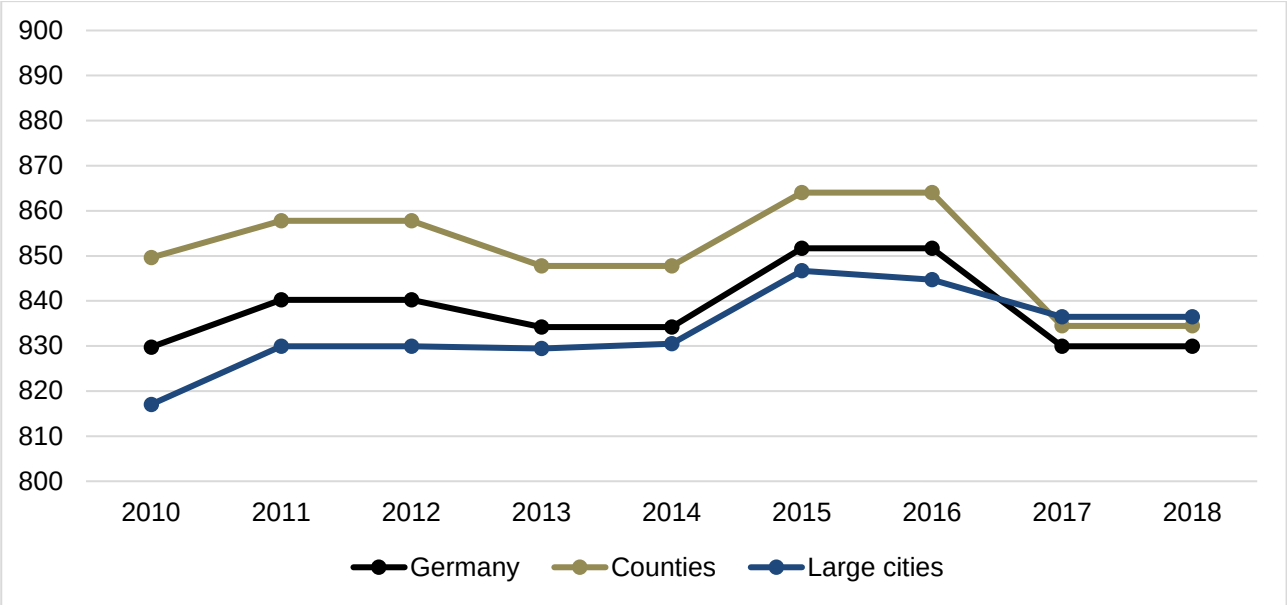


Figure 12: Staff in nursing home facilities in full-time positions per 10,000 inpatients in need of care

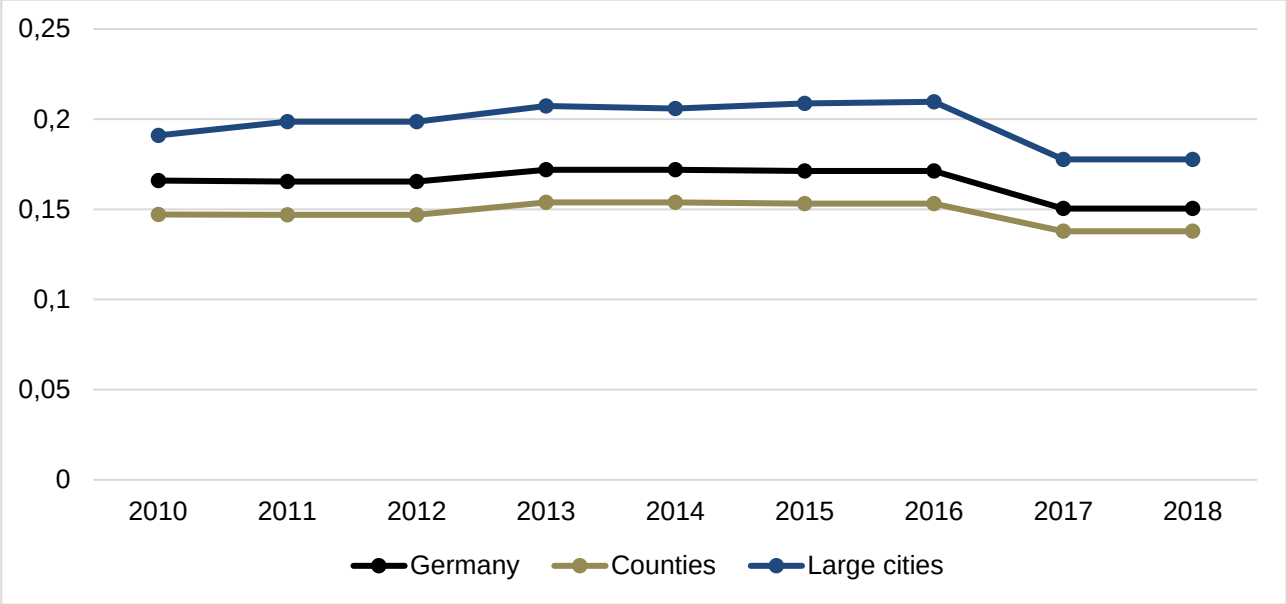


Figure 13: Staff in nursing services per person in need of care

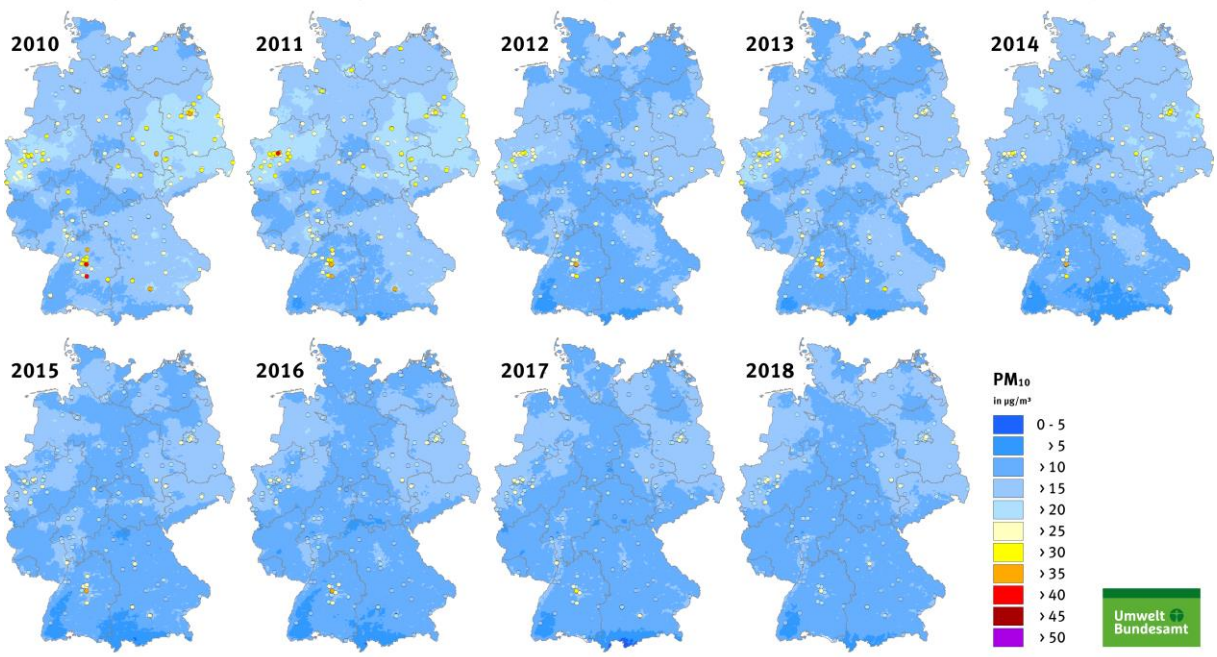


Figure 14: Air pollution exposure PM_{10} in µm per m^3 (Source: German Environment Agency 2020)

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

Figure 15 points to an unimproved or even negative trend with respect to equitable school education. On the other hand, the proportion of children under the age of three in child care facilities (Figure 16) and the proportion of integrative institutions among those (Figure 17) display positive developments.

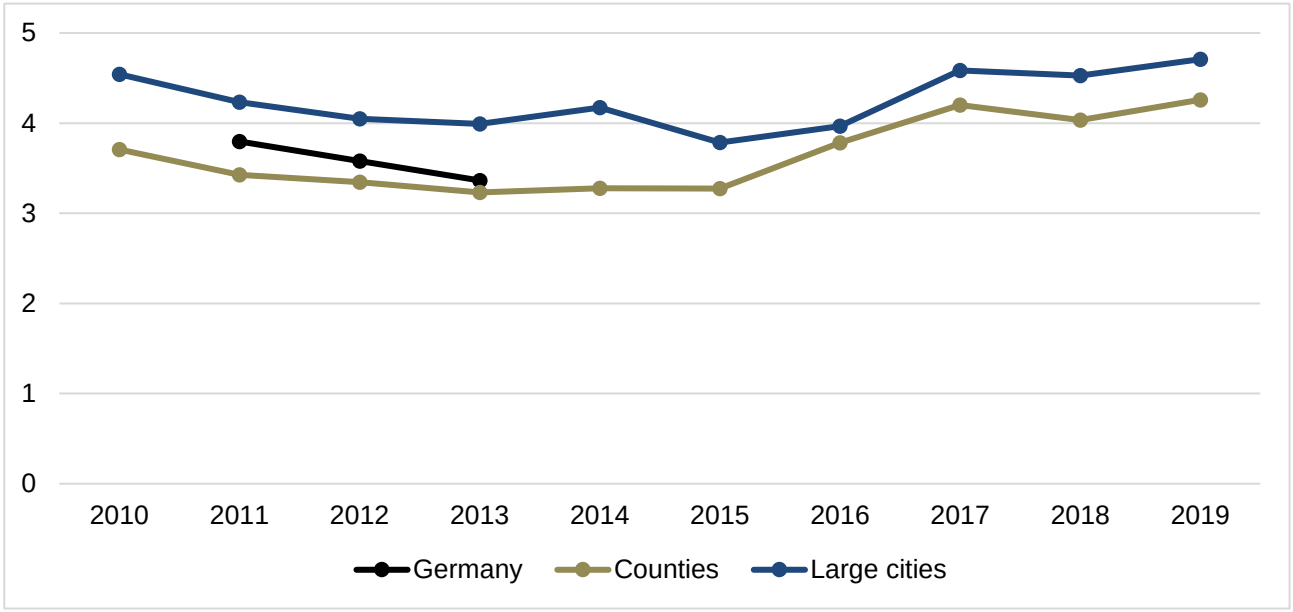


Figure 15: Early school leavers in percent

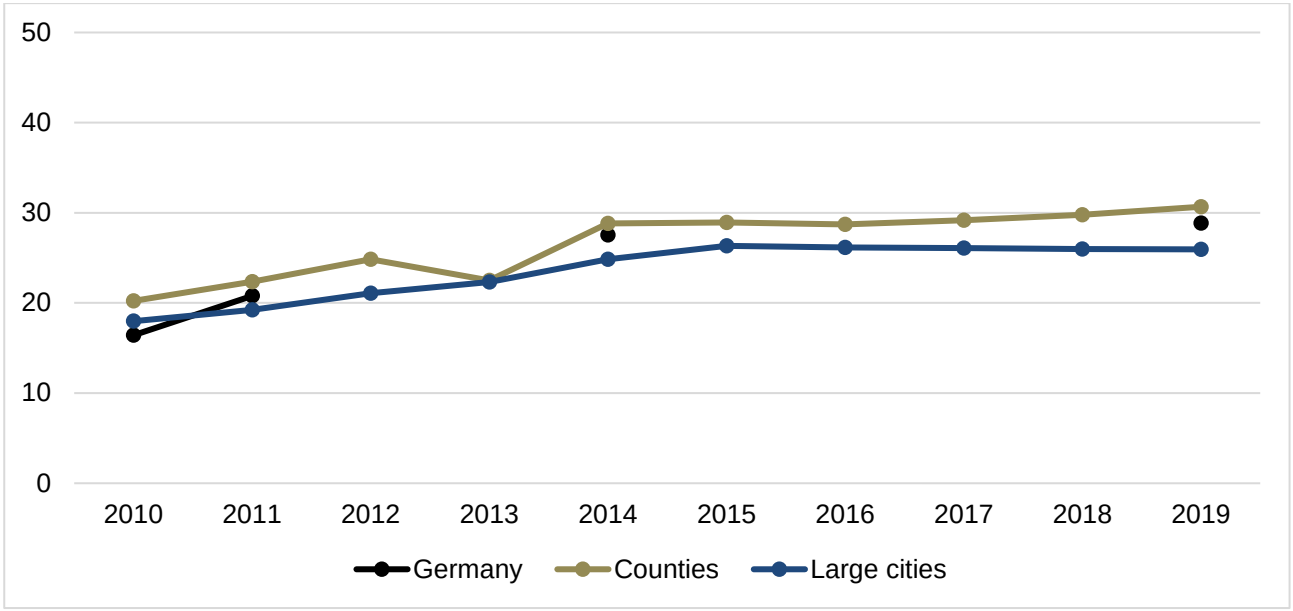


Figure 16: Child care (under 3 year-olds) in percent

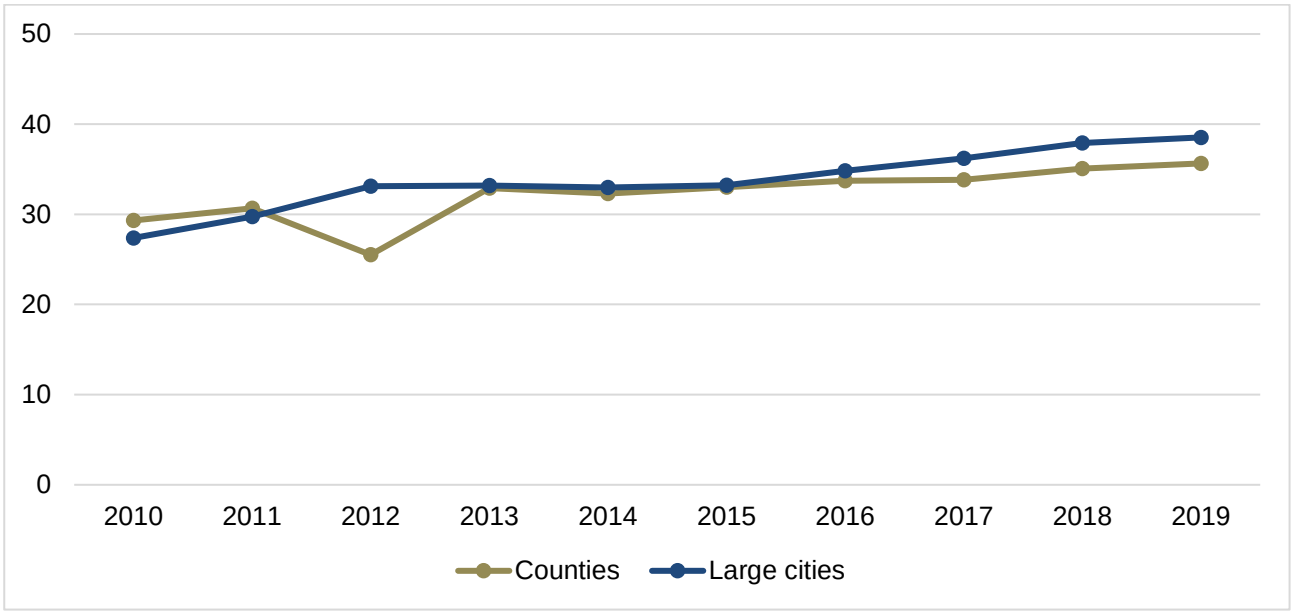


Figure 17: Integrative child care centres in percent

2.5 SDG 5: Achieve gender equality and empower all women and girls

The indicator in Figure 18 visualizes the ratio of the proportion of employed women between 15 and 64 years of age subject to social insurance contributions, and the respective proportion in the male population. Equally employed ratios between women and men would result in an indicator value of 100%. Overall, the trend towards gender equality in employment rates seems positive. Figure 19 shows the ratio of median incomes between women and men, pointing into the same direction. However, we are still far from achieving equality. Female representation in local politics (Figure 20) remains quite stable between 2013 and 2017 on unsatisfactory levels – most clearly in the counties, where less than one quarter of the seats are held by women.

