

1. VOLUNTARY LOCAL REVIEW

For the Rhine-Neckar Metropolitan Region



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Metropolregion
Rhein-Neckar

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PREFACE

As the Rhine-Neckar Metropolitan Region, we have a great responsibility to promote sustainable development ourselves through measures in our area of responsibility and to support and promote measures by other players in the region. We see ourselves as a driving force for social and economic change towards greater sustainability. We actively support the United Nations 2030 Agenda for Sustainable Development.

The United Nations 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) is a global action plan that must be implemented at a local level. Municipalities and regional associations such as the Rhine-Neckar metropolitan region play a key role in this.

Sustainable development must be practiced locally and anchored in municipal strategies, guiding principles and planning. The Standardized Regional Plan Rhine-Neckar as a central instrument of spatial planning offers the opportunity to draft an integrated strategy for sustainable regional development and to make specific spatial determinations. It serves as a compass for the future development of the region and its sub-regions. Land management, integrated transport planning, the promotion of renewable energies, rural development, securing open spaces as well as climate protection and adaptation play a central role in this. The standardized regional plan spatially specifies supra-local objectives and principles for these fields of action of sustainable development and coordinates them across disciplines.

Regional development comprises measures designed to support and promote the economic, social and ecological development of a region. The aims are to balance regional disparities, create equal living conditions and ensure the sustainable development of the region. In the Rhine-Neckar metropolitan region, the Rhine-Neckar Regional Association (Verband Region Rhein-Neckar, VRRN) is responsible for cross-border regional planning and regional development. The focus is on strengthening the metropolitan functions and competitiveness of the region while at the same time safeguarding the quality of life and natural resources. The association coordinates topics such as economic development, landscape parks, tourism and transportation planning.

The Rhine-Neckar metropolitan region integrates the global Sustainability Goals of the 2030 Agenda into both regional planning and regional development and submits a voluntary local inventory for implementation. The Committee for Regional Development and Regional Management prepares and decides on the relevant topics.

This report shows the current status of sustainable development in the Rhine-Neckar metropolitan region and outlines fields of action for the future. It is intended to be the starting point for a continuous improvement process in which municipalities, companies, civil society and citizens actively participate.



Ralph Schlusche, Association Director



Stefan Dallinger, Association Chairman

ZUSAMMENFASSUNG

Die Metropolregion Rhein-Neckar versteht sich als Impulsgeber für den gesellschaftlichen und wirtschaftlichen Wandel hin zu mehr Nachhaltigkeit. Sie unterstützt aktiv die Agenda 2030 für nachhaltige Entwicklung der Vereinten Nationen mit ihren 17 globalen Nachhaltigkeitszielen (Sustainable Development Goals, SDGs). Bereits heute werden in der Region zahlreiche Projekte und Maßnahmen zur Erreichung der SDGs umgesetzt.

Durch Bürgerbeteiligung in Dialogprozessen, die regionale Vernetzung relevanter Akteure und eine vorausschauende, integrierte Raumplanung will die Metropolregion Rhein-Neckar die Agenda 2030 konsequent in die regionale Entwicklung integrieren. Die Kommunen entwickeln integrierte Nachhaltigkeitsstrategien, fördern erneuerbare Energien und ein nachhaltiges Flächenmanagement. Die Wirtschaft zeigt Best-Practice-Beispiele im Bereich Nachhaltigkeit auf. Wissenschaft und Forschung tragen mit Innovationen zu mehr Nachhaltigkeit bei.

Der vorliegende Bericht stellt als freiwillige lokale Bestandsaufnahme den aktuellen Stand der nachhaltigen Entwicklung in der Metropolregion Rhein-Neckar dar. Für fünf prioritäre SDGs werden Hintergründe, Ist-Zustand, laufende Aktivitäten sowie Ziele und Herausforderungen beleuchtet. Betrachtet wird zum einen das Ziel einer qualitativ hochwertigen Bildung (SDG 4), das Aspekte wie eine exzellente Schulbildung, die Verringerung der Schulabbrecherquote, die Förderung von Kompetenzen für eine nachhaltige Entwicklung sowie die Erhöhung der Berufsbildungsquote umfasst. Ein weiterer Schwerpunkt liegt auf SDG 7 (bezahlbare und saubere Energie) durch die Sicherstellung von Energiedienstleistungen, die Erhöhung des Anteils erneuerbarer Energien und deren gezielte Förderung. Auch die Gestaltung nachhaltiger Städte und Gemeinden (SDG 11) mit integrierter Siedlungsplanung, bezahlbarem Wohnraum, nachhaltiger Mobilität, schonender Flächennutzung und Bürgerbeteiligung wird eingehend behandelt. Verantwortungsvolle Konsum- und Produktionsmuster (SDG 12) durch umweltbewussten Konsum und nachhaltige Abfallwirtschaft sowie Maßnahmen gegen den Klimawandel (SDG 13) mit den Schwerpunkten Wasserstoffwirtschaft, Klimaanpassung und Klimaschutzstrategien runden die Betrachtung ab. Der Review soll Ausgangspunkt für einen kontinuierlichen Verbesserungsprozess sein, der die Region fit für die Zukunft macht.



SUMMARY

The Rhine-Neckar metropolitan region sees itself as a driving force for social and economic change towards greater sustainability. It actively supports the United Nations' 2030 Agenda for Sustainable Development with its 17 global Sustainable Development Goals (SDGs). Numerous projects and measures to achieve the SDGs are already being implemented in the region.

The Rhine-Neckar metropolitan region aims to consistently integrate the 2030 Agenda into regional development through citizen participation in dialogue processes, regional networking of relevant actors and forward-looking, integrated spatial planning. Municipalities are developing integrated sustainability strategies, promoting renewable energies and sustainable land management. The business community is demonstrating best-practice examples in the field of sustainability. Science and research are contributing to greater sustainability through innovation.

As a voluntary local review, this report presents the current status of sustainable development in the Rhine-Neckar metropolitan region. For five priority SDGs, the background, current status, ongoing activities as well as goals and challenges are examined. On the one hand, the goal of quality education (SDG 4) is considered, which includes aspects such as excellent school education, reducing the dropout rate, promoting skills for sustainable development and increasing the vocational training rate. Another focus is on SDG 7 (affordable and clean energy) by ensuring energy services, increasing the share of renewable energy and promoting it in a targeted way. Designing sustainable cities and communities (SDG 11) with integrated settlement planning, affordable housing, sustainable mobility, prudent land use and citizen participation is also discussed in detail. Responsible consumption and production patterns (SDG 12) through eco-conscious consumption and sustainable waste management, and action on climate change (SDG 13) with a focus on the hydrogen economy, climate adaptation and mitigation strategies complete the picture. The review is intended to be the starting point for a continuous improvement process that will make the region fit for the future.



1. Key figures and background of the Rhine-Neckar metropolitan region

The Rhine-Neckar region, named after the Rhine and Neckar rivers, was officially declared a European metropolitan region (MRN 2024) in 2005. Around 2.4 million people live in an area of around 5.600 square kilometres. Rhine-Neckar comprises seven administrative districts, eight independent cities and a total of 290 municipalities in the three federal states of Baden-Württemberg, Rhineland-Palatinate and Hessen (Fig. 1). The largest cities are Mannheim, Ludwigshafen and Heidelberg with 315.554, 174.265 and 162.273 inhabitants respectively in 2022. In addition to these three large urban centers, there are 30 medium-sized cities spread throughout the region. Overall, around 72% of the population live in high-density urban areas and urbanized areas, while 28% of the population live in peripheral rural areas. The Rhine-Neckar metropolitan region covers 1.6% of Germany's total area, making it the smallest of the eleven metropolitan regions in Germany. However, it is also the region with the second-highest population density (422 inhabitants per km²) and the second-highest proportion of land used for settlement and transportation purposes (18.4%).

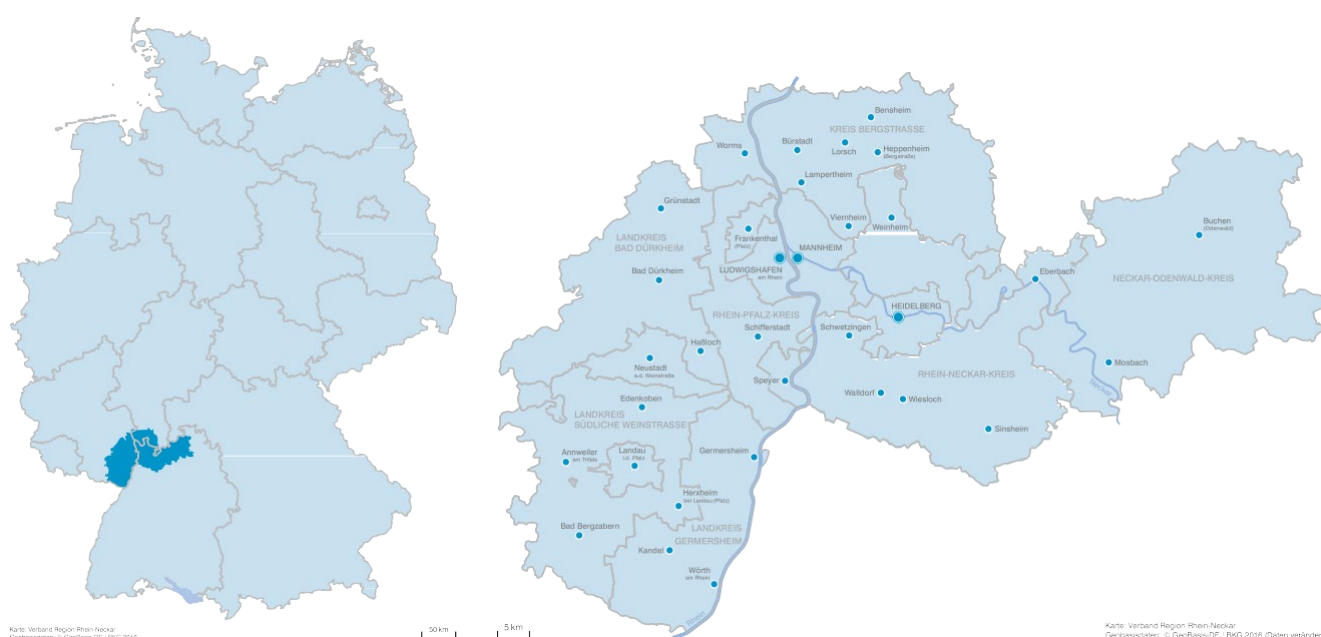


Figure 1: The Rhine-Neckar Metropolitan Region © VRRN

The Metropolitan Region is home to around 160.000 companies, including several global corporations from the construction materials, chemicals, construction and engineering, food processing, mechanical engineering and software sectors. These large companies are primarily located in the urban core of the Rhine-Neckar region, especially in the functional urban areas of Mannheim-Ludwigshafen and Heidelberg. Three companies based in the Rhine-Neckar Metropolitan Region (BASF, Heidelberg Materials, SAP) are represented in the German DAX share index, the index of the 40 largest listed German companies. The rural areas in the Rhine-Neckar Metropolitan Region are predominantly characterized by small and medium-sized enterprises (SMEs). Key sectors of the Rhine-Neckar economy are the automotive sector, biotechnology, chemicals, energy, health and life sciences, IT and mechanical engineering. The export ratio of the region's manufacturing industry (60%) is above the German average (40%). The gross regional product of the Rhine-Neckar Metropolitan Region reached € 102.5 billion in 2019 and was primarily generated by the service sector (64.7%), followed by the manufacturing industry (34.5%) and agriculture and forestry (0.8%). The gross domestic product (GDP) per person in employment in the Metropolitan Region was EUR 79.351 in 2019, slightly above the German average of EUR 76.190 (Fig. 2).

Rhine-Neckar has gross domestic product growth rates of over 3% and a disposable household income above the German average, but these achievements mask territorial disparities. Between 2014 and 2018, gross regional product in the Metropolitan Region rose by an average of around 3.1%, just below the German average of 3.4%. However, the growth rates within the Metropolitan Region varied and ranged from 1.3% in Frankenthal to 4.0% in the city of Mannheim. In 2018, the average disposable per capita income of private households in Rhine-Neckar was around EUR 24.000, above the German average of EUR 22.900, although there were again regional differences of around EUR 7.000 between the district of Bad Dürkheim (EUR 26.900) and the city of Ludwigshafen (EUR 19.800) (pre-coronavirus figures). In 2020, the average unemployment rate in Rhine-Neckar was 5.4% and therefore below the German average of 5.9%, ranging from 3.8% in the Neckar-Odenwald district to 9.7% in the city of Ludwigshafen.

The Metropolitan Region is a hub for higher education and research. In 2018, around 88.000 students were enrolled at 22 universities in the Metropolitan Region, most of them at the universities of Heidelberg, Germany's oldest university, and Mannheim. There are also more than 30 research institutions in the Rhine-Neckar Metropolitan Region. These include the Center for European Economic Development, the European Molecular Biology Laboratory, the German Cancer Research Center and four Max Planck Institutes, which belong to a non-profit association of German research institutions. In total, 2.3% of employees in the Metropolitan Region work in research and development. Several industry clusters have formed in the region, in which private companies, universities and research institutes work together in their respective fields, particularly in the areas of life sciences (BioRN), organic electronics (Forum Organic Electronics) and biomedicine (Mannheim Center for Biomedicine and Medical Technology).

2. Agenda 2030

The 2030 Agenda was adopted by the UN General Assembly, i.e. the 193 member states of the United Nations, in New York on September 25, 2015. It is entitled "Transforming our world" and comprises 17 global goals for sustainable development with a total of 169 sub-goals (United Nations 2015). These are to be achieved by 2030 and apply universally, i.e. equally to all countries. The 2030 Agenda thus represents a roadmap for the future with which the global community aims to enable a decent life for all while preserving the natural foundations of life in the long term (United Nations 2015, Beisheim).

All states are called upon to align their actions and activities accordingly. Unlike previous sustainable development programs, the Agenda applies equally to industrialized countries, emerging economies and countries of the global South. Everyone has a responsibility to make decisive progress towards sustainable development in the coming years by fundamentally reorganizing structures, processes and ways of thinking and behaving.

2.1 Overview of the 17 Sustainability Goals

At the heart of the 2030 Agenda are the 17 Sustainable Development Goals (SDGs), in which the principles and common objectives are formulated. The Sustainability Goals are closely interlinked and encompass economic, environmental and social aspects. It is clear that ending poverty and other forms of disadvantage must go hand in hand with strategies to improve health, reduce inequalities and promote economic growth - while at the same time limiting climate change and protecting oceans and forests (United Nations 2015, Kaumanns, Blumers & Junglewitz 2016).

The basic idea of sustainability is expressed most clearly in the English term "sustainable". It refers to the use of resources, always taking into account their regeneration, in order to satisfy long-term needs. As early as the 18th century, the principle of cutting only as much wood as will grow back in the forest was recognized in Germany in connection with forestry (United Nations 2019).

The goals can be assigned to the three dimensions of sustainability: economic, ecological and social (Hauff 2021).



Figure 3: THE UNITED NATIONS' SUSTAINABILITY GOALS AT A GLANCE © VEREINTE NATIONEN 2015

Social Sustainability Goals in terms of intergenerational justice, social sustainability aims to ensure that no generation leaves the next generation a world full of unresolved problems, but that there is also fair access to resources in all parts of the world within the current generation. We are therefore talking about inter- and intragenerational justice. In particular, problems of poverty, educational inequality and gender injustice are addressed (United Nations 2015, Senghaas-Knobloch 2009).

The mutual interdependence of the individual goals is particularly evident in the social Sustainability Goals. For example, there are close links between global poverty reduction, education, gender equality and peace. It is also obvious that a high level of public health depends on strong institutions and the successful fight against hunger and poverty. Consequently, one goal of social sustainability cannot be achieved without taking the others into account.

The social dimension of sustainable development includes the following goals in particular:

- No poverty (SDG 1)
- Zero hunger (SDG 2)
- Good health and well-being (SDG 3)
- Quality education (SDG 4)
- Gender equality (SDG 5)
- Reduced inequalities (SDG 10)
- Sustainable cities and communities (SDG 11)
- Peace, justice and strong institutions (SDG 16)

Ecological Sustainability Goals

While the concept of social sustainability is not yet so well known to the general public, ecological sustainability is already widely known and recognized. The principle of sustainability was also the first to develop in connection with the conservation of natural resources - originally from forestry (Grober 2013). It is therefore also the starting point for the later three-pillar model of sustainability.