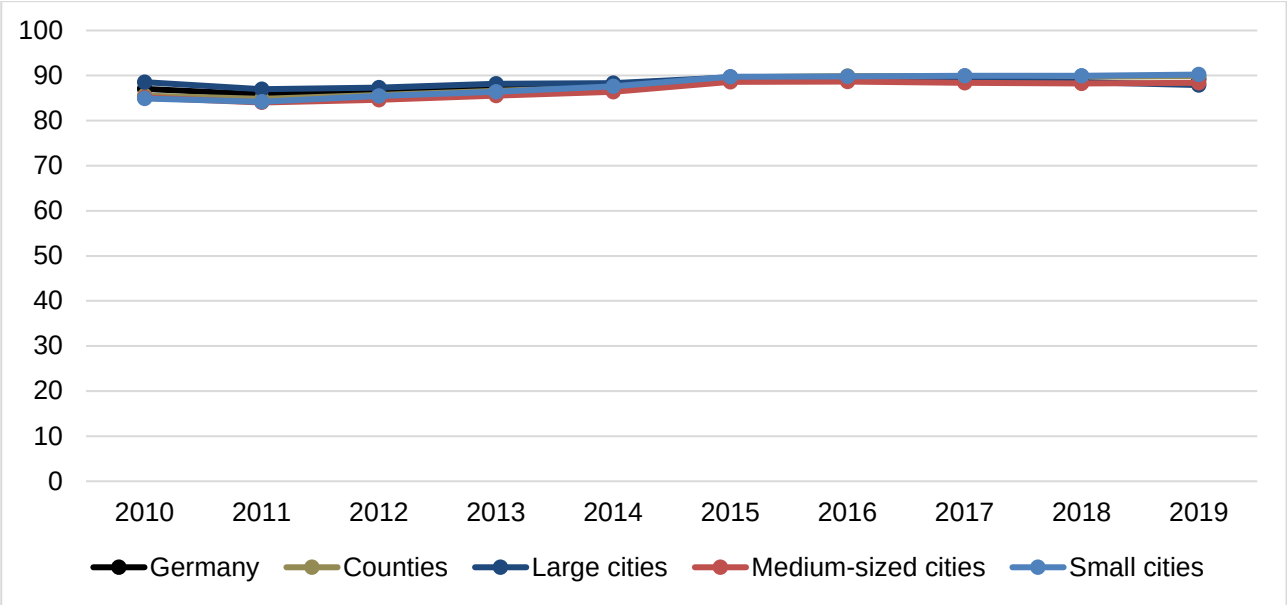


Figure 18: Ratio of employment rates of women to men in percent

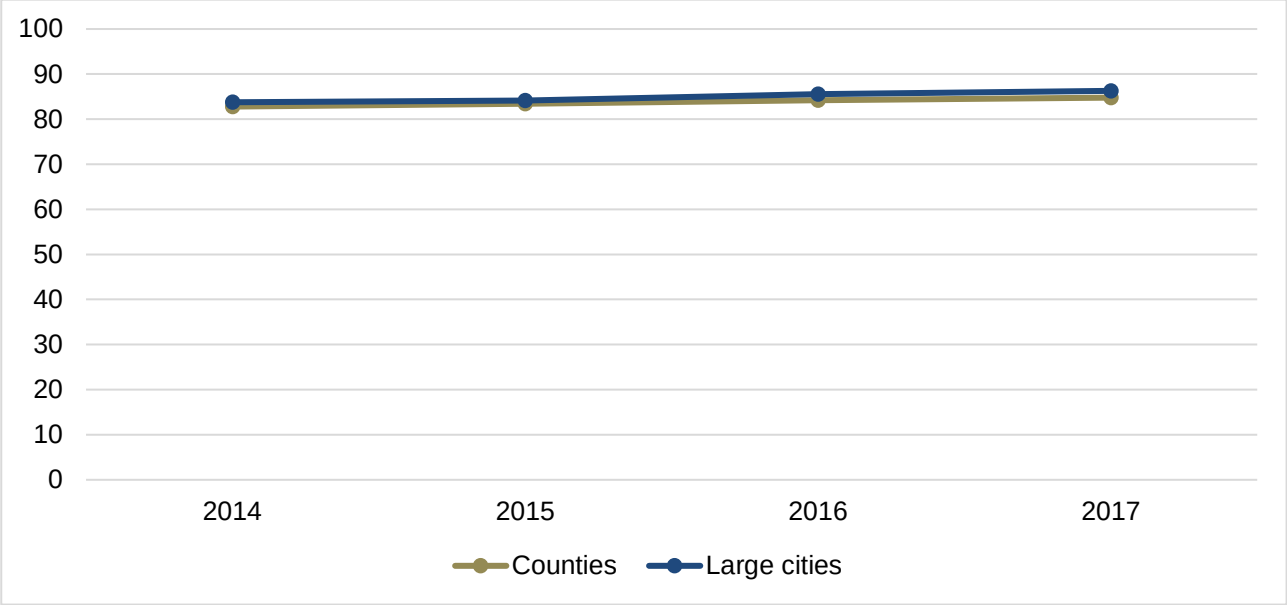


Figure 19: Earnings gap – median income of women to median income of men in percent

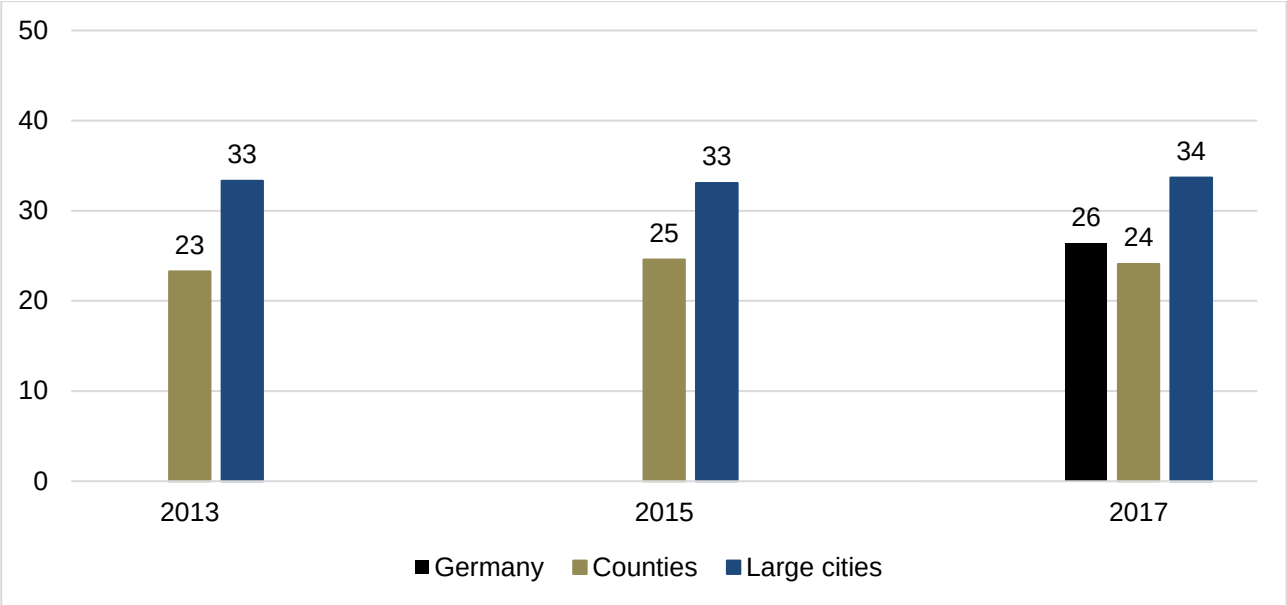


Figure 20: Seats held by women in local parliaments and governments in percent

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

According to Figure 21, trends in wastewater treatment have been stable in nine years of monitoring – with the relatively highest proportion of 98% to 100% treatment in large cities.

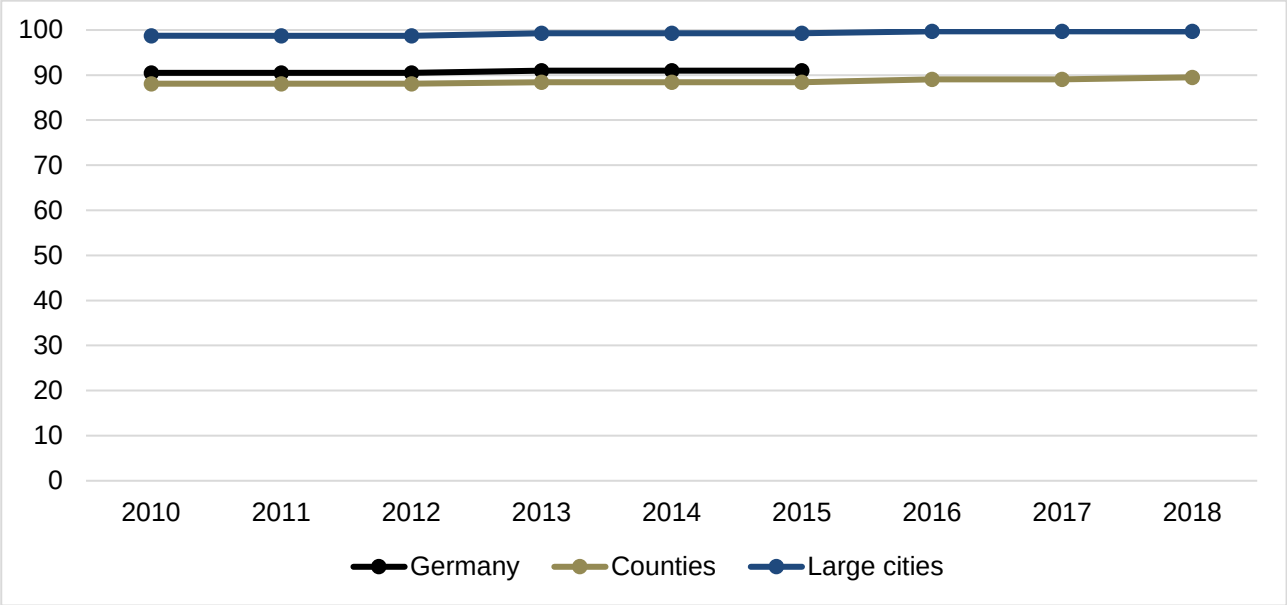


Figure 21: Proportion of treated wastewater in percent

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

The amount of watts of wind power electricity per inhabitant increased between 2013 and 2015 most notably in the counties, where the main proportion of this renewable energy is produced (see Figure 22).

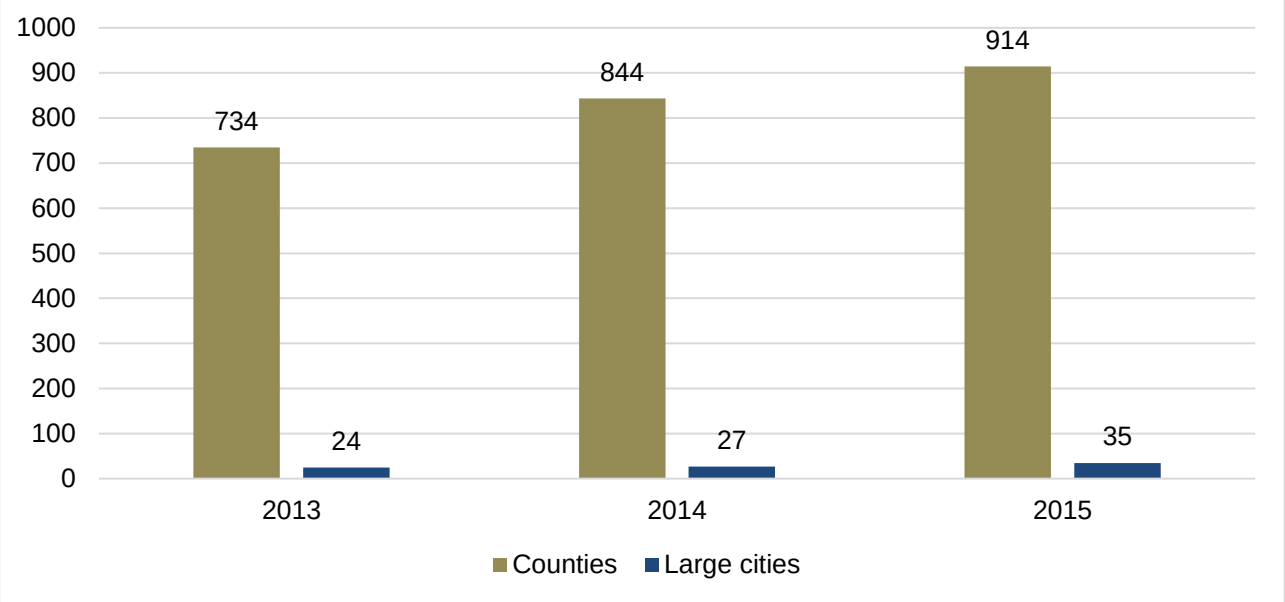


Figure 22: Electricity from wind power in watts per inhabitant

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

Figure 23 shows the development of the gross domestic product per inhabitant until 2019, but without showing the economic impact resulting from the COVID-19 pandemic. While the values for counties were relatively low compared to large or medium-sized cities, there is nevertheless a slight but constant increase in gross domestic product at all spatial levels. The indicators “Employment rate - 15-64 year-olds and 55-64 year-olds" (Figure 24) shows almost no differences between the levels over time. The values for the 55-64 year-olds (right) are particularly interesting to observe, as almost all data points overlap in the graph, so that hardly any difference is discernible. However, a remarkable constant increase in the employment rates can be observed – this applies in particular to older employees. Efforts to reduce long-term unemployment seem to have an impact, too: over a 10-year period, the rate falls almost constantly (Figure 25). Employed persons whose wages are not sufficient to cover their living expenses and who therefore receive additional unemployment benefit (ALG II) are called "Aufstocker". Figure 26 shows that a small decline can be seen at all levels between 2010 and 2019.