Ecological sustainability describes the forward-looking and careful use of natural resources. It refers to the long-term preservation and conservation of ecological systems and processes. This includes preserving biodiversity and natural resources, limiting the consumption of renewable resources to the extent that they can be renewed, and minimizing the consumption of non-renewable resources. Ecological sustainability aims to maintain the ability of ecosystems to regenerate and exist without depleting natural resources for the future. It is an important part of the concept of sustainable development, which also encompasses the social and economic dimensions. Ecological sustainability is a principle that is applied in many areas such as forestry, agriculture and, increasingly, tourism. Overall, the aim is to protect and use the environment and natural resources in such a way that future generations can also benefit from them (United Nations 2015, Hauff 2021). The principle of ecological sustainability is therefore: natural resources should only be used to the extent that they can regenerate, i.e. there should be no overexploitation of nature and no destruction of the natural environment. All actors in a society - from the state to the economy to private households - can contribute to the preservation of the natural foundations of life within their respective spheres of activity. Responsibility is also indivisible in the core area of sustainability (United Nations 2021).

The following goals in particular are closely linked to the ecological dimension of sustainable development:

- Clean water and sanitation (SDG 6)
- Affordable and clean energy (SDG 7)
- Climate action (SDG 13)
- Life below water (SDG 14)
- Life on land (SDG 15)

Economic Sustainability Goals

Economic sustainability is the third component of sustainability or the three-pillar model. It focuses in particular on socially and ecologically compatible economic activity, decent work for all, crisis-resistant infrastructure and responsible consumption. Accordingly, it is also referred to as integrative sustainability (Jörissen & Karlsruhe 1999).

Here, too, the close links between the individual goals of economic activity become clear. Eco-modernism and degrowth are two different approaches to shaping the relationship between ecology and economy in the context of sustainable development (Maher & McEvoy 2023). Ecomodernism takes the view that technological progress and economic growth are compatible with ecological sustainability. Through innovations and more efficient technologies, it should be possible to reduce environmental pollution and enable economic growth at the same time. The aim is to decouple economic growth and environmental damage. In contrast, the degrowth approach sees economic growth as the main cause of ecological problems. Instead, it advocates a reduction in resource consumption and production in order to reduce the burden on the environment. Degrowth advocates argue that an economic system without growth is possible and necessary to stay within planetary boundaries. Both approaches aim to reconcile ecology and economy, but pursue different strategies. While ecomodernism focuses on technological progress and green growth, degrowth aims to transform the entire economic system. Which approach is more promising is the subject of controversial debate (Maher & McEvoy 2023). However, economic sustainability not only addresses companies, but also the population. In their role as consumers, they can make a contribution to conserving resources and, for example, avoid particularly harmful products in favour of responsibly manufactured goods.

The following goals are summarized under economic sustainability:

- Decent work and economic growth (SDG 8)
- Industry, innovation and infrastructure (SDG 9)
- Responsible consumption and production (SDG 12)
- Partnerships for the goals (SDG 17)

In Germany, the 2030 Agenda has long been the basis for the federal government's sustainability policy and an integral part of the German Sustainable Development Strategy (DNS). It sets out the principles for managing sustainability challenges, identifies specific sub-goals and measures for each of the 17 goals and defines indicators for reviewing the progress of action. Progress is to be reviewed on a regular basis.

The global challenges of our time must also be tackled regionally and locally. As early as the 1990s, cities joined forces in international networks to work together on a sustainable future. The report of the Brundtland Commission (1987) and the Agenda 21 action program of the United Nations Conference on Environment and Development (1992) were taken up by municipalities worldwide and subsequently led to local implementation processes in many places. Today, municipalities around the world are involved in the processes of the 2030 Agenda and other sustainability strategies and are an essential pillar for achieving all Sustainability Goals. This is also due to the close links between politics, civil society, the private sector and science at municipal level. Both top-down and bottom-up processes play an important role in the sustainable transformation of cities. Top-down processes are initiated by politics and administration and can create framework conditions for sustainability through resolutions, funding programs and ordinances, e.g. in the form of municipal sustainability strategies. Bottom-up processes, on the other hand, are initiated by civil society actors, initiatives and citizens and enable ideas and projects to be tested at the neighbourhood level. They can increase acceptance for change through participation and engagement (Rink 2018). Successful sustainable urban development requires the interplay of both approaches - top-down creates framework conditions, bottom-up tests solutions. Civil society demands from bottom-up processes are often later incorporated into top-down decisions. Cities play an important multiplier role here, as they are drivers and pioneers of the sustainability transformation and can provide impetus to the local area through their role model function and networking. Municipal sustainability strategies can thus serve as a blueprint for other cities (Rink 2018, Koch & Krellenberg 2021).

22 Impact and implementation in the Rhine-Neckar Metropolitan Region

In order to drive forward the implementation of the 2030 Agenda, a broad commitment is required in all political, economic and social dimensions, which also include a differentiation between the various decision-making levels such as municipal, district, state, regional, federal and EU level.

Municipalities and regions play a key role here as regional authorities under public law, for whose sustainable and inclusive development all other goals are of key importance in addition to the explicitly stated goal of "Sustainable Cities and Communities" (SDG 11). The municipal and regional level is currently faced with the task of creating awareness of global challenges and local responsibility, defining an agenda for the Sustainability Goals and formulating specific goals and measures adapted to the local context, which are intended to promote sustainable development through efficient monitoring.

In this context, local authorities also have a responsibility to promote the participation of the population. This is because sustainable development requires not only the participation of municipal institutions and government organizations, but also the active involvement of local associations, non-profit initiatives and citizens. In particular, it is important to strengthen and consolidate cross-divisional and cross-sector networking between administration, civil society and local businesses in order to develop and implement joint solutions for the challenges of the future.

In the Rhine-Neckar Metropolitan Region, sustainability guidelines of the development concepts for the municipal and regional level are accompanied in this context as part of linked development concepts. Current challenges, such as in the areas of housing, mobility and climate protection, can only be solved at an inter-municipal level. The identification and concretization of the topics of regional cooperation is part of the process. In rural areas in particular, supra-local cooperation is carried out with the aim of raising acceptance and awareness.

What does this mean for the role of the Rhine-Neckar Metropolitan Region?

The Rhine-Neckar Metropolitan Region has been working intensively on the topic of sustainability in its own work since 2019. In 2019, the Committee for Regional Development and Management of the Rhine-Neckar Regional Association assigned the administration the task of incorporating the topic into its active work (ARR resolution 49/19/01 "Sustainability in regional development") and linking it to the UN Sustainable Development Goals (SDGs). Spatial planning is sustainable because it aims to reconcile the social and economic demands on space with its ecological functions. It should lead to a lasting, large-scale balanced order by coordinating the different demands on space. On the one hand, regional planning safeguards the region's natural resources and, on the other, provides sufficient scope for the development of the population and economy. The overriding goal is sustainable spatial development that reconciles the different demands on space. Overall, it can be seen that regional planning is an important instrument for the sustainable development of regions due to its cross-sectional and integrative approach. While regional planning is sustainable per se because different social and ecological requirements are weighed up against each other and also contribute to the Sustainability Goals, it was decided to further strengthen awareness in regional development, but also among the population. A key component of the resolution is that regional development measures should be aligned and dovetailed with existing supra-regional strategies and that potential conclusions for the region in terms of sustainable development should also be drawn from the strategies. The resolution is the basis and foundation stone for sustainability efforts in the region.

As a result, a corresponding assessment of the respective goals of the fields of action for the achievement of the 2030 Agenda goals was first carried out in the regional fields of action, followed by a scientific validation: Education region of the future (SDGs: 4, 8, 10, 16).

- Sustainable and needs-based mobility (SDGs: 3, 11, 13, 17)
- Intelligently networked healthcare region (SDGs: 3, 8, 11)
- Cooperation and positioning in Europe (SDGs: 7, 9, 11, 13)
- Regional innovation support (SDGs: 3, 7, 8, 9, 11, 13)
- Balanced settlement and open space development (SDGs: 2, 6, 9, 10, 11, 13, 14, 15)
- Regional energy transition (SDGs: 7, 9, 11, 13)
- Networked management (SDGs: 4, 9, 11, 16)
- Civic engagement (SDGs: 11, 17)
- Vital labour market / securing skilled workers (SDGs: 1, 3, 4, 8, 9, 10, 11, 12)
- Exceptional cultural Region (SDGs: 4, 11, 16, 17)

Since then, various projects with a clear reference to the 2030 Agenda and a clear link to specific Sustainability Goals have been initiated or completed in the priority areas and beyond, examples of which are presented below:

Rhine-Neckar Open Government Lab

In order to drive forward sustainability efforts and activities, the Rhine-Neckar Regional Association received funding from the Federal Ministry of the Interior in 2020 to establish an Open Government Laboratory Rhine-Neckar. The project, entitled "Sustainability in regional and urban development", will focus in particular on the Sustainability Goals of the United Nations.

The basic idea of open government is democratic cooperation and the improvement of government services. To this end, many already familiar topics are to be linked, such as: Participation, cooperation, accountability, use of new media and technologies as well as increased transparency. The goal is a transparent and collaborative administrative culture that starts with freely accessible, open data and information. The participation of technical experts and civil society plays a major role in this. The process will be continued iteratively. The aim is to establish the process and have it recognized by everyone. A generally accepted process then plays an important role in resolving conflicting objectives.

OECD-Monitoring & Report

How does our region compare worldwide in terms of sustainability? The Rhine-Neckar Metropolitan Region, together with its three institutions Rhine-Neckar Regional Association (Verband Region Rhein-Neckar, (VRRN)), Association for the Future of the Rhine-Neckar Metropolitan Region (Verein Zukunft Metropolregion Rhein-Neckar, (ZMRN)) and Rhine-Neckar limited liability company (Metropolregion Rhein-Neckar GmbH (MRN GmbH)) as well as local partners from all sectors, has been investigating this question since December 2020 together with the OECD (Organization for Economic Co-operation and Development) in the project "A Territorial Approach to the SDGs". The aim was to make the Rhine-Neckar region internationally comparable through SDG monitoring by the OECD and to present the sustainable activities at regional level in a report.

The published report presents the regional activities, regional development and regional planning as well as current projects related to the SDGs. It also contains a monitoring system that can be compared internationally with other pilot regions and cities. Exemplary results are summarized below:

- Results for SDG 3 (Health and well-being): The Metropolitan Region has a low infant mortality rate (3,2 deaths in children under one year of age compared to the OECD average of 5,9), a relatively high hospital bed density (62 per 10 000 inhabitants, more than 20 beds above the OECD average of 41) and a good life expectancy (81,4 years, 2 years above the average for OECD regions).
- Results for SDG 9 (Industry, innovation and infrastructure) and SDG 10 (Reduced inequalities): At 2,9 percent, the unemployment rate in Rhine-Neckar in 2019 is well below the OECD average of 7,6 percent, and youth unemployment at 5,3 percent is also less than a third of the OECD average (16,7 percent) (SDG 8). Rhine-Neckar spends more than 3% of its GDP on research and development, more than twice as much as the average for OECD regions (1,6%) (SDG 9). The disposable household income (USD 27 742 in 2017) and the growth rates of disposable income (around 2,6% per year in the period 2015-2019) are above those of most OECD regions (0,5% on average).

SDG monitoring is not only carried out by the OECD at international level, but is also being expanded at regional level in order to make opportunities and challenges in the region measurable.

Online survey and participation on sustainability in regional development

In order to obtain a well-founded opinion on the Sustainability Goals in the region, an online survey was conducted between September 3 and October 9, 2020, with the target group "Residents of the Rhine-Neckar Metropolitan Region. A total of 997 participants took part in the survey over the period. One focus of the survey was: "How do people see the Rhine-Neckar region in 2030? What is important to them and where do they see the relevant levers for sustainable development and ensuring (global) quality of life? What goals do we want to set ourselves as a region - for climate protection, in the social sphere or in the economy?".

In March 2024, the Rhine-Neckar Metropolitan Region once again called on people to take part in a second online citizen survey with the aim of examining the extent to which shifts have occurred in the population's assessment of the 2030 Agenda, picking up new ideas and deriving corresponding projects and activities.

The findings and results from the 2020 online survey were supplemented by several online participations on the topic of sustainability: An online participation was dedicated to the topic of how to make the Sustainability Goals more measurable - which indicators can be used for regional SDG monitoring and what a personal checklist for more sustainability in everyday life could look like. The second online participation focused on the topic of sustainable mobility in the region and took place as part of the Rhine-Neckar Mobility Pact. The third participation aimed to discuss the "Smart and sustainable Rhine-Neckar Metropolitan Region" funding project with citizens and share experiences and ideas on topics such as mobility and CO2 reduction, smart visitor guidance and digital services for leisure activities. The third citizen survey took place between May and August 2023 with the participation of 1,035 people with the aim of determining the expectations and needs of the population in terms of social engagement. The results serve as a basis for working with civil society, local authorities and regional companies to develop forms of engagement and support services that are tailored to the needs of people's individual.

The Rhine-Neckar Metropolitan Region is fundamentally committed to participatory regional development in the long term with the introduction of the participation platform "Nachhaltig im Dialog" ([Sustainable dialog, URL: www.nachhaltig-im-dialog.de](https://www.nachhaltig-im-dialog.de)). The platform has the clear aim of actively involving the citizens of the Rhine-Neckar Metropolitan Region in the decision-making process for regional development. Informal participation is intended to promote the creation of creative solutions and new projects. The "Nachhaltig im Dialog" participation platform is an integral part of the Smart Region project and is integrated into all areas of regional work.

The platform is aimed at citizens and partners from various projects, municipalities and networks in the Rhine-Neckar Metropolitan Region. Participants have the opportunity to provide answers to thematic questions anonymously or by registering. Registered users are included in the further analysis and decision-making process and thus become part of the future development of the Rhine-Neckar region.

Signing of the resolution: "Agenda 2030 for Sustainable Development"

The signing of the model resolution "Agenda 2030 for Sustainable Development: Shaping sustainability at municipal level" represents a further commitment to the 2030 Agenda. This was adopted at the 42nd association meeting on July 20, 2022 for the Rhine-Neckar Metropolitan Region by the chairman of the association, District Administrator Stefan Dallinger.

The Rhine-Neckar Metropolitan Region is thus the first Metropolitan Region ever to follow the initiative of the Service Agency Communities in One World with the Association of German Cities and the German section of the Council of European Municipalities and Regions. Around 200 municipalities have already joined the network by ratifying the resolution.

Signing the resolution sends a visible signal to the region that sustainability will continue to be a key issue in the Rhine-Neckar Metropolitan Region in the future.

Smart Region Rhine-Neckar

The Federal Ministry of Housing, Urban Development and Building is funding 74 "Smart Cities Model Projects" across Germany, including the "Smart Region Rhine-Neckar" project. This aims to better connect the Rhine-Neckar Metropolitan Region through the provision of digital infrastructure and the use of data and digital tools. The objectives include the provision and use of open data for a holistic social, ecological and economic environment. In the implementation phase, the focus is on the further development and evaluation of the smart city strategy, the consolidation of the network and communication structure and the implementation of further measures. An important part of the project is an advisory board that meets twice a year and is made up of experts from various domains such as culture, information technology, tourism and digitalization.

The model project in the Rhine-Neckar Metropolitan Region focuses on the topic of tourism against the backdrop of a sustainable, smart and environmentally conscious (re)start after the corona-related crisis. The 2030 Agenda is at the heart of the strategy. Seven focus goals were selected from the 17 Sustainability Goals, which address the topic of smarter, more sustainable tourism particularly well. Based on this, fields of action were derived to which the pilot measures.

In this context, local authorities also have a responsibility to promote the participation of the population. Sustainable development requires not only the participation of municipal institutions and government organizations, but also the active involvement of local associations, non-profit initiatives and citizens. In particular, it is important to strengthen and consolidate cross-departmental and cross-sectoral networking between administration, civil society and local businesses in order to develop and implement joint solutions for the challenges of the future.



FIGURE 4: FOCUS GOALS OF THE SMART REGION - DECENT WORK AND ECONOMIC GROWTH (8), LESS INEQUALITY (10), SUSTAINABLE CITIES AND COMMUNITIES (11), RESPONSIBLE CONSUMPTION AND PRODUCTION (12), CLIMATE ACTION (13), LIFE ON LAND (15) AND PARTNERSHIPS FOR THE GOALS (17) EACH IN KURPFALZ DIALECT. © VRRN

Foundation charter signed in March 2020

The establishment of the regional foundation network in March 2022, in which 60 foundations joined forces to promote a shared culture of values, utilize synergies and resources and develop joint projects for the common good, underscores civic engagement in the Rhine-Neckar Metropolitan Region.

In the meantime, the network has grown to 120 foundations and has taken an important place in the regional engagement structure through regular, topic-specific network events as well as a regional foundation day.

Rhine-Neckar Fair

With reference to the great relevance of SDG 12 "Sustainable consumption and production" among the population and the knowledge of the commitment of numerous Fairtrade municipalities in the region, the Rhine-Neckar Regional Association founded the "Rhine-Neckar Fair" initiative together with the civil society actor "Eine-Welt-Zentrum Heidelberg e.V." (EWZ). On the one hand, the initiative aims to network and support the 28 Fairtrade Towns and districts, municipalities in the application process and thematically interested towns and municipalities and improve their public perception. On the other hand, the initiative itself is to plan and carry out campaigns.