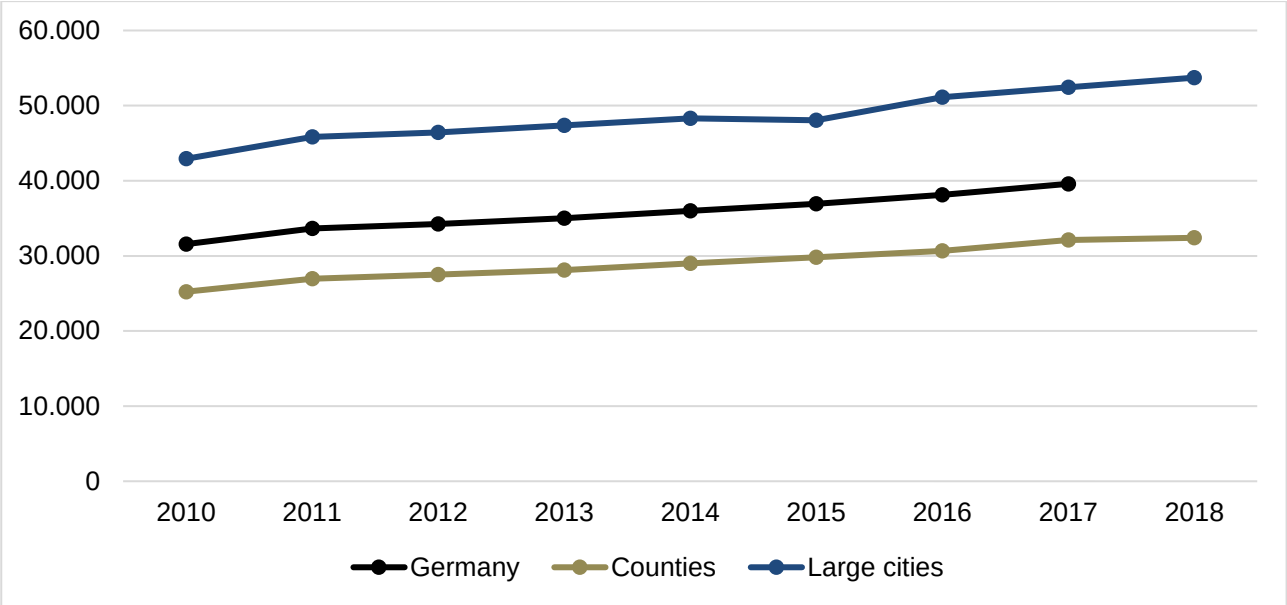


Figure 23: Gross domestic product in euros per inhabitant

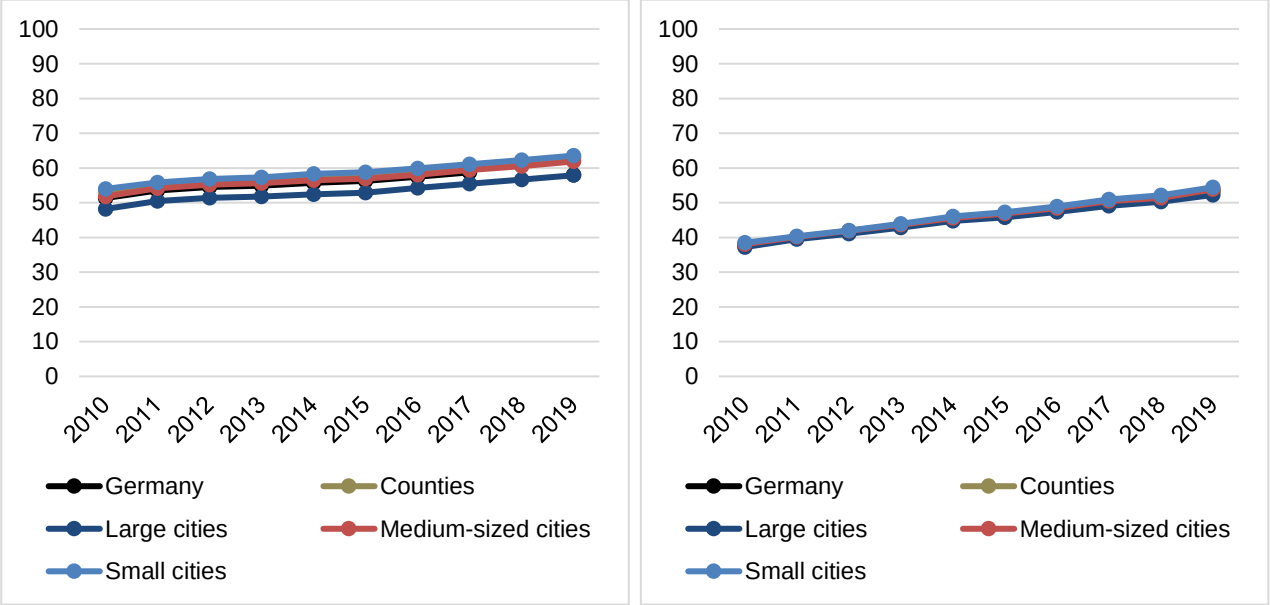


Figure 24: Employment rate - 15-64 year-olds (left) and 55-64 year-olds (right) in percent

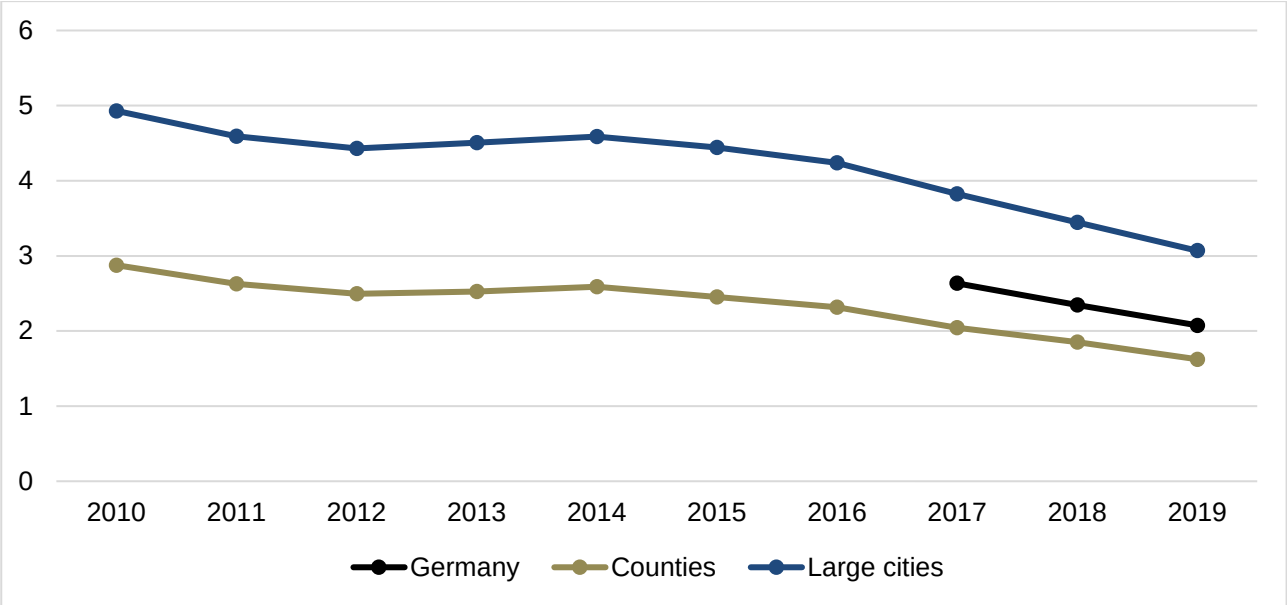


Figure 25: Long-term unemployment rate in percent

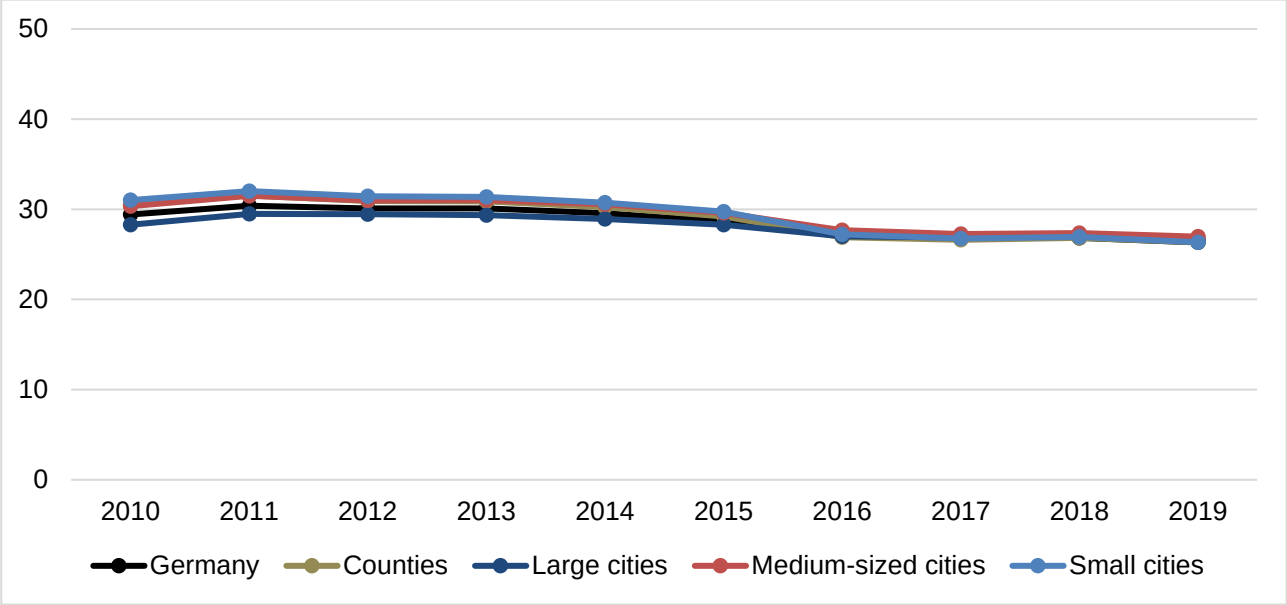


Figure 26: Unemployment benefit recipients in employment ("Aufstocker") in percent

2.9 SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

The indicator 'business start-ups' (Figure 27) dropped since 2010 for several years, but seems to have improved again recently. The indicator 'highly skilled workers' (Figure 28) has constantly increased since 2012. In both cases, the German average is supported by the higher proportions in large cities. Broadband internet access of private households (Figure 29) also shows a slight increase, reaching higher coverage with increasing city size.

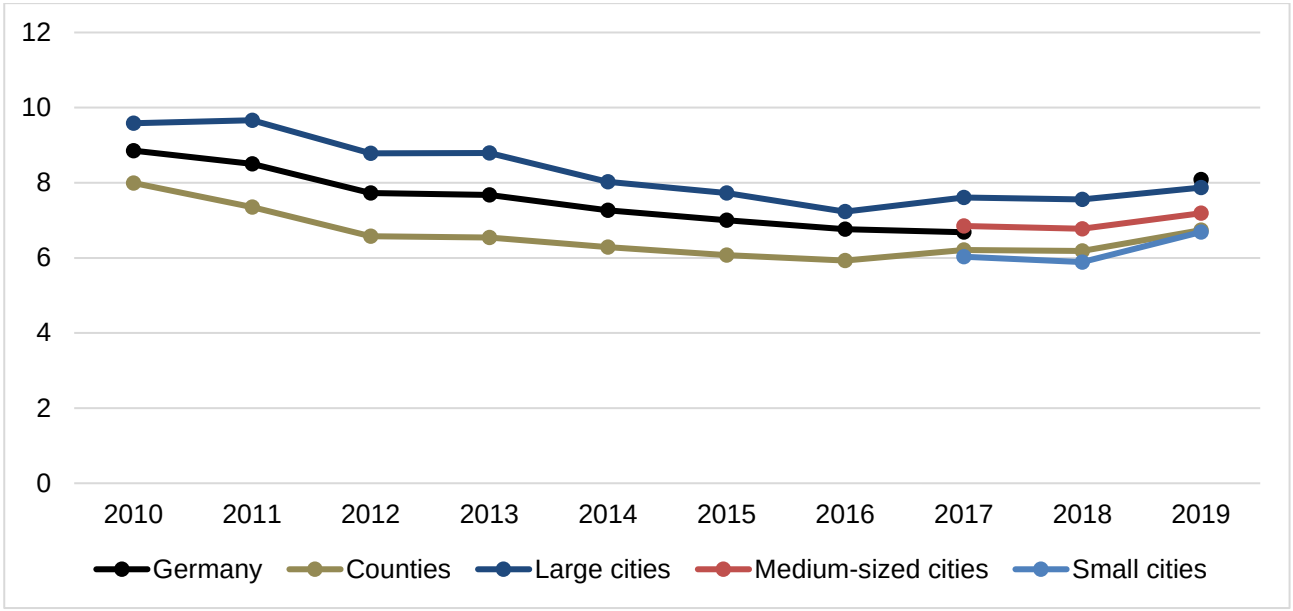


Figure 27: Business start-ups per 1,000 inhabitants

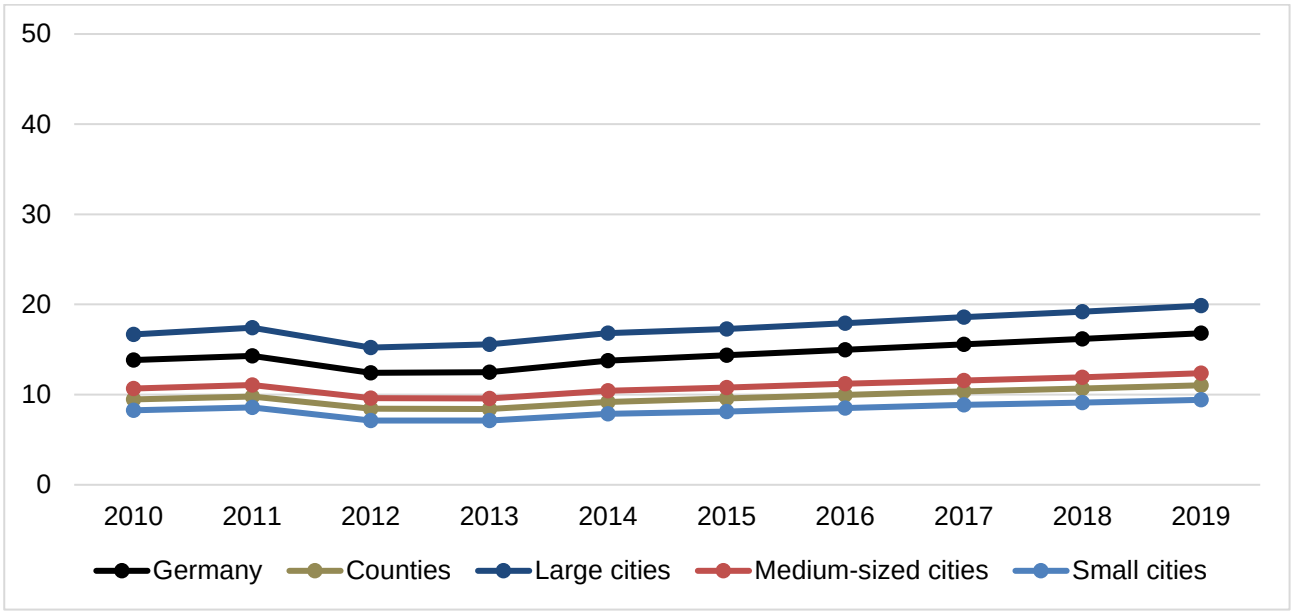


Figure 28: Highly skilled workers in percent

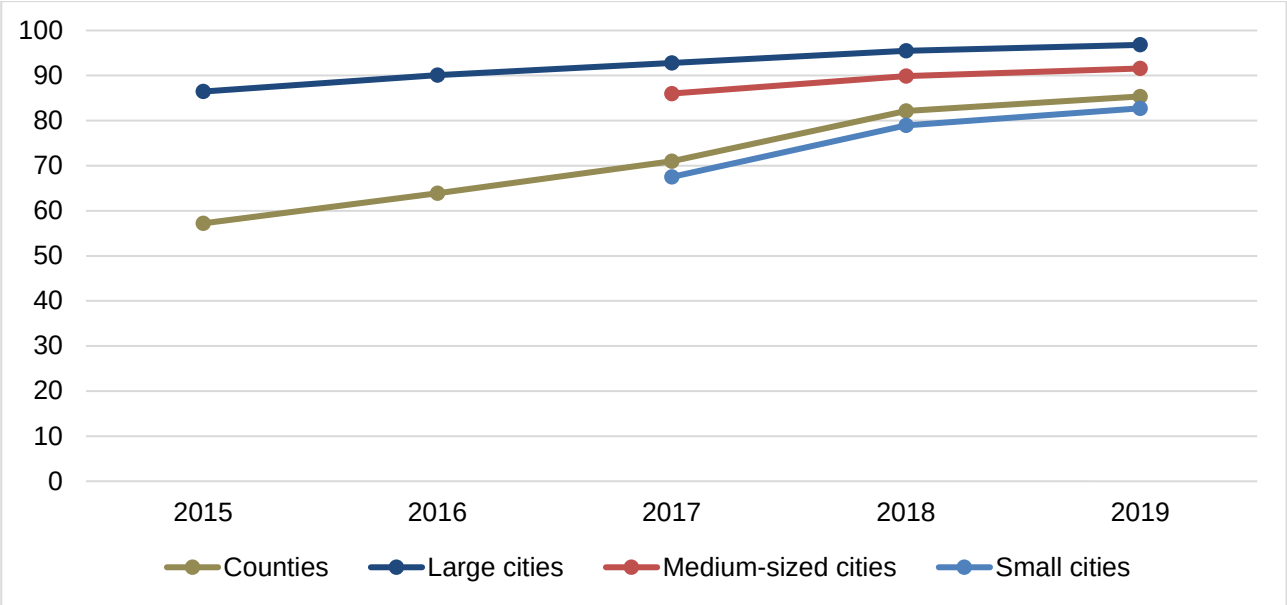


Figure 29: Broadband internet access –Private households in percent

2.10 SDG 10: Reduce inequality within and among countries

Figure 30 shows an overall positive trend in the employment rate for foreigners. The rate of foreign early school leavers (Figure 31), on the other hand, rose sharply, especially between 2015 and 2017, reflecting a negative trend potentially due to the refugee crisis from 2015 onwards. The rate of naturalizations (Figure 32) peaked in 2012 and, despite slight increases in recent years, has not reached that level since. Trends at the different spatial levels are similar, with generally more naturalizations occurring in large cities.