FIGURE 5: RHINE-NECKAR FAIR INITIATIVE BUNDLES THE COMMITMENT TO FAIR TRADE IN THE RHINE-NECKAR REGION. © VRRN

Sustainability monitoring and dashboard

In order for the 2030 Agenda to live up to its high standards and for the actions and projects to be successfully implemented in the region, implementation must be comprehensible, i.e. measurable. This is the only way to demonstrate success and to be able to make adjustments with selected measures if necessary.

In order to be able to measure the changes and progress made by the Rhine-Neckar region in the area of sustainability in future, a monitoring system is currently being set up to evaluate the Sustainability Goals. This will visualize relevant KPIs (key performance indicators) of the sub-goals and compare them with the respective target values in perspective. On the one hand, this monitoring is intended to depict the Rhine-Neckar region as a whole and, on the other, to serve as a tool for the municipalities in the region. The dashboard is linked to the Rhine-Neckar Metropolitan Atlas and the data portal and works on an open source basis, meaning that it can also be applied to other regions.

In this context, a link has also been created between the regional volunteering platform (www.wir-schaffen-was.de) and the volunteering exchange to the dashboard and the metropolitan atlas. Among other things, the Volunteer Day projects in each participating municipality are displayed here and everyone can see which local associations are active. The recording and presentation of all associations has been prepared and is about to be rolled out.



FIGURE 6: A REGIONAL VERSION IN THE KURPFALZ DIALECT WAS DEVELOPED TO PUBLICISE THE 17 SUSTAINABILITY GOALS. THE KURPFALZ SDGS ARE INTENDED TO CREATE A LINK BETWEEN THE GLOBAL GOALS AND THE LOCAL COMMUNITY © ZMRN UND VRRN

The success of the interlinked concepts at municipal and regional level is not only judged by the description and creation of these concepts, but also by the measurable change in reality based on sustainability indicators. To achieve this, many measures must be interlinked, and many players must work together. In addition to the region and local authorities, other social stakeholders must be involved in specific topics. In the case of specific projects, there is sometimes also increasing resistance among the population (citizens' initiatives, referendums, etc.), which must be addressed. In order to mitigate conflicts, new, early, transparent administrative action beyond the boundaries of the individual municipality is necessary. This must also take place at a political level - corresponding to the current definitions of functional areas, e.g. by the OECD. Interest groups must be involved in a variety of ways and fair processes must be found for defining objectives. Where the interests of different groups diverge, a transparent, recognized balancing process must be established in a participatory manner.

The region sees itself on its way to becoming an attractive and competitive region in Europe, playing a strong role in shaping equal living conditions in urban and rural areas. To this end, the region is joining forces in an alliance of strong partners.

2.3 Exemplary municipal activities for the 2030 Agenda in the Rhine-Neckar Metropolitan Region

The municipalities in the Rhine-Neckar Metropolitan Region have been working closely together for many years. In institutionalized committees and also in various projects of their own, they are working on the future-proof development of municipalities and the region and are guided by sustainability guidelines, which are supplemented by the concrete implementation of the United Nations 2030 Agenda (Fig. 7). Exemplary municipal activities from the cities and municipalities in the region are presented below as examples of good practice.

In order for the 2030 Agenda to live up to its high standards and for the measures and projects in the region to be implemented successfully, implementation must be comprehensible, i.e. measurable. This is the only way to demonstrate success and to be able to make adjustments with selected measures if necessary.



FIGURE 7: FOR US, REGIONAL COOPERATION IS A KEY ELEMENT IN PROMOTING SUSTAINABLE DEVELOPMENT, BECAUSE GLOBAL CHALLENGES CAN ONLY BE TACKLED EFFECTIVELY THROUGH COORDINATED EFFORTS AND THE EXCHANGE OF KNOWLEDGE AND RESOURCES BETWEEN DIFFERENT STAKEHOLDERS © ADOBE STOCK / PROSTOCK-STUDIO

Association of regionally committed cities to form the "Committed Region MRN"

Another example of municipal networking and joint activities is the "Engagierte Region Rhein-Neckar" network. Here, seven cities from the three federal states in the region have joined the federal network of the Engaged City in order to promote the formation of trisectoral partnerships and thus cross-sectoral, public welfare-oriented cooperation in the region. In its function as an official cooperation partner of the nationwide initiative, the MRN is regarded as a model region with the aim of using the know-how gained, passing it on within the framework of tandem partnerships and establishing a regional peer-to-peer learning network. This will also enable municipalities in the region and nationwide that have not joined the network to participate in the results and learning processes of the program.

The committed cities in the region include:

- Heidelberg, Weinheim (Baden-Württemberg)
- Lampertheim, Viernheim (Hesse)
- Neustadt a.d.W., Speyer, Landau (Baden-Württemberg)



FIGURE 8: THE MRN REGIONAL NETWORK © ZMRN E.V. / SVENJA MIX

Municipal partnership Viernheim - Silly

The municipal partnership between Viernheim and Silly is a long-standing collaboration that promotes the development of the municipality of Silly in Burkina Faso. This partnership has existed for over 25 years and has helped to improve living conditions in Silly. The city of Viernheim is actively involved in this partnership and has launched various initiatives to support Silly. One example of this is the municipal corona solidarity package that was put together for Silly in Burkina Faso together with FOCUS e.V.. This partnership demonstrates the commitment to international cooperation and development cooperation. Further information at: [Climate partnership | FocusViernheim](#)

The city of Viernheim and its partner municipality Silly were also involved in the SDG Partnership Conference of the Rhine-Neckar Metropolitan Region. The virtual exchange of expertise and experience on the 2030 Agenda and its 17 Sustainability Goals across borders took place from November 9 to 11, 2021 with a total of 18 municipalities from eight countries and four continents. In addition to the city of Viernheim, the partner municipality of Silly and the Rhine-Neckar Regional Association, the following German municipalities from the three federal states took part in the partnership conference, each with one of their partner municipalities from countries in the Global South:

- Municipality Haßloch - District Kolokani (Mali)
- City of Heidelberg - Sô-Ava- Ganvié (Benin)
- City of Ladenburg - Region Garango (Burkina Faso)
- City of Landau – Municipality Ruhango (Rwanda)
- City of Ludwigshafen – City of Sumagait (Azerbaijan)
- City of Mannheim – City of Chişinău (Moldova)
- City of Neustadt an der Weinstraße - Independencia (Bolivia)
- City of Speyer - District Rusizi (Rwanda)
- City of Viernheim - Municipality Silly (Burkina Faso)

For more information:

[SDG Partnerschaftskonferenz 2021 – SKEW](#)

In total, there are over 240 international partnerships in more than 120 of the 290 municipalities in the Rhine-Neckar region. These include numerous city partnerships with countries in the Global South.

Global Sustainable Communities Palatinate

The Palatinate SDG Biosphere Reserve is an important project that aims to implement the Sustainable Development Goals in the Palatinate. The Palatinate Forest-North Vosges biosphere reserve plays a central role as an SDG model region for a sustainable Rhineland-Palatinate. Through cooperation with various partners and municipalities, concrete measures are being taken to promote and implement the Sustainability Goals. The following municipalities from the Rhine-Neckar Metropolitan Region are:

- Speyer
- Municipality of Deidesheim

During the first project phase (2019 to 2021)

- Bad Bergzabern
- Neustadt an der Weinstraße
- Municipality of Lambrecht
- Municipality of Maikammer.

The cooperation with Engagement Global gGmbH focuses on the development of sustainability strategies and SDG action plans in the participating municipalities as well as support in the implementation of these plans. The biosphere reserve acts as a driver for holistic and sustainable development in the region by actively promoting the 2030 Agenda and the 17 Sustainable Development Goals.

For more information:

[Global Nachhaltige Kommune Pfalz \(2022 bis 2023\) – Pfälzerwald](#)

Heidelberg urban development concept

The municipal council of Heidelberg has decided to use the Sustainability Goals of Agenda 2030 as the basis for the new urban development concept (Stadtentwicklungskonzept, STEK) in order to promote sustainable development. The STEK 2035 serves as a guiding thread and local agenda for sustainable urban development in Heidelberg. This concept emphasizes the importance of environmental protection, climate protection and sustainable urban development. By integrating the Sustainability Goals into the STEK, the aim is to make the city of Heidelberg future-oriented and sustainable by harmonizing environmental protection, social justice and economic development.

For more information:

[Stadtentwicklungskonzept 2035](#)

„global.lokal.erleben – 17-destination tours for sustainability“

In the seven districts of the Rhine-Neckar Metropolitan Region, adventure tours on foot, by bike or on the water have been developed and are open to the general public as a tourist offer. Specially trained tour guides show the global connections on site and provide suggestions on how the 17 goals can be implemented locally. The "global.lokal.erleben" tours (global.local.experience-tours) are offered by Engagement Global as part of the Development-Related Education in Germany (EBD) program in cooperation with the Rhine-Neckar Regional Association.

The seven districts and municipalities in which the tours are carried out are representative of the implementation of the tours. These are:

- Bad Dürkheim district – City of Bad Dürkheim
- Bergstraße district – City of Lorsch
- Germersheim district – City of Germersheim
- Neckar-Odenwald district – City of Buchen
- Rhein-Neckar district – Municipality of Zuzenhausen
- Rhine-Palatinate district – Municipality of Limburgerhof
- Südliche Weinstraße – City of Landau

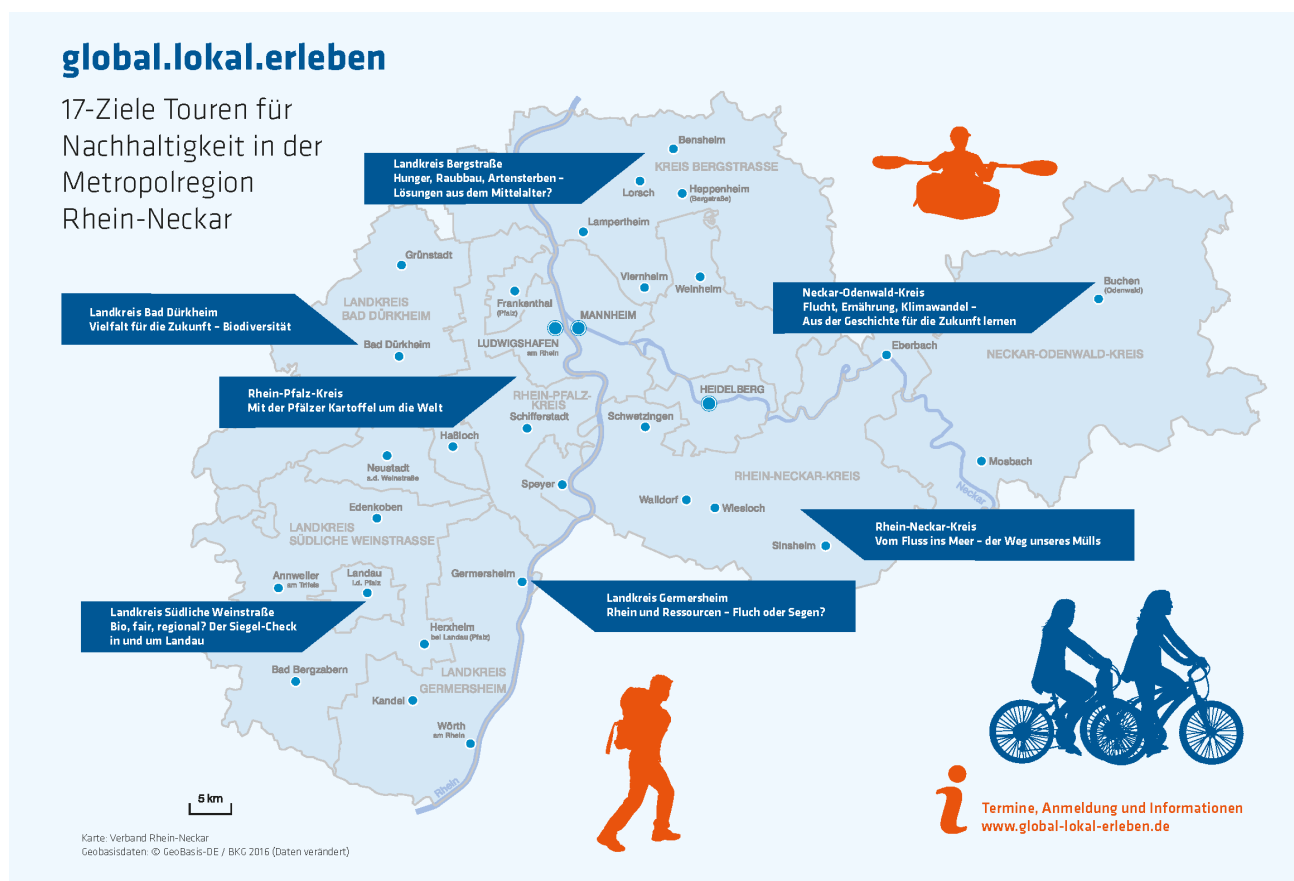


FIGURE 9: GLOBAL.LOKAL.ERLEBEN - 17-DESTINATION TOURS FOR SUSTAINABILITY IN SEVEN TOWNS IN THE SEVEN DISTRICTS OF THE RHINE-NECKAR METROPOLITAN REGION © VRRN

For more information:
[global.lokal.erleben\(m-r-n.com\)](http://global.lokal.erleben(m-r-n.com))

Mannheim 2030 mission statement

With the "Mannheim 2030" mission statement process, the City of Mannheim has actively committed itself to implementing the 2030 Agenda and the 17 global Sustainability Goals. Since January 2016, the 17 Sustainability Goals of the 2030 Agenda have also been binding for cities, as many of these goals can only be achieved through the participation of cities. Mannheim has already been involved in the area of sustainability in many ways and is now expanding this commitment against the backdrop of global challenges. In a broad-based participation process, proposals and ideas for the "Mannheim 2030" mission statement were developed together with over 2,500 Mannheim citizens, companies, institutions, initiatives and associations, universities and self-help groups. The mission statement serves as the basis for the local implementation of Agenda 2030 and helps to create a more sustainable and fairer world. Mannheim City Council adopted the mission statement in March 2019, which will be continuously adapted and implemented.

For more information:
[Leitbild Mannheim 2030](#)

Sustainability management of the city of Speyer

The city of Speyer is actively committed to implementing the Sustainability Goals of the 2030 Agenda and is one of the pioneering cities in Germany. By signing the resolution "2030 Agenda for Sustainable Development: Shaping sustainability at municipal level", Speyer has confirmed its commitment to sustainable development.

The city follows the motto "Think globally, act locally" and has launched a program of action for sustainable development. In workshops, key objectives and projects were developed together with local stakeholders in order to implement the 2030 Agenda locally. Among other things, Speyer is committed to conserving resources, avoiding waste, preserving biodiversity, sustainable consumption, environmental education and global responsibility. These activities help to create a liveable and sustainable city that meets the needs of today's generations and leaves a liveable environment for future generations.

For more information:

[Sustainability | Stadt Speyer](#)

3. Process and procedure

Sustainable action at all levels and in all areas of life and action is one of the greatest challenges of our time, which is being consistently tackled in the Rhine-Neckar Metropolitan Region with an increasing number of initiatives, projects and activities. This Voluntary Local Review - a voluntary sustainability report - is a logical next step for the Rhine-Neckar Metropolitan Region in its commitment to the 2030 Agenda and the integrated sustainability.

3.1 The path to a Voluntary Local Review in the Rhine-Neckar Metropolitan Region

Sustainability permeates all areas - including the fields of action of the Rhine-Neckar Metropolitan Region. In the planning region, the Rhine-Neckar Regional Association, Association for the Future of the Rhine-Neckar Metropolitan Region and Rhine-Neckar limited liability company work together to shape regional development holistically. Many sustainable measures have already been implemented in regional planning and development.

For example, the principles of regional planning stipulate that balanced social, infrastructural, economic, ecological and cultural conditions should be aimed for. This means ensuring sustainable services of general interest, promoting sustainable economic growth and innovation, securing development potential and protecting resources in the long term. For planning, this always means working towards better resource efficiency, multifunctional use and intelligent land use. The options for shaping land use in the region must also be ensured for future generations.

For regional development, however, this means In order to ensure sustainable spatial development for the Rhine-Neckar Metropolitan Region, settlement and open space development must always be integratively oriented and coordinated. Demand-oriented designation of residential and commercial areas must always go hand in hand with the question of their spatial and environmental compatibility so that the natural resources of open spaces with their multifunctional effects as habitats for humans, animals and plants can sustainably retain their useful and protective functions.