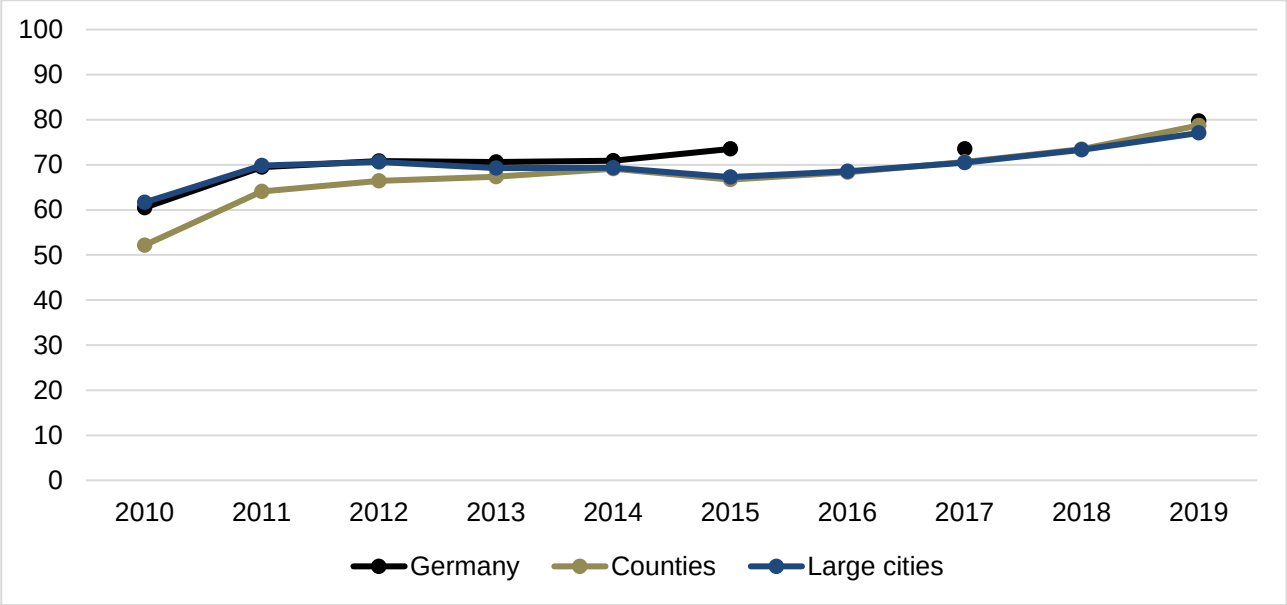


Figure 30: Employment rate – Foreign nationals in percent

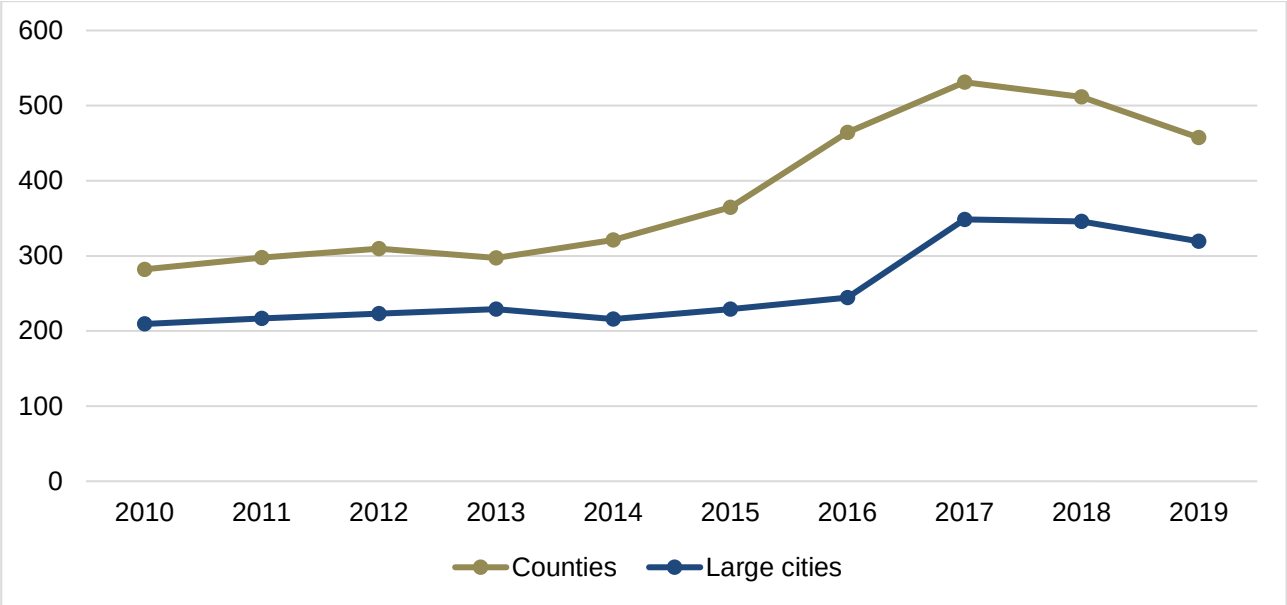


Figure 31: Ratio of foreign early school leavers to all early school leavers in percent

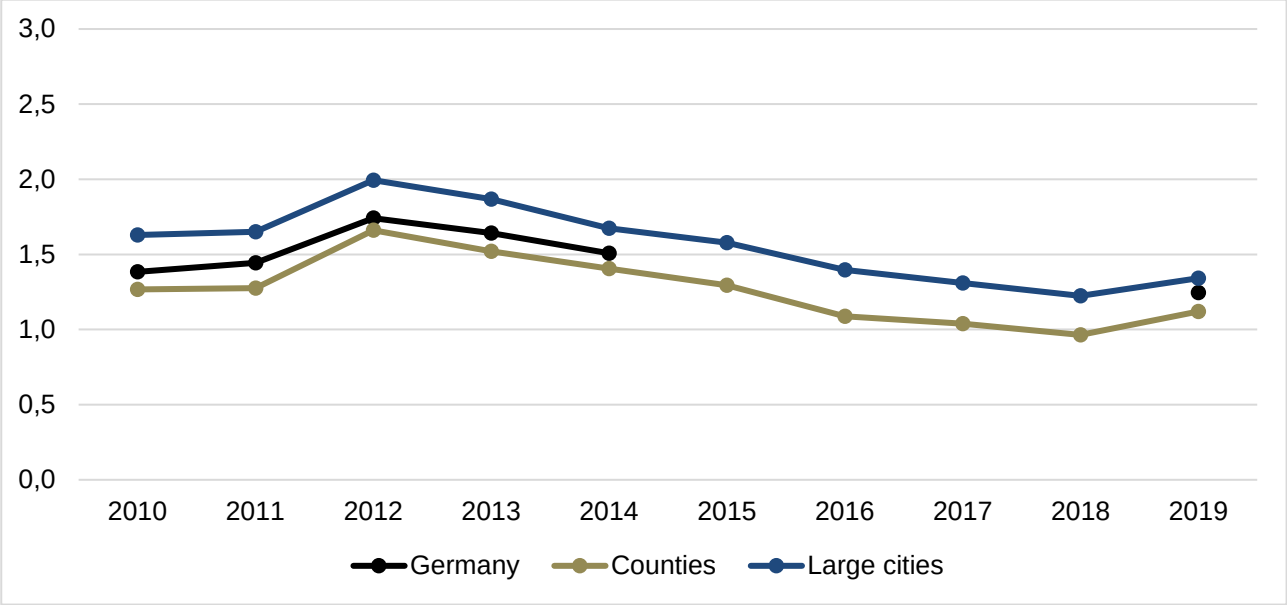


Figure 32: Naturalizations in percent

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

Rent prices substantially increase over time, especially in large cities (Figure 33), reflecting general urbanisation pressures. Even only slight increases in the average living space per person (Figure 34) and the constantly growing car density (Figure 35) additionally contribute to the socio-economic pressures in municipalities.

Road safety, expressed by the indicator 'victims of traffic accidents' (Figure 36), shows differentiation tendencies – values in small and medium-sized cities decrease over time, whereas more victims of traffic accidents were registered in large cities and counties.

Figure 37 (left) shows large differences between counties and cities with growing land use in large cities and counties or medium-sized cities. Settlement and transport areas increase slowly, but constantly, and are much higher in large cities (values around 50) than in counties (values around 13). The rate of land use change has recently accelerated in small towns (Figure 37 right). Due to a change in the data basis in 2015/2016, the comparison of the German value with the respective previous year is limited.

The last three indicators of SDG 11 (Figures 38, 39 and 40) are similar in that the values of larger cities are lowest, and counties represent the highest values. In the case of land use intensity – defined as settlement and transport area per inhabitant – (Figure 38), the values remain fairly stable with slight increasing tendencies. The proportion of local recreation areas per inhabitant (Figure 39) has increased in all categories, which can be evaluated as very positive in regard to the increasing competition between many land use types. Finally, a similar positive development can be observed in renewable heating energy in new residential buildings, as depicted in Figure 40.

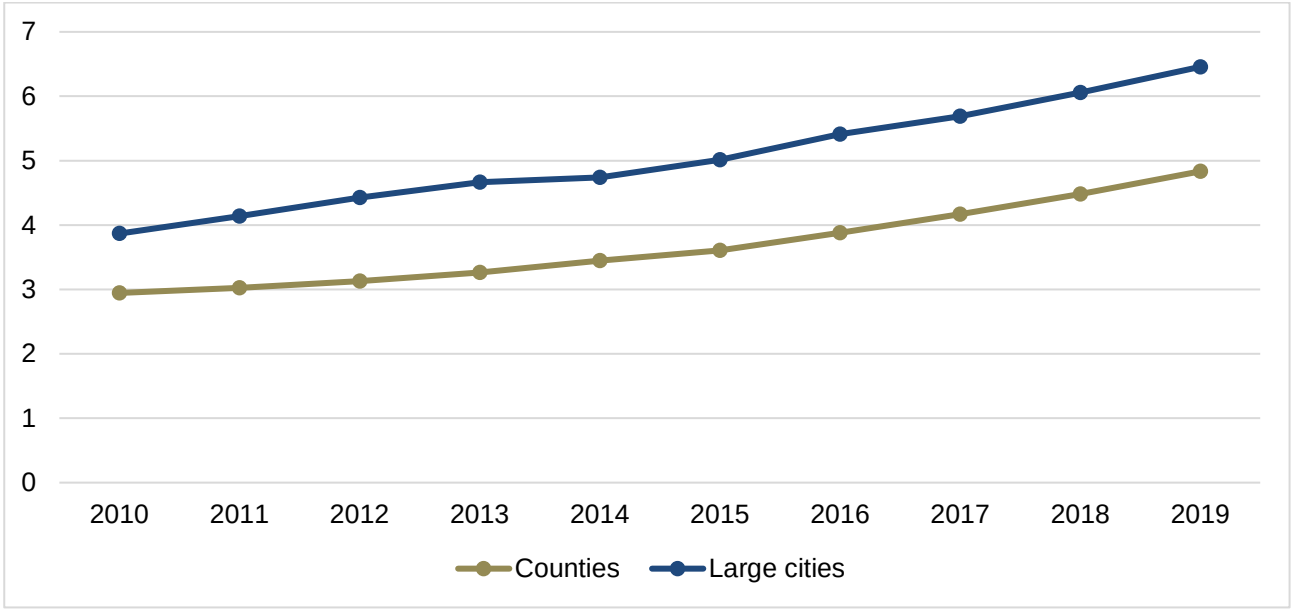


Figure 33: Rent prices in euros per m^2

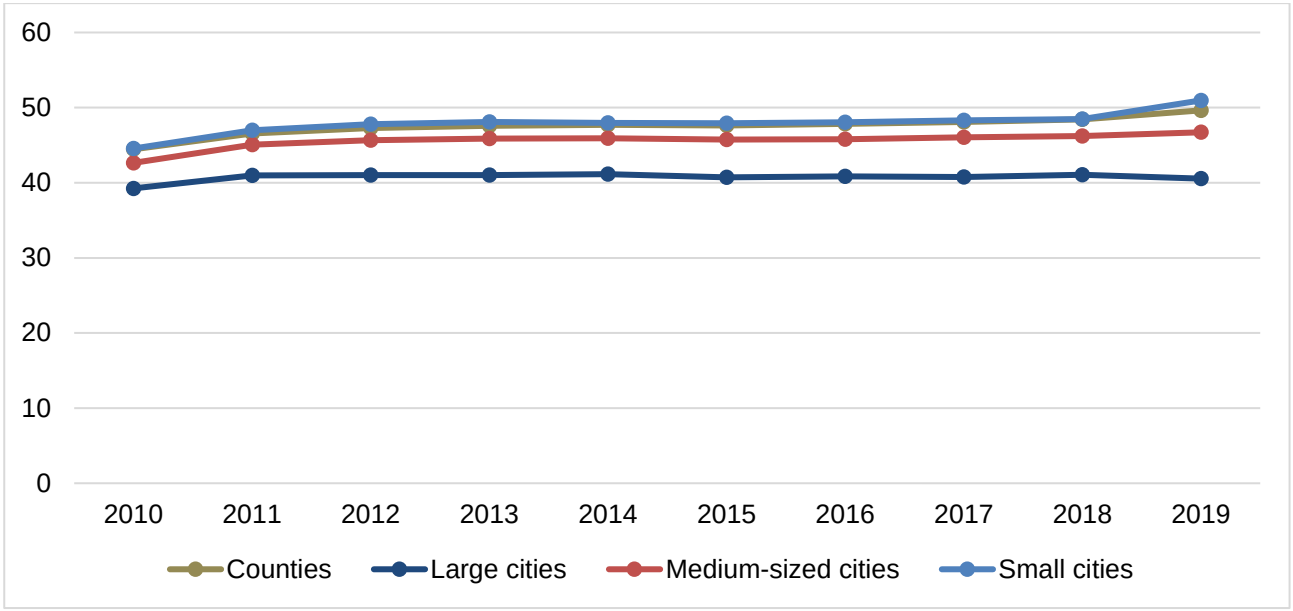


Figure 34: Living space in m^2

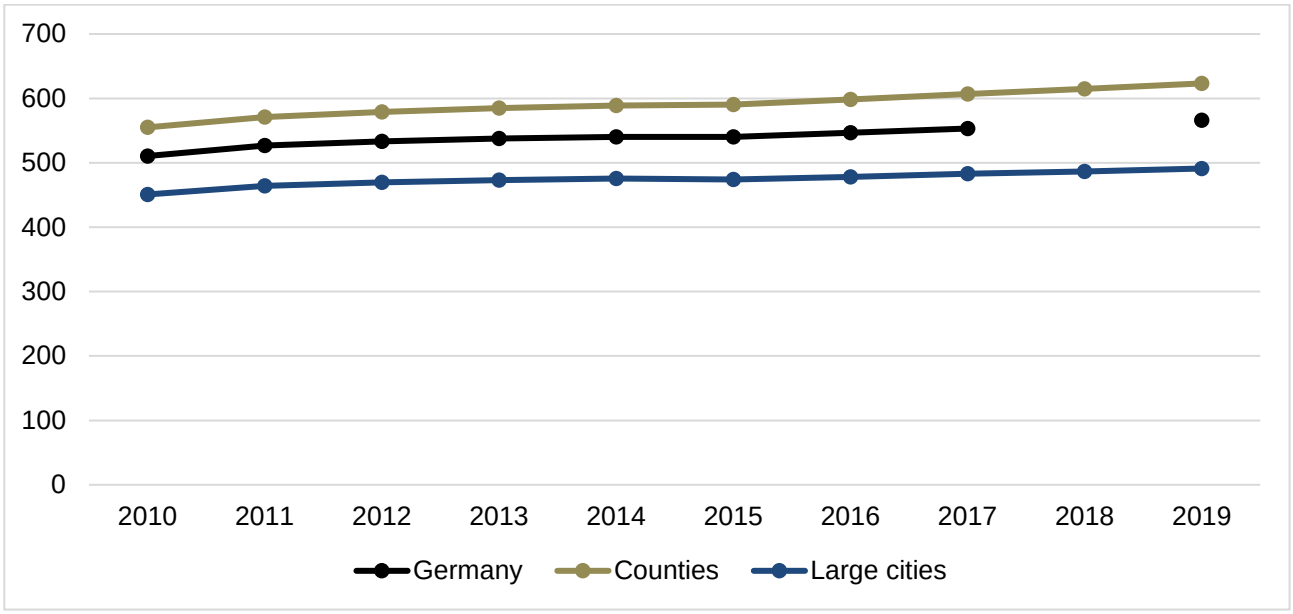


Figure 35: Car density in number of cars per 1,000 inhabitants

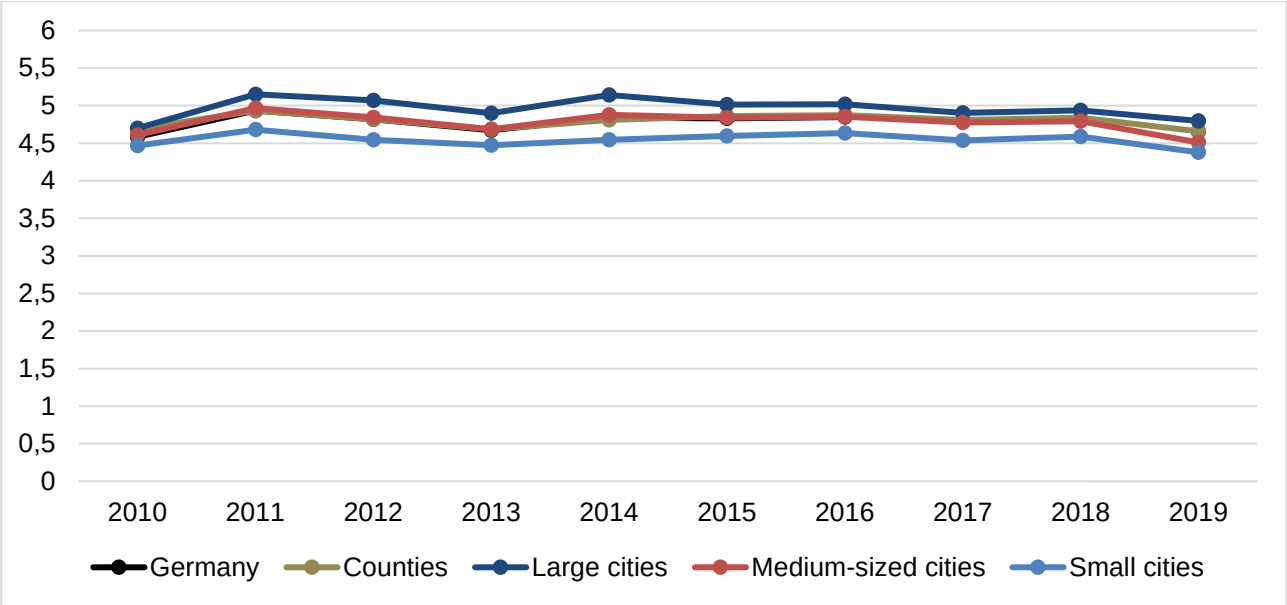


Figure 36: Victims of road accidents per 1,000 inhabitants

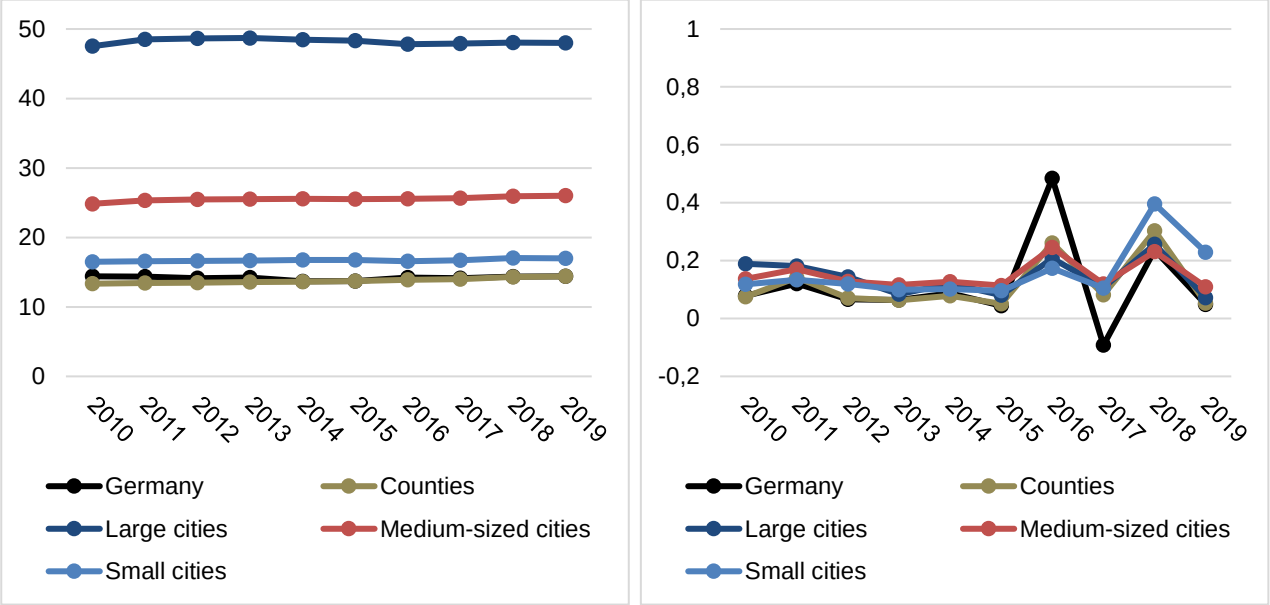


Figure 37: Land use (left) and land use change rate (right) in percent

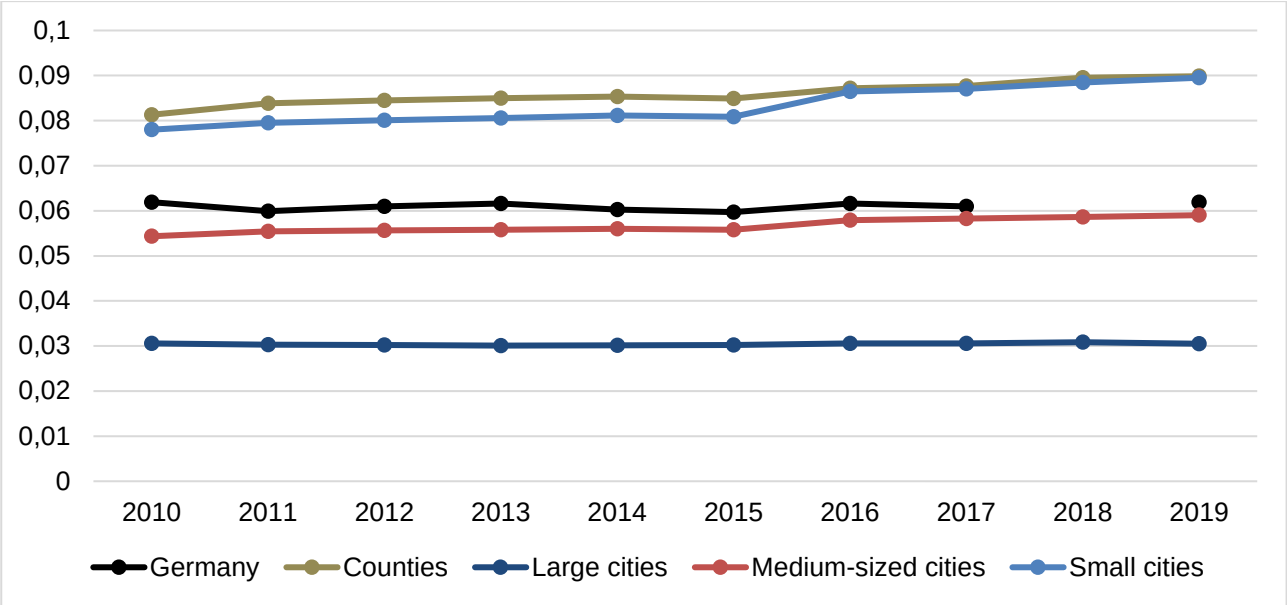


Figure 38: Land use intensity in m^2 per inhabitant

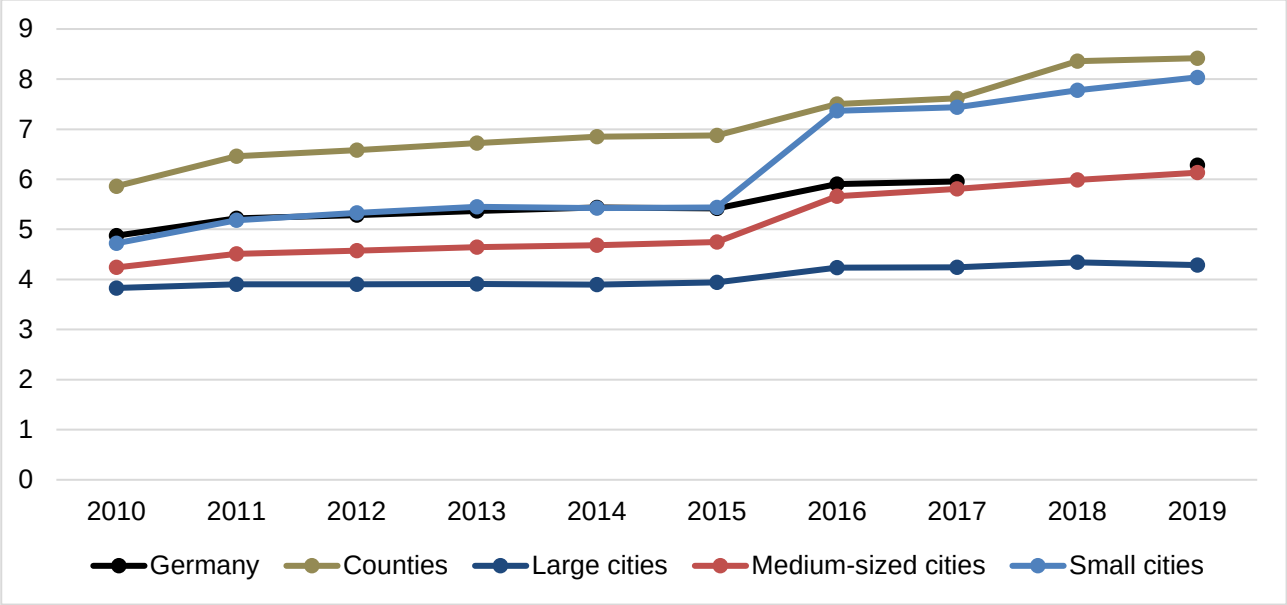


Figure 39: Local recreation areas in m^2 per inhabitant

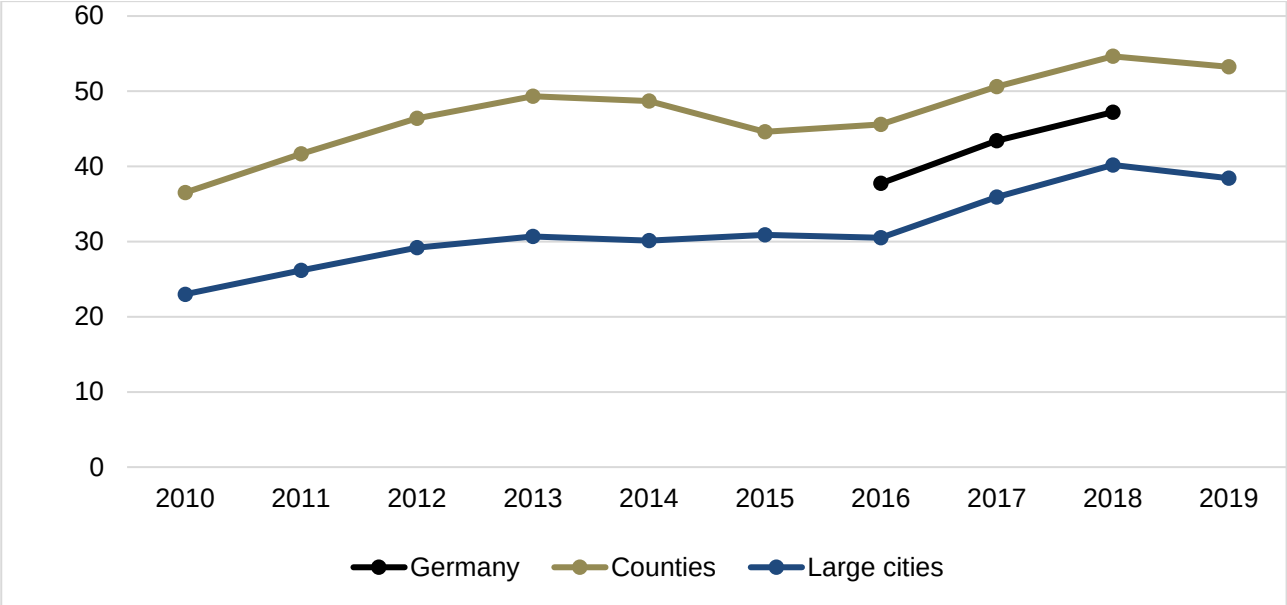


Figure 40: Completed residential buildings with renewable heating energy in percent

2.12 SDG 12: Ensure sustainable consumption and production patterns

The development of sustainable consumption and production patterns is depicted in drinking water consumption (Figure 41) and waste generation (Figure 42). Over time, both indicators are fairly stable, with waste generation even slightly increasing. There are no notable differences between the different spatial categories.

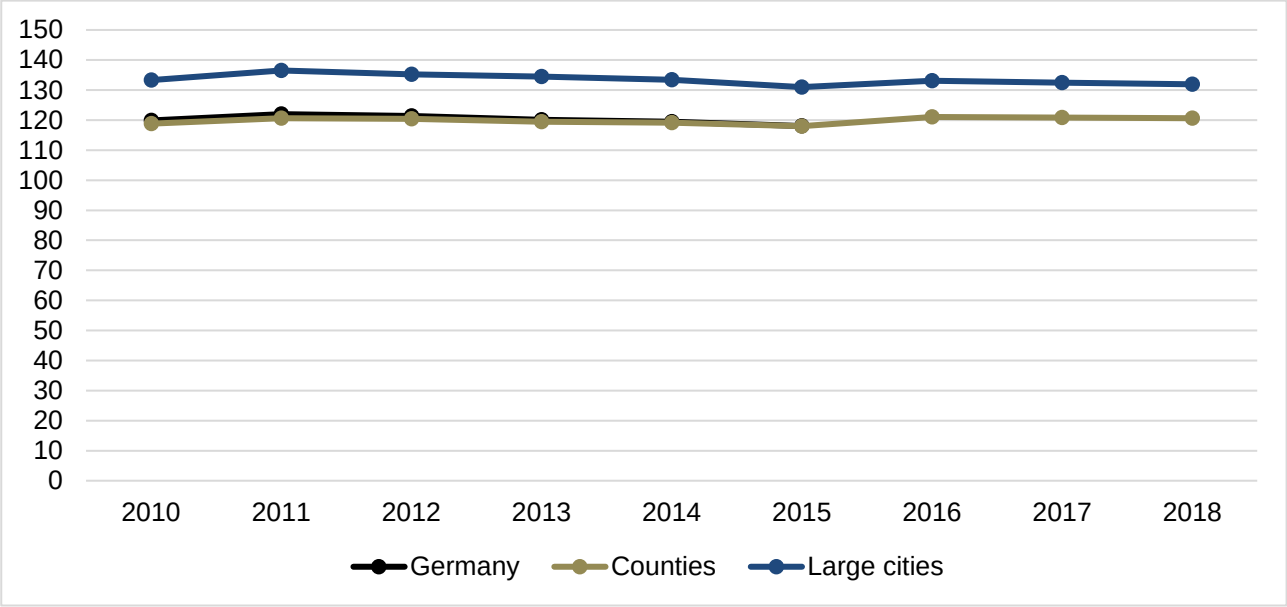


Figure 41: Drinking water consumption – Private households in litres per inhabitant and day