In addition to the inherently positive influence of regional planning on the SDGs, there are numerous formally binding resolutions as well as projects and measures that make a demonstrable contribution to achieving the goals of the 2030 Agenda (see section 3.2). For example, the resolution on "Sustainability in regional development" (ARR resolution 49 / 19 / 01, 16.10.2019) was followed by the following steps:

- Municipal Partnerships Network: SDG Partnership Conference (ARR 56 / 21 / 02, 11.06.2021)
- Opening of the "Fair Region" process (ARR 57 / 21 / 03, 15.09.2021) and certification (ARR / 2023 / 007, 31.03.2023)
- Planning of SDG tours in rural areas together with Engagement Global (ARR 58 / 21 / 02, 12.11.2021)

- OECD project to evaluate the UN Sustainable Development Goals in our region and opening of the process to apply for the funding applications "Coordination of municipal development policy" at the SKEW and "Smart, sustainable tourism" in the BMI call for Smart Cities for Germany (ARR 55/21/02, 5.03.2021 und ARR / 2022 / 032, 18.03.2022)
- Signing of the resolution "Agenda 2030 for Sustainable Development: Shaping sustainability at municipal level" at the association committee (VV / 2022 / 034, 20.07.2022)
- Signing of cooperation agreement Engagierte Region (committed region) and foundation charter for the foundation network (ZMRN 18.03.2022) up to the resolution to prepare a Voluntary Local Review as a voluntary sustainability report (ARR / 2022 / 050) on November 11, 2022.
- Raising awareness of the importance and opportunities of a regional food system (ARR 64/23/15, 28.06.2023)
- Supporting the social economy in the Rhine-Neckar Metropolitan Region (ARR 64/23/15, 28.06.2023)

The next important step in the sustainability efforts of the Rhine-Neckar Metropolitan Region is the preparation of a regional Voluntary Local Review. A binding resolution to prepare a Voluntary Local Review as a voluntary sustainability report (ARR / 2022 / 050) was also passed on November 11, 2022.

During the preparation of this Voluntary Local Review, particular emphasis was placed on the involvement of internal specialist departments, the municipalities in the region and collaboration and exchange with external cooperation partners in order to ensure the greatest possible transparency, comprehensive consideration and identification with the contents of the report.

The municipalities in the region were involved through the organization of workshops in which requirements for a regional SDG dashboard were formulated, the database of which can form the basis of their own municipal VLRs. Suitable (regional) indicators were also discussed. Here, the expertise of the municipalities was used to ensure that the indicators adequately reflect the diversity and special features of the individual areas. When selecting the indicators, the Bertelsmann Stiftung's indicator set in particular forms an important framework for comparison and orientation. However, as the presentation of the recommended indicators proved to be difficult due to the sometimes difficult data basis and availability - particularly in the presentation for municipalities with fewer than 5,000 inhabitants, but also in the scaling to an MRN average - a citizen participation exercise was carried out in the Metropolitan Region without further ado. The population was explicitly asked for ideas, data sets and indicators in the area of climate protection (SDG 13). This participatory approach is intended to ensure that the VLR also reflects the perspectives and concerns of citizens.

Parallel to this approach, close cooperation with the regional planners took place in order to enable a sub-regional assessment and to establish comparability between the various sub-regions. This ensures a holistic and balanced view of the entire Rhine-Neckar Metropolitan Region. Furthermore, the sister institutions Rhine-Neckar limited liability company and the Association for the Future of the Rhine-Neckar Metropolitan Region were involved in a joint project round as well as in an explicit exchange with the respective specialist departments or project groups in the process and the content development of the report.

In addition to the "internal perspective" and above all to ensure that the region's first VLR can achieve the greatest possible comparability with other municipalities both nationally and internationally, cooperation with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) took place. The Rhine-Neckar Metropolitan Region is participating in the BBSR research project "Implementing the 2030 Agenda through urban development at local level - cities, municipalities and districts in a data-based and model-oriented dialog on aspects of global sustainability relevant to urban development". The aim of the project is to carry out own analyses (in the format of VLRs) of the respective municipal potentials and development paths in selected cities, municipalities and districts in Germany as well as in European and international partner countries, which are oriented towards the 2030 Agenda. In addition to the Rhine-Neckar Metropolitan Region, the project participants:

:

- Cottbus
- Eisenach
- Eltville am Rhein
- Lüdenscheid
- Mannheim
- München
- Niebüll
- Besançon (France)
- Liverpool City Region Combined Authority United Kingdom)
- Prefeitura Municipal de Maringá (Brazil)
- Toyama (Japan)
- UN-Habitat Data and Analytics.

The project strengthens the international trans-municipal dialog on data-based and model-oriented sustainable urban and regional development, in which SDG 11 represents the central reference point for urban development and urban planning.

Finally, to ensure that the Voluntary Local Review also adequately takes into account the scientific perspective, Dr. Max Jungmann and Dr. Kathrin Foshag, who work both at the strategy consultancy for sustainability Momentum Novum and at the University of Heidelberg, were closely involved. With their expertise in the field of sustainability research, they help to ensure that the scientific findings and methods are incorporated into the creation of the VLR. This collaboration ensures a well-founded and evidence-based analysis of the sustainability efforts of the Rhine-Neckar Metropolitan Region and supports the development of future-oriented recommendations for action.

We would like to take this opportunity to thank all those involved. The exchange of findings and cooperation make it possible to comprehensively evaluate and document the progress made in achieving the Sustainability Goals in the Rhine-Neckar Metropolitan Region. The VLR will continue to be an important instrument in the future for presenting progress transparently and taking further steps towards sustainable development in the region.

3.2 Selection of Sustainability Goals

The basis for the selection of the Sustainability Goals considered in this report is the feedback from the population of the Rhine-Neckar Metropolitan Region. A (first) online survey on the 2030 Agenda was conducted in 2020 between September 3 and October 9, 2020. The findings and results subsequently provided impetus for numerous projects. The inspiration gathered at the time helped to set the course for sustainable development. Citizens are therefore the driving force behind these efforts. Their ideas, suggestions and advice are of the utmost importance and serve to make the region fit for the future in the long term and to ensure acceptance and support for development.

The aim of the online survey was to gain an insight into how people see the Rhine-Neckar region in 2030. What is important to them and where do they see the relevant levers for sustainable development and safeguarding the (global) quality of life? What goals should be set for the Rhine-Neckar region - in terms of climate protection, social issues and the economy? The title of the survey "Sustainable in Dialogue" was translated into a terminology that is compatible with other studies in terms of the variables in order to enable comparisons and further classification. This was done in two ways: firstly, it was based on the SDGs formulated by the United Nations and secondly on the so-called three-pillar model of sustainability, which describes the connection between ecological, economic and social goals.

Gender, age, education and size of the residential communities in the structure of the official statistics were queried in order to determine factors influencing the goals classified as important. In order to keep the time and financial expenditure within limits, the survey was conducted online (duration: 37 days; scope: 997 participants).

The first in-depth question was dedicated to the topic of social sustainability. Overall, there were notable differences in the assessment of the individual SDGs. Three goals stood out clearly from the others in terms of their value: "Sustainable cities and communities" (20.2%), "Health and well-being" (18.3%) and "Quality education" (17.2%) were rated as the most relevant. At 5%, the lowest number of mentions for the sustainability goal "gender equality" or SDG 2 "zero hunger" is striking. The second major topic area was dedicated to the environmental Sustainability Goals. The overview shows significant differences in the assessment of the individual ecological Sustainability Goals. The goals "Climate action" and "Affordable and clean energy" clearly set themselves apart from the other goals. The third major topic area was dedicated to the economic Sustainability Goals. The overview shows notable differences in the assessment of the individual economic Sustainability Goals. The goal "Sustainable consumption and production" stands out relatively clearly from the other goals, whereas the item "Partnership to achieve the goals" was rated as significantly less relevant than the other goals.