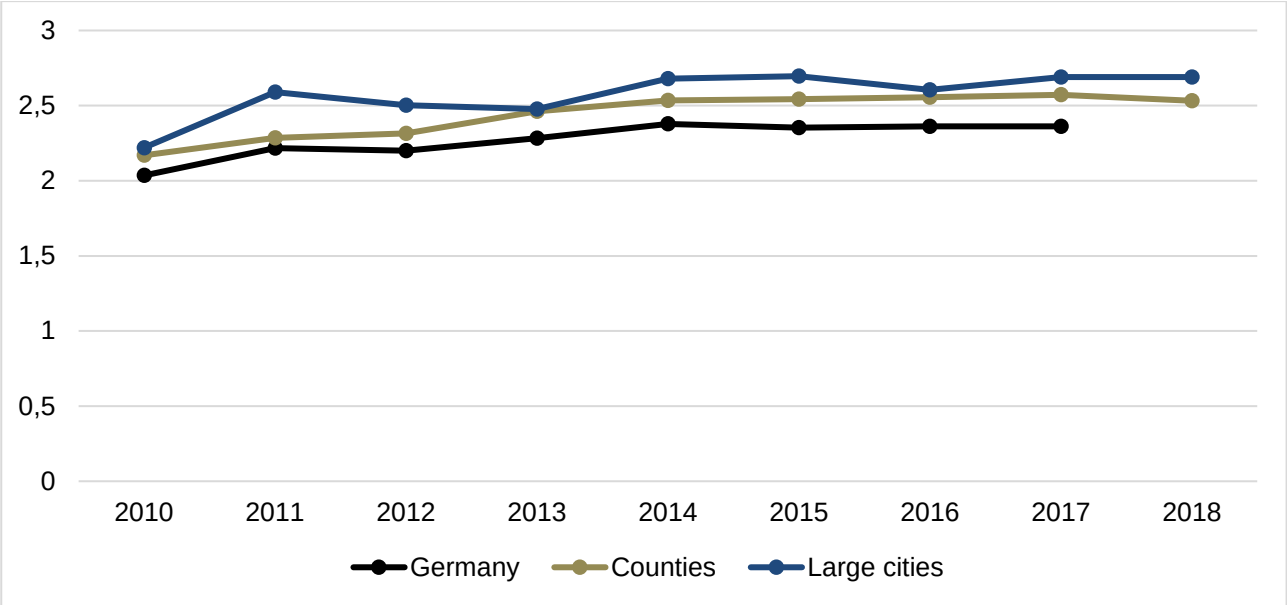


Figure 42: Waste generation in t per inhabitant

2.13 SDG 13: Take urgent action to combat climate change and its impacts

Figure 43 shows the results of a survey on climate protection concepts (Difu 2020). A clear increase in the development of climate protection concepts can be seen. Whereas in 2007/2008 less than half of all municipalities (43%) stated that they had a climate protection concept, development has increased strongly by 2020 (87%). In 2020, only 13% of the municipalities stated that they did not have a climate protection concept yet or that they were planning one. While this development points to an important increase in awareness of the problems associated with climate change on the local levels, it should however be noted that these survey data do not provide any information on the measures actually implemented.

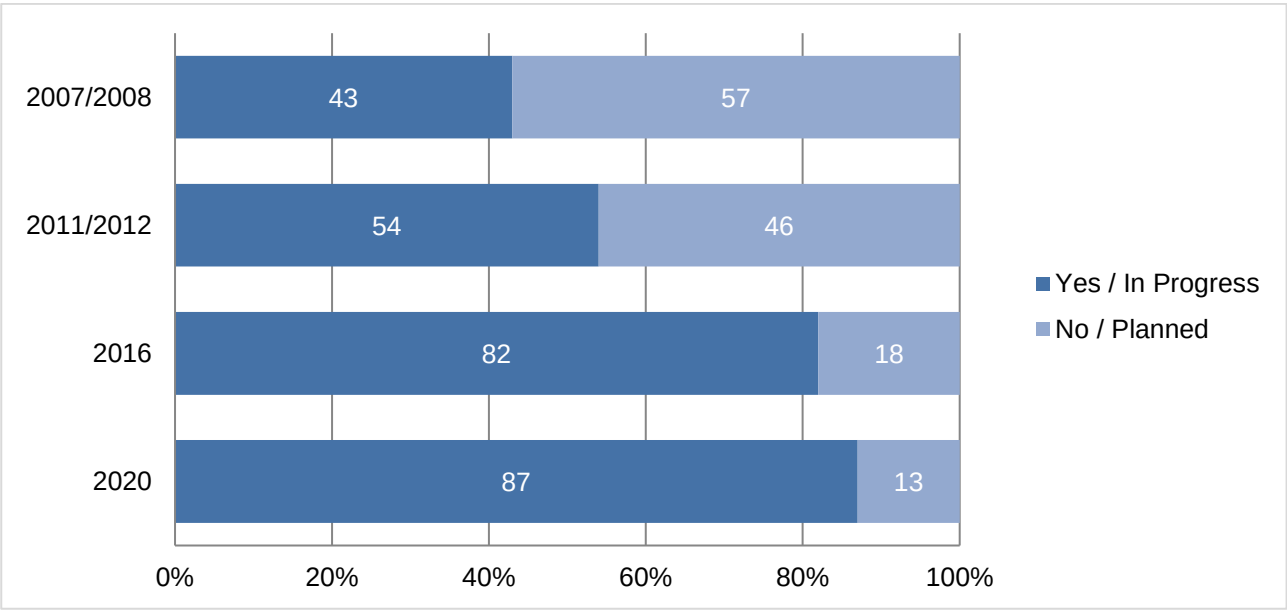


Figure 43: Climate protection concepts in percent of surveyed municipalities (Question: "Has a municipal protection concept been prepared in your city / municipality or for your country?"; N = 129-328; Difu 2020)

2.14 SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

For running water quality, as shown in Figure 44, a distinction is made between good/very good and moderate/bad according to the Water Framework Directive and its last river basin management plan period in 2015. Far less than half of the running water kilometres are in a good or very good ecological condition. The smaller the city size, the better the ecological status and condition of rivers. The figure shows that municipalities are not on track to protect and restore healthy aquatic ecosystems. Therefore they do not ensure sustainable use of the oceans, seas and marine resources in Germany.

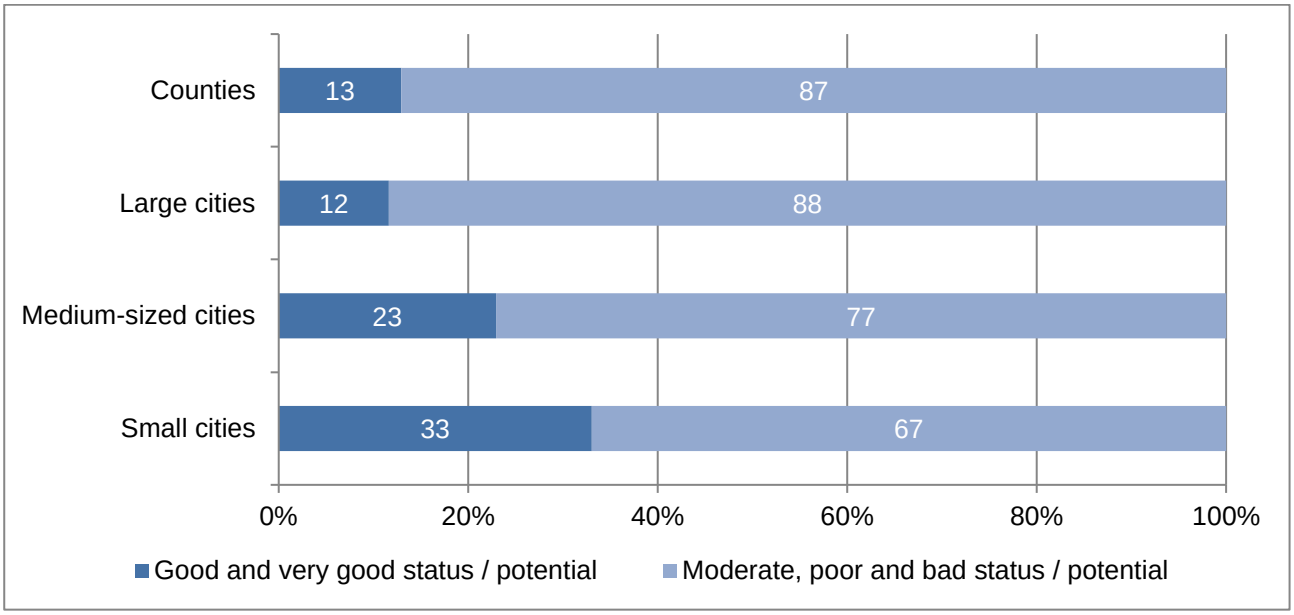


Figure 44: Running water quality 2015 in percent of watercourse length with the ecological status "very good" and "good" of total watercourse length

2.15 SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Nature conservation and landscape quality are not primarily associated with cities; however, urban greenery contributes to halting biodiversity loss and increasing experience of nature. The proportion of nature conservation areas (Figure 45) remains stable over time, with the highest values in smaller cities and counties. Non-urban areas included in the Germany-wide value appear to have much higher proportions of protected nature areas. Accordingly, the degree of human impact on nature (hemeroby, Figure 46) – comprising naturalness, potential vegetation, soil ceiling and some factors more – is highest in large cities. This highly condensed indicator hardly changed over time. This also applies to the proportion of non-fragmented open space areas > 50 km² not dissected by routes of the interurban transport network (Figure 47).

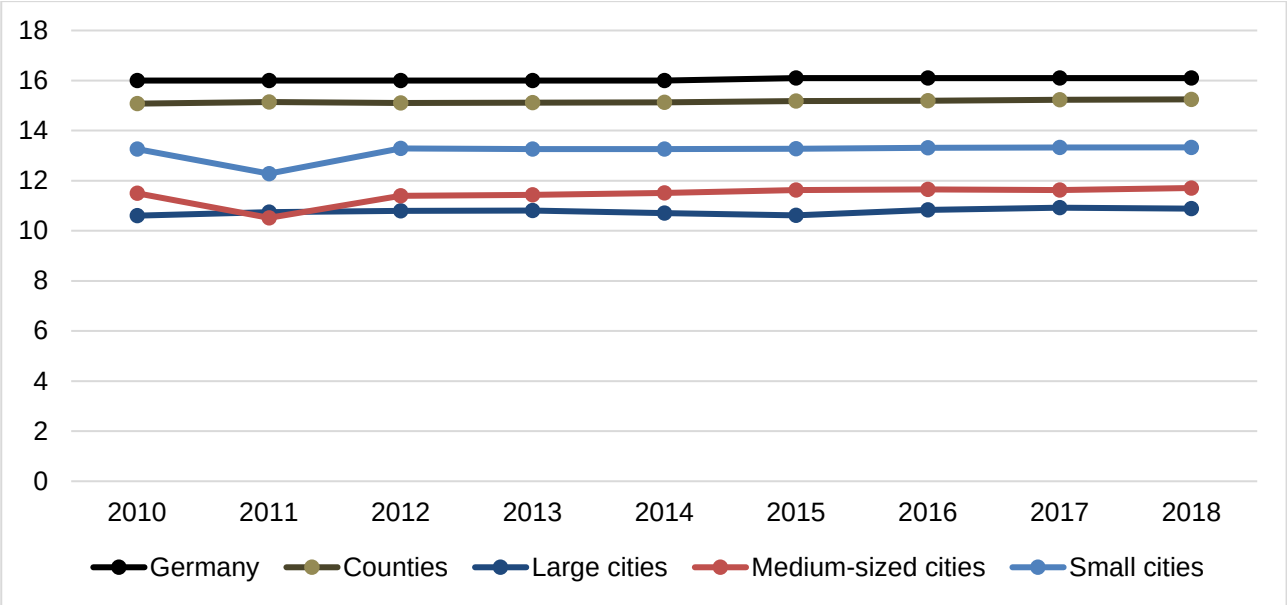


Figure 45: Nature conservation areas in percent

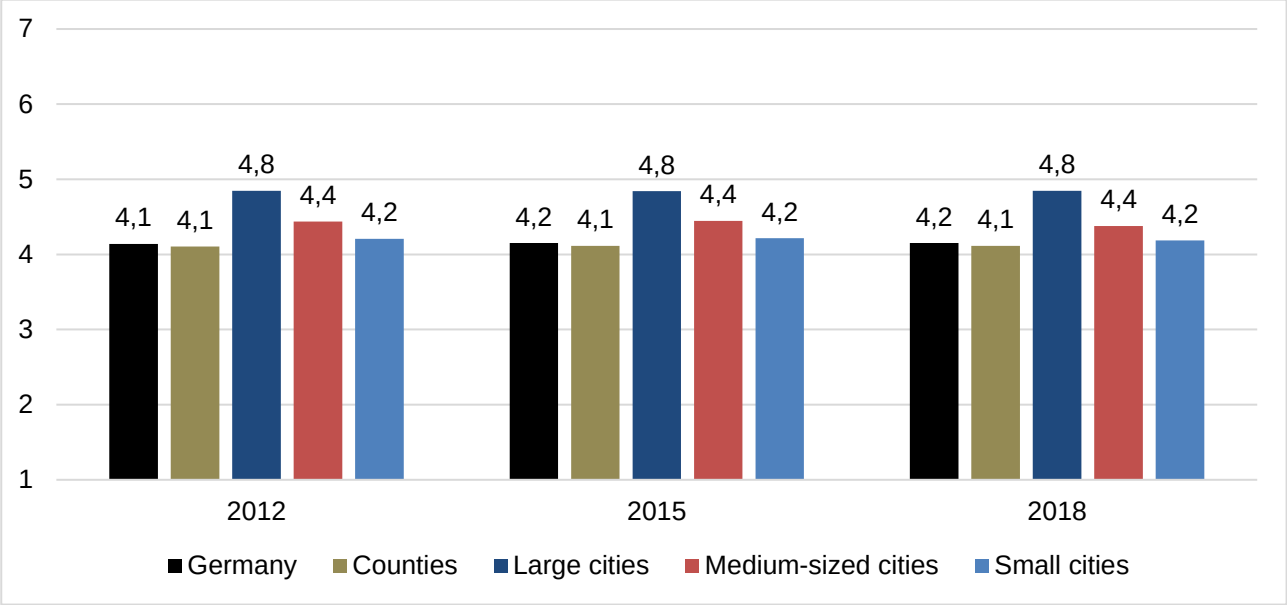


Figure 46: Landscape quality in hemeroby index ranging from 1 – no human impact to 7 – excessive human impact / biocenosis destroyed

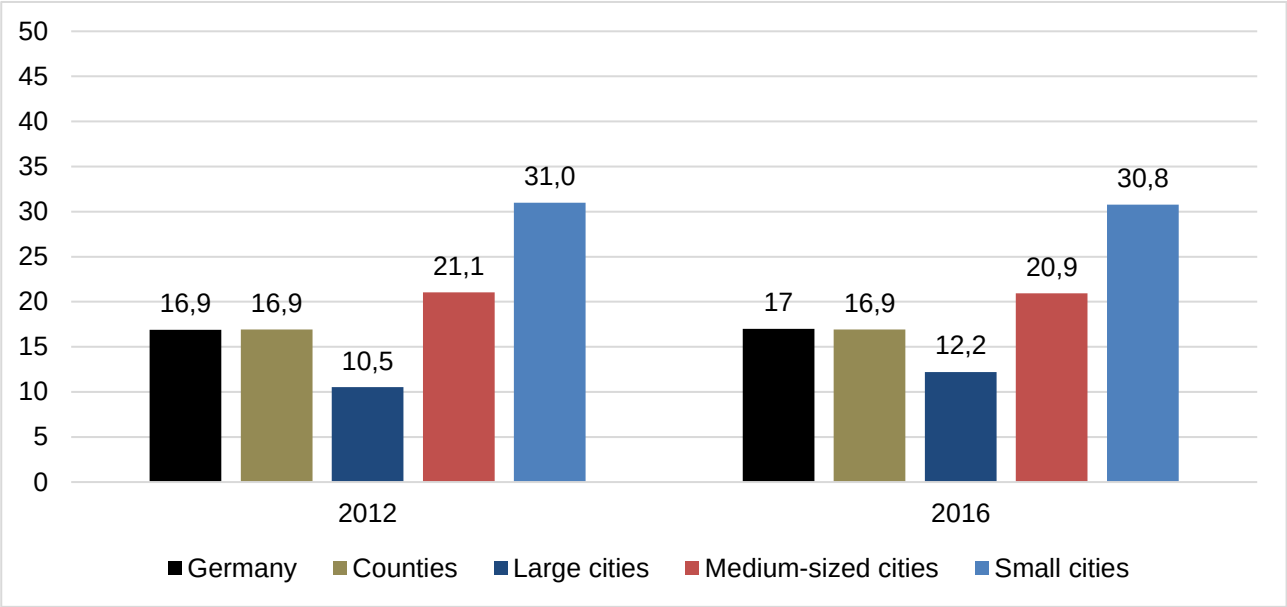


Figure 47: Landscape fragmentation – Percentage of non-fragmented open space areas > 50 km² which are not dissected by routes of the interurban transport network

2.16 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

The thematically broad SDG 16 is underpinned by indicators on crime and tax revenues (Figures 48 and 49). Both indicators show a positive development, with a slight decrease in criminal offences and a notable increase in taxes. While the large cities have the most negative values in the first case, the opposite applies to tax revenues.

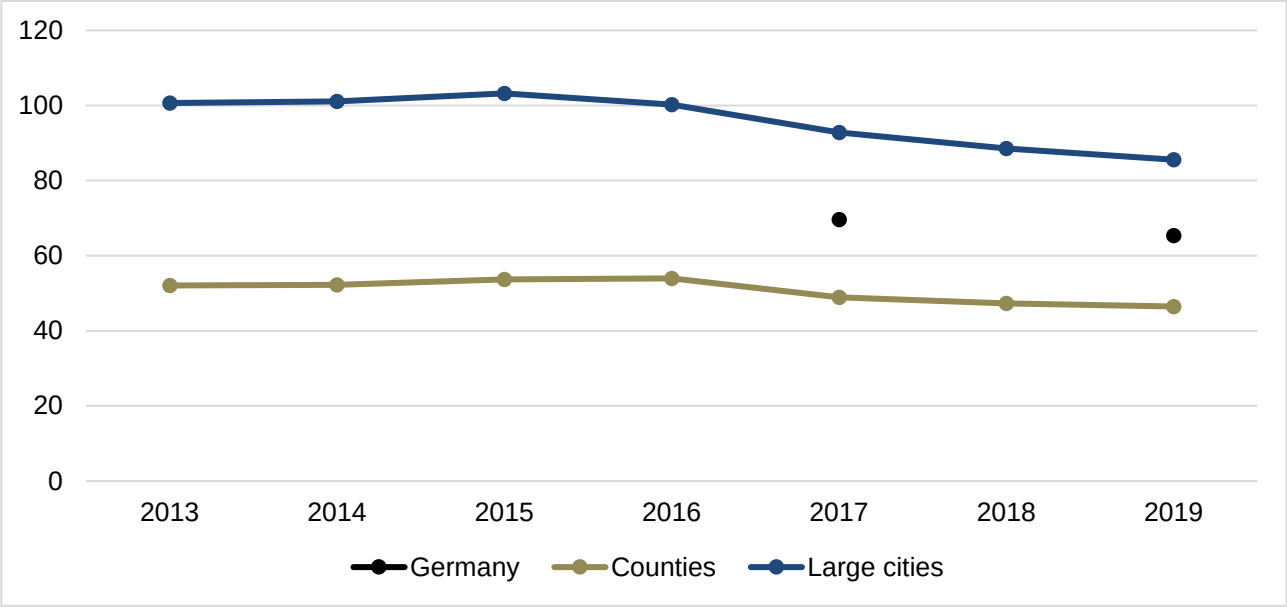


Figure 48: Criminal offences per 1,000 inhabitants

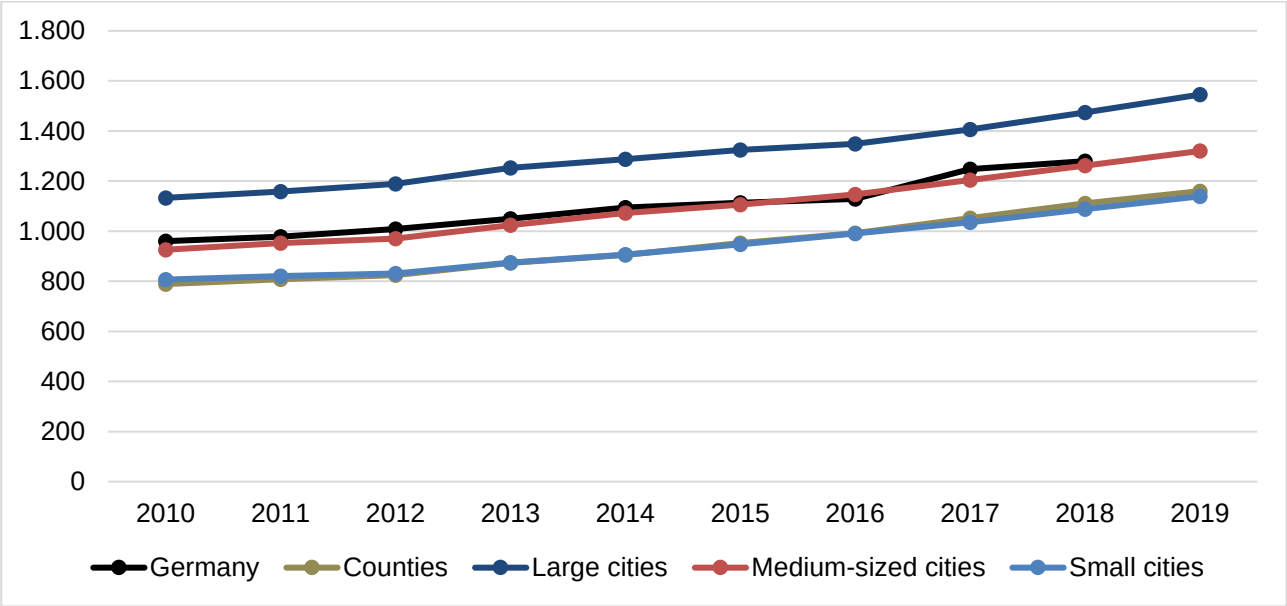


Figure 49: Tax revenues in euros per inhabitant

2.17 SDG 17: Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development

Figure 50 shows the development of a slight but constant increase in the number of municipal partnerships in Germany. However, the growth of new partnerships per year varies greatly. Initially, a negative development could be observed between 2010 and 2014, followed by a slight increase from 2015 onwards. Most municipal partnerships can be found between German and other European cities, while there is a lack of sufficient connection to the Global South and Australia (Figure 51).

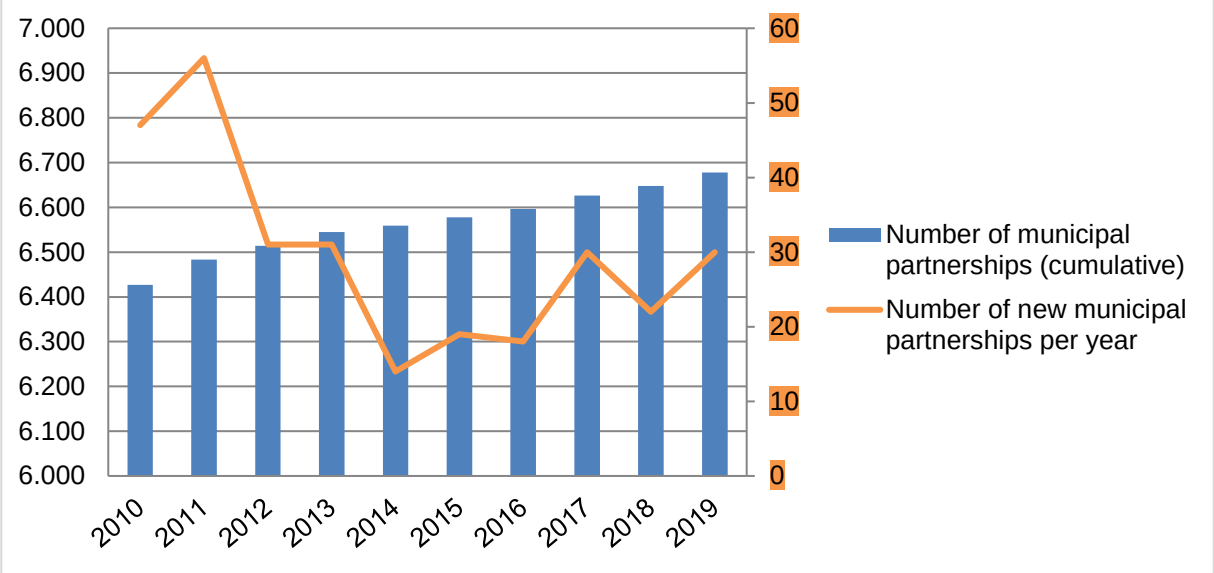


Figure 50: Development municipal partnerships in absolute numbers (Source: RGRE 2021)

Figure 51: Distribution map of municipal partnerships in absolute numbers (source: RGRE 2021)

3 German VLRs

At the time of writing, three German cities have published their own Voluntary Local Reviews: Bonn, Mannheim, and Stuttgart. These three reports are briefly presented as good practice examples and are roughly compared in the following sections.

3.1 City of Bonn

Bonn's first Voluntary Local Review (published by the City of Bonn in 2020) illustrates the state of SDG implementation in alignment with the six fields of municipal action which are targeted by the City's Sustainability Strategy: mobility, climate and energy, natural resources and environment, labour and business, social participation and gender, global responsibility and One World. The report initially summarizes the resolutions adopted by the Bonn City Council related to Agenda 2030, starting with the city's first Sustainability Report in 2005. It outlines the City of Bonn's related international cooperation with diverse stakeholders, which provides additional multiplier effect in local SDG implementation in other parts of the globe. Bonn's Sustainability Strategy was adopted in 2019 and defines specific goals and measures within the six fields to constitute the framework for the city's future development and growth and recognizes the interconnection between different SDGs and SDG targets. Moreover, the SDGs are briefly presented.

The VLR depicts how each of the six fields contributes to the SDGs and presents the strategic goals related to the fields. Indicator values and dynamics are used to shed light on the outcomes of SDG localization measures. The development of the indicators was interpreted by experts in the administrative departments and is illustrated by traffic light symbols. In addition, goal value coverages are indicated for the year 2022. To supplement the indicators, qualitative information on relevant activities was amended, and the six areas of action are complemented by practical project examples. The quantitative data for this report were obtained from the City's 5th Sustainability Report[3], where further information on the origin of the data can be obtained.

3.2 City of Mannheim

Mannheim's Voluntary Local Review (Stadt Mannheim, 2019) is based on the 'mission statement' as representative of the whole community's commitment to implementing the SDGs, according to the motto "Think global, act local". The 2030 mission statement is primarily a broad participatory process with a variety of dialogue opportunities that included individual citizens and civil society; more than 2,500 residents have directly participated in discussions about SDG localization with international partners and representatives. Another 10,000 were integrated via polls and other events. The process resulted in the definition of seven strategic goals: educational equality and prevention of poverty, urban quality of life and safety, solidary and tolerant urban community including gender equality, democracy and transparency, economic growth, climate protection and resilience, and global justice and international cooperation. These strategic goals represent the tangible SDG implementation in Mannheim.

The VLR presents the SDGs, also with alignment to the individual strategic goals and three dimensions i.e. local effects, indirect global effects, and direct global effects. Consecutively, the 'mission statement process' is illustrated, from the very first participatory steps in 2017 to the adoption of the mission statement in 2019. The main part focuses on an evaluation of the state-of-the-art achievement of the strategic goals with the help

[3] Further information on the origin of the data can be obtained from Chapter 7.2 of the 5th Sustainability Report, available in German only ("Nachhaltigkeitsbericht der Stadt Bonn" https://www.bonn.de/medien-global/amt-67/lokale-agenda/Nachhaltigkeitsbericht_Bonn_2016-19_Juni2020_WEB.pdf)

of indicators whose goal progress is appraised by arrow symbols and assigned to a specific SDG. The city of Mannheim used additionally our SDG Indicators for Municipalities for their VLR. In addition, related strategies, specific implemented projects and prospective measurements are presented in a descriptive way for each strategic goal.

3.3 City of Stuttgart

In 2019, the State Capital Stuttgart published the first voluntary review of the city's progress on SDG implementation in German language (Landeshauptstadt Stuttgart, Deutsches Institut für Urbanistik & Bertelsmann Stiftung, o. D.) and also provided an executive summary in English (State Capital Stuttgart, Deutsches Institut für Urbanistik & Bertelsmann Stiftung, o. D.). The report starts with an introduction to the city's efforts towards implementing the global goals, including the signing of the specimen resolution. Consecutively, the methodological approach for the VLR is described, using and testing 77 indicators. These indicators were partially derived from the first set of SDG (key) indicators for municipalities from 2017, and amended by additional indicators from other sources and the city's own indicators. The main part in the German version consists of an extensive description of the developments in Stuttgart regarding the 17 SDGs over time since 2007. Additionally, the VLR contains more than 50 qualitative descriptions of best practice examples, showing the broad range of measures the City of Stuttgart implements in order to promote SDG localization. The aim is to use the VLR as a monitoring and steering tool to enhance political decision-making processes on sustainable development. Furthermore, the city's VLR and its summary propose methodological recommendations for other cities – in terms of applicability and relevance of the selected indicators, proposals for additional indicators, and recommendations on how to take up the process of the VLR within administrations. The document can thus serve as a supportive, cross-sectoral tool for other municipalities that are preparing their own comprehensive SDG monitoring or a VLR.

Locally, the VLR complements Stuttgart's wide-ranging strategic and practical measures to upscale the scope of SDG implementation. It creates additional favourable conditions to strategically anchor the SDGs within the city administration and beyond. Various departments, offices, staff units and the city's in-house operated enterprises were involved. The institutional focus also strengthens partnerships with business, civil society, the scientific community as well as national and international cooperation.

The first VLR process was supported by cooperation with Bertelsmann Stiftung and the German Institute of Urban Affairs, and consisted of a pilot test for the "SDG Indicators for Municipalities" in 2018 and a second phase in 2019 to update the data. Stuttgart is currently elaborating its second generation VLR, which includes addressing general lacunae of SDG Indicators by developing and integrating additional indicators on culture and digitalisation, amongst others. The next VLR will be published by autumn 2021 and interlink further with the budgetary process, aiming towards a strategic, impact-oriented municipal sustainability steering.

3.4 Summary

The three reports fulfill most the principles in the guidelines by UCLG (United Cities and Local Governments, 2020) and the European Commission (European Union, 2020). The two VLRs of Bonn and Mannheim differ from the English version of the Stuttgart report in that they provide quantitative and qualitative information on the degree of attainment of specific aspects of the SDGs, as represented by the chosen indicators and project descriptions. The two reports are structured in a similar way, with both focusing on their own strategic areas of action as the main perspective and with (some of the) SDGs assigned to these topics additionally. While this is a sound strategy for continuous sustainability monitoring with individual foci, it impedes an overview of the degree of attainment of the SDGs overall in these two cities.

4 Conclusion

With the ‘Decade of Action – ten years to transform our world’, the United Nations calls for an accelerated effort to deliver the ambitious goals and the initially cited promise to “work tirelessly” towards the full implementation of the 2030 Agenda. This call is directed towards all parts of society and to all administrative levels, including the local level, and is based on the conclusion that the need for accelerated and transformative change is obvious (United Nations, 2019). Concluding from this brief review, we fully underline this statement.

The specimen resolution and Club of 2030 Agenda Municipalities is a useful tool that should receive much more attention and commitment in German municipalities. The supply side, in the form of tool development, knowledge transfer and community building, as well as the demand side – the concrete application and implementation of the tools in local administrations – requires even more coordinated and resourced support to realize the full potential of the SDGs by 2030. With the SDG Indicators, the SDG Portal and the prospective BNK, comprehensive instruments for SDG monitoring are available. However, there is still a lack of indicators to fully monitor all SDGs. The reasons for this significant limitation range from a lack of centrally accessible Germany-wide data (specifically SDG 13 and 17, but also certain important targets in other SDGs) to a lack of adequate measurement concepts, particularly with regard to ecological sustainability (e.g., microplastics in waters, renewable energy, biodiversity monitoring, environmental justice etc.).