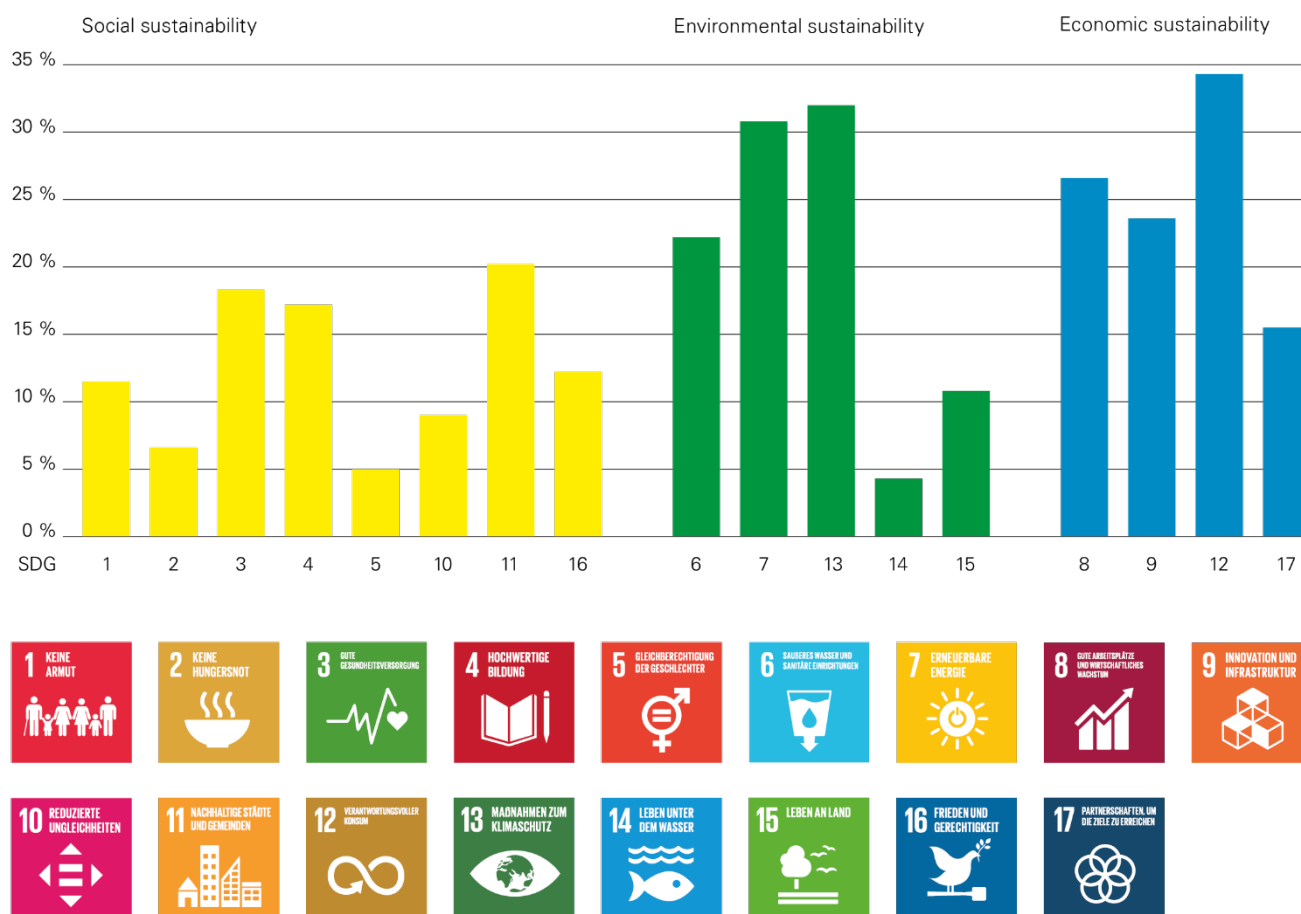


FIGURE 10: THE EVALUATION OF THE ONLINE SURVEY SHOWS THAT THE SUSTAINABILITY GOALS 'SUSTAINABLE CONSUMPTION AND PRODUCTION' (SDG 12), 'CLIMATE ACTION' (SDG 13) AND 'AFFORDABLE AND CLEAN ENERGY' (SDG 7) ARE MOST IMPORTANT TO THE CITIZENS OF THE REGION © VRRN

As the ecological and social sustainability pillars each account for more SDGs in purely numerical terms, this report highlights two SDGs from each of these two pillars and one goal from the economic sustainability pillar as a supplement. The focus of this first VLR of the Rhine-Neckar Metropolitan Region is on indicators of SDGs 4, 7, 11, 12 and 13. This report thus follows the findings of the citizen survey and combines regional action and civic engagement to provide a holistic view of sustainable action in Rhine-Neckar. It should also be noted that the area of the social economy, which is important for the transformation towards greater sustainability and contributes to numerous SDGs in all three pillars, has only been researched to a limited extent in the Rhine-Neckar Metropolitan Region. It should therefore be given more space in a follow-up report.

4. Quality Education (SDG 4)

A high-quality education empowers people to improve their political, social, cultural and economic situation. Every child therefore has the right to a school education and every person has the right to satisfy their basic learning needs - throughout their lives. Education is seen as the key to sustainable development and is therefore a focus of sustainable development in the Rhine-Neckar Metropolitan Region.



SDG 4 aims to improve educational opportunities, access to and quality of education and improve the educational attainment of all people. In particular, access to early childhood education, high-quality primary and secondary education, technical, vocational and tertiary education, inclusive education and aspects of education for sustainable development are addressed. A further goal is the elimination of gender and milieu-specific differences in education as well as equal access to education and the facilitation of lifelong learning for all.

Description

Poverty and educational poverty are closely linked: A lack of education is one of the main causes of material impoverishment. A deficient level of education is also often passed on from one generation to the next. A sufficient level of education includes early childhood education (daycare/preschool), primary education (elementary school), lower secondary education (up to the first school-leaving certificate that qualifies for vocational training) or catch-up basic education for young people and adults, as well as inclusive education.



FIGURE 11: PROMOTING QUALITY EDUCATION (SDG 4) IS CENTRAL TO SUSTAINABLE DEVELOPMENT AS IT EQUIPS PEOPLE WITH THE KNOWLEDGE, SKILLS AND VALUES THEY NEED TO DEVELOP INNOVATIVE SOLUTIONS TO GLOBAL CHALLENGES SUCH AS POVERTY, INEQUALITY, HEALTH AND CLIMATE CHANGE AND TO BUILD AN INCLUSIVE, PEACEFUL AND PROSPEROUS SOCIETY © PIXABAY / WWW.PICJUMBO.COM

4.1 High-quality primary and secondary education

The indicator "Transitions to secondary schools" contributes in particular to sub-objective 4.1. This target reads: "By 2030, ensure that all girls and boys complete primary education that is free, compulsory and of high quality."

The indicator "Transitions to secondary schools (here: grammar schools) serves to measure the transition rates and access to grammar school education. It quantifies the percentage of all pupils in the final year of primary school who transfer to a grammar school. The recommendations of the type of secondary school are not taken into account in advance. Successfully completing a Gymnasium opens up a wide range of career prospects and facilitates access to certain occupational fields. Grammar schools represent a demanding challenge that can motivate students to realize their full potential and develop a higher level of motivation. Statistical indicators often show a positive correlation between a higher level of education and a higher income. Accordingly, people with a general higher education entrance qualification or entrance qualification for universities of applied sciences tend to have a greater choice of career opportunities and can position themselves in sectors with higher income potential. The indicator therefore plays an important role in evaluating the level of education. The abolition of the mandatory primary school recommendation and the increased influx to grammar schools and universities in the German education system, on the other hand, are certainly problematic in light of the shortage of skilled workers.

On the one hand, the fact that elementary school recommendations are no longer binding means that more pupils switch to grammar school than is actually appropriate for their abilities. This can lead to overcrowding at grammar schools, while other types of school such as intermediate secondary schools and vocational grammar schools are less well attended. Many pupils who would actually be better suited to a Realschule (secondary school) end up at a Gymnasium (grammar school), where they may be overwhelmed.

Secondly, studies show that access to grammar school depends heavily on the social background of the pupils. Children from educationally disadvantaged homes have significantly lower chances of being recommended for grammar school, despite equal performance. This increases social inequality in the education system. This can have problematic consequences for many young people. If they attend a type of school that does not match their abilities, there is an increased risk that they will not graduate or will lose out. This can significantly impair their career prospects. At the same time, there is a shortage of urgently needed skilled workers in areas such as trade or industry.

In more rural regions, where access to grammar schools is more heterogeneous and at the same time there are good opportunities to find qualified training and employment with an intermediate school-leaving certificate, above-average transition rates to secondary schools and, in some cases, community schools can be observed. This is the case in the Neckar-Odenwald district, for example. In contrast, more academic and urban areas with large universities are characterized by a high proportion of pupils attending a grammar school. Exemplary examples for the 2021/22 school year are the urban district of Speyer with 61.9% of pupils transferring to a grammar school and the urban district of Heidelberg (68.3%).

The long-term trend of an increase in grammar school education leading to the Abitur shows signs of stagnation, ranging between 48.3% and 47.6% in 2018 and 2020. It can be assumed that the uncertainties in connection with the corona pandemic have also influenced the decisions of children and their parents regarding the transition. In districts with decreasing grammar school rates, such