SDGs with the most positive development between 2010 and 2019 – according to the specific and incomplete indicators we used in our analyses – are SDG 1 (poverty), SDG 8 (economy), SDG 13 (climate), and SDG 16 (institutions). However, the positive trend in these goals says nothing about their magnitude and sufficiency. For example, the continuing rise in awareness of the climate change problems in local authorities – which was also shown in the OB-Barometer 2021 – or the preparation of climate protection concepts does not allow any estimation of the degree to which we will be able to lessen or counteract climate change. Moreover, the COVID-19 pandemic and the resulting crisis may significantly alter some of these trends. SDGs with a clear negative trend – albeit only one indicator – are SDG 2 (agriculture) and the strongly linked SDG 14, showing the slow progress of improving ecological water quality. The trends of the indicators in SDG 11 are very heterogeneous, however; the negative dynamics of car density and rent prices point to major challenges for municipal development, namely sustainable housing and mobility – which are likewise indicated as essential challenges in the OB-Barometer 2021. Mobility was shown to be a major weakness even among sustainability-advanced cities and towns that applied for the German Sustainability Prize. As in other contexts, the indicator values are not unrelated to city size. For instance, large cities often act as a focal point for socio-environmental challenges such as poverty and pollution, while at the same time providing higher land use efficiency, social equity, innovation and economic performance in comparison with smaller cities and counties.

So far, three German municipalities – Mannheim, Stuttgart and Bonn – have published their own Voluntary Local Reviews. These three reports pursue very different approaches to reporting on the progress of SDG implementation: Mannheim’s report includes a broad participatory process resulting in a mission statement, Stuttgart focuses on the use of indicators combined with best practices, and Bonn reveals the state of SDG implementation aligned with different fields of municipal action. It is expected that many municipalities i.e. those in the GNK NRW project, will use the opportunity to prepare VLRs in the near future. The cities of Arnsberg, Bonn, Dortmund, Düsseldorf and Münster will add their contributions to the increasing list of VLRs in 2022.

SDG monitoring at the local level should become an integral part of SDG monitoring at state, federal and European levels. The German Sustainable Development Strategy as the implementation of the 2030 Agenda on national level explicitly takes up this vertical integration. It is the result of many political initiatives that converge in the Committee of State Secretaries for Sustainable Development. For example, this committee has already put forward the “Interministerial Working Group on Sustainable Urban Development in a National and International Perspective” and further joint resolutions with the federal states and municipalities. In this year's German Sustainable Development Strategy, more than 30 national-level indicators are suitable for the local level, and another 20 indicators could be used, at least in part, for the SDG Indicators for Municipalities (see Appendix). The Committee of State Secretaries for Sustainable Development will discuss and reaffirm the role of municipalities for sustainable development in June 2021.

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Appendix: SDG Indicators for Municipalities

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
1	End poverty in all its forms everywhere	SGB II/SGB XII rate	Proportion of persons entitled to benefits under SGB II or SGB XII (under 65 years) in the population (under 65 years)	Type I	
		Poverty – Child poverty	Proportion of under 15-year-olds affected by poverty	Type I	
		Poverty – Youth poverty	Proportion of 15-17-year-olds affected by poverty	Type I	
		Poverty – Elderly poverty	Proportion of over 65-year-olds affected by poverty	Type I	
		Severe material deprivation	Proportion of materially deprived persons	Type II	x
		Homelessness	Proportion of residents who are considered homeless	Type II	
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Children with malnutrition	Proportion of overweight and underweight children among all children examined in their first year of school	Type II	(x)
		Organic agriculture	Proportion of organically farmed area in the area used for agriculture	Type II	x
		Nitrogen surplus	Nitrogen surplus of agricultural land	Type I	x
3	Ensure healthy lives and promote well-being for all at all ages	Premature mortality - Women	Number of deaths among women under 70 years of age per 1,000 persons	Type I	x
		Premature mortality - Men	Number of male deaths under 70 years of age per 1,000 persons	Type I	x
		Noise pollution exposure	Proportion of population living in residential and mixed areas exposed to traffic noise	Type II	
		Basic supply close to home – Family doctor	Population-weighted linear distance to the nearest general practitioner	Type I	
		Hospital provision	Number of hospital beds per 100,000 inhabitants	Type I	
		Basic supply close to home - Pharmacy	Population-weighted linear distance to the nearest pharmacy	Type I	
		Staff in nursing homes	Staff in nursing homes per 10,000 inpatients in need of care	Type I	
		Staff in nursing services	Staff in outpatient care services per person in need of care	Type I	
		Nursing home places	Number of available inpatient places in nursing homes per 1,000 inhabitants aged min. 65 years	Type I	
		Air pollution exposure	Emission of particulate matter PM_{10}	Type I	x

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Basic supply close to home – Primary school	Population-weighted linear distance to the nearest primary school	Type I	
		Early school leavers	Proportion of school leavers without lower secondary school leaving certificate among all school leavers	Type I	x
		Child care (under 3 years olds)	Proportion of children under 3 years of age who are cared for in day-care facilities	Type I	(x)
		Staff in child care (under 3 year olds)	Number of children under 3 years per caregiver in day-care facilities	Type II	
		Tertiary educational attainment	Proportion of 30-34 year-olds with tertiary or post-secondary non-tertiary qualifications	Type II	x
		Sustainable schools	Proportion of schools in the municipality that have received a sustainability certificate out of all schools in the municipality	Type II	
		Sustainable child care centres	Proportion of day-care centres in the municipality that have received a sustainability certificate out of all day-care centres in the municipality	Type II	
		Integrative child care centres	Proportion of inclusive day-care facilities out of all day-care facilities in the municipality	Type I	
5	Achieve gender equality and empower all women and girls	Ratio of employment rates of women to men	Ratio of female employment rate to male employment rate	Type I	
		Earnings gap between women and men	Median income of female employees in relation to the median income of male employees	Type I	x
		Seats held by women in local parliaments and governments	Proportion of mandates in the city council, municipal council or county council held by women	Type I	
		Proportion of women in leadership positions in city, municipal or county administration	Proportion of women in leadership positions in the city, municipal or county administration in relation to the number of all managers in the city, municipal or county administration	Type II	x
		Positions held by women in senior management of municipal companies	Proportion of women in management positions in municipal enterprises in relation to the number of all managers in municipal enterprises	Type II	x
6	Ensure availability and sustainable management of water and sanitation for all	Nitrate in groundwater	Proportion of monitoring sites exceeding the threshold value of 50 mg nitrate per litre	Type II	x
		Wastewater treatment	Proportion of wastewater treated by denitrification and phosphorus elimination	Type I	(x)
7	Ensure access to affordable, reliable, sustainable and modern energy for all	Proportion of renewable energy in gross final energy consumption	Proportion of renewable energy in gross energy consumption	Type II	x
		Proportion of electricity from renewable sources in gross electricity consumption	Proportion of renewable electricity in gross electricity consumption	Type II	x
		Electricity from wind power	Installed wind power capacity per inhabitant	Type I	
		Electricity from photovoltaics	Installed solar power capacity per inhabitant	Type II	
		Energy-efficient street lighting	Proportion of street lighting with LED technology	Type II	
		Municipal investment in the development of renewable energy	Proportion of municipal budget expenditure on investments in the expansion of renewable energies	Type II	

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Gross domestic product	Gross domestic product per inhabitant	Type I	x
		Long-term unemployment rate	Proportion of long-term unemployed inhabitants in the labour force	Type I	
		Employment rate – 15-64 year olds	Proportion of 15- to 64-year-olds in employment subject to social insurance at place of residence out of all 15- to 64-year-old inhabitants	Type I	(x)
		Employment rate - 55-64 year olds	Proportion of 55- to 64-year-olds in employment subject to social insurance at place of residence in all 55- to 64-year-old residents	Type I	(x)
		Unemployment benefit recipients in employment (“Aufstocker”)	Proportion of ALG II recipients in employment among all recipients of benefits who are capable of working	Type I	
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Business start-ups	Number of newly established businesses per 1,000 inhabitants	Type I	
		Highly skilled workers	Proportion of employees subject to social security contributions with an academic vocational qualification among all employees subject to social security contributions at the place of work	Type I	(x)
		Broadband internet access - Private households	Proportion of private households that can use a minimum bandwidth of 50 Mbit/s	Type I	x
		Broadband internet access - Companies	Proportion of businesses that can use a minimum bandwidth of 50 Mbit/s	Type II	
10	Reduce inequality within and among countries	Employment rate – Foreign nationals	Ratio of employment rate of foreigners to employment rate in the total population	Type I	
		Early school leavers – Foreign nationals	Ratio of the school dropout rate of foreigners to the school dropout rate in the total population	Type I	(x)
		Income distribution - Gini coefficient	Distribution of equalised disposable income per person using Gini coefficient	Type II	x
		Projects with migrant organisations	Projects carried out by the municipality together with migrant organisations in relation to the number of inhabitants	Type II	
		Proportion of migrants in the city council, municipal council or district council	Proportion of mandates in city councils, municipal councils and county councils held by people with a migrant background	Type II	
		Naturalisations	Number of naturalised persons in the respective year in relation to the number of all foreign residents	Type I	

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
11	Make cities and human settlements inclusive, safe, resilient and sustainable	Rent prices	Average net basic rent per square metre	Type I	
		Housing cost overburden rate	Proportion of households spending more than 40% of their disposable income on housing	Type II	x
		Living space	Available living space per person	Type I	
		Basic supply close to home – Supermarket	Population-weighted linear distance to the nearest supermarket or discount store	Type I	
		Modal split	Proportions of walking, cycling and public transport in total traffic volume	Type II	
		Car density	Number of cars per 1,000 inhabitants	Type I	
		Cars with electric drive	Proportion of registered passenger cars with electric drive including plug-in hybrids	Type II	
		Cycle path network	Length of cycle path network per 1,000 inhabitants	Type II	
		Public transport – Local supply with stops	Proportion of inhabitants with max. 1 km linear distance to the next public transport stop with at least 10 departures per day	Type II	
		Public transport – Accessibility of (main) regional centres	Average travel time by public transport to the nearest central or regional centre	Type II	x
		Victims of road accidents	Number of persons injured or killed in traffic accidents per 1,000 inhabitants	Type I	
		Land use	Proportion of settlement and transport area in total area	Type I	x
		Land use change	Change in settlement and transport area compared to the previous year based on total area	Type I	x
		Land use intensity	Settlement and transport area per inhabitant	Type I	x
		Local recreation areas	Local recreation area per 1,000 inhabitants	Type I	
		Completed residential buildings with renewable heating energy	Proportion of completed residential buildings with renewable heating energy	Type I	
		Rate of energetic renovation of buildings	Proportion of buildings renovated for energy efficiency as a percentage of all buildings	Type II	
12	Ensure sustainable consumption and production patterns	Fairtrade Town	Number of awards of the municipality as a Fairtrade Town	Type I	
		Fairtrade Schools	Proportion of schools awarded Fairtrade School status out of all schools	Type I	
		Expenditure on fair trade products	Proportion of municipal expenditure on Fairtrade products out of total municipal expenditure	Type II	(x)
		Drinking water consumption – Private households	Drinking water consumption (households and small businesses) per inhabitant per day	Type I	
		Drinking water consumption – Industry, trade, commerce and services	Annual drinking water consumption of industry, commerce, trade and services per person employed at place of work	Type II	
		Energy consumption – Private households	Direct and indirect energy consumption of private households per inhabitant	Type II	x
		Energy consumption – Industry, trade, commerce and services	Direct and indirect energy consumption of industry, trade, commerce and services per person employed at the place of work	Type II	
		Waste generation	Amount of waste disposed of per inhabitant	Type I	
		Recycling rate	Proportion of municipal waste recycled as a percentage of total municipal waste generated	Type II	
		EMAS certified sites	Proportion of EMAS-certified operating sites in all operating sites	Type II	x
		Sites with environmental or sustainability certificates	Proportion of sites with environmental or sustainability certificates in all operating sites	Type II	
		Sustainable Procurement Index	Sum index of dichotomous variables, based on a standardised questionnaire on the procurement process	Type II	(x)
		Sustainable procurement procedures	Proportion of sustainable procurement processes in the total number of procurement processes	Type II	

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
13	Take urgent action to combat climate change and its impacts	Municipal Climate Adaptation Index	Sum index of dichotomous variables, based on a standardised questionnaire on municipal climate adaptation	Type II	
		Ecological forest conversion	Proportion of ecologically converted forest area in total forest area	Type II	
		Trees in public spaces	Number of trees in public space per hectare	Type II	
		Retention areas	Average retention volume per area	Type II	
		CO2 emissions – Private households	Greenhouse gas emissions of private households per inhabitant	Type II	(x)
		CO2 emissions – Industry and manufacturing	Greenhouse gas emissions from industry and manufacturing per person employed at the place of work	Type II	(x)
		CO2 emissions – Trade, Commerce, Services (GHD) and Other	Greenhouse gas emissions from trade, commerce, services (GHD) and other per employee at place of work	Type II	(x)
		CO2 emissions – Municipal facilities	Greenhouse gas emissions from municipal facilities per person employed at the place of work	Type II	(x)
		CO2 emissions – Motorised private transport (MIV)	Greenhouse gas emissions from private motorised transport per passenger kilometre travelled	Type II	(x)
		CO2 emissions – Public Transport	Greenhouse gas emissions from public transport per passenger-kilometre performed	Type II	(x)
		CO2 emissions – Road freight transport	Greenhouse gas emissions of road freight transport per tonne-kilometre	Type II	(x)
		Municipal Climate Protection Index	Sum index of dichotomous variables, based on a standardised questionnaire on municipal climate protection	Type II	(x)
		Staff in municipal climate protection	Full-time equivalent municipal climate protection positions per 1,000 inhabitants	Type II	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Running water quality	Proportion of watercourse length with the ecological status ratings "very good" and "good" out of the total watercourse length	Type I	
		Nutrient pollution in running waters	Average total phosphorus concentration in running waters	Type II	x
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Sustainable forest management	Proportion of PEFC or FSC certified forest area in total forest area	Type II	
		Nature conservation areas	Proportion of nature conservation areas with high protection status (Natura 2000 areas, nature reserves and national parks) in the total forest area	Type I	
		Landscape quality	Total of human interventions in ecosystems (hemeroby index)	Type I	(x)
		Landscape fragmentation	Proportion of non-fragmented open space areas > 50 km², which are not dissected by routes of the interurban transport network, in the total area	Type I	
		Common bird index	Actual value of the index for the population of bird species measured against the target value of the index for the population of bird species	Type II	x

No. of SDG	Description of SDG	SDG Indicator	Description of SDG Indicator	Indicator Type	Included in Germany's National Sustainable Development Strategy (2021)
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	Criminal offences	Number of registered offences per 1,000 inhabitants	Type I	x
		Corruption Prevention Index	Sum index of dichotomous variables, based on a standardised questionnaire on municipal anti-corruption measures	Type II	(x)
		Financial balance	Budget surplus or deficit per inhabitant	Type I	(x)
		Tax revenues	Tax revenue per inhabitant	Type I	
		Liquidity loans	Liquidity/cash loans in the core budget per inhabitant	Type I	(x)
		Loan financing ratio	Debt incurred in relation to adjusted expenditure	Type II	
		Interest tax ratio	Interest expenditure or expense in relation to tax revenue or income	Type II	
		Digital Municipality Index	Sum index of dichotomous variables, based on a standardised questionnaire on digitisation processes in the municipality	Type II	
		Participation in local elections	Proportion of eligible voters in a municipality	Type II	
		Informal citizen participation	Number of informal participation processes per 1,000 inhabitants	Type II	
17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	Expenditure on municipal development cooperation	Expenditure on bilateral development cooperation projects per 10,000 inhabitants	Type II	x
		Expenditure on municipal development policy	Expenditure on development policy projects and development cooperation per inhabitant	Type II	(x)
		Partnerships in countries of the Global South	Number of partnerships with partners in countries of the Global South per 10,000 inhabitants	Type II	(x)
		Projects with partners in countries of the Global South	Number of KEpol projects carried out with partners in countries of the Global South in relation to the number of inhabitants	Type II	
		Development policy projects	Number of development policy projects in which the municipality was involved in the reporting year per 1,000 inhabitants	Type II	x

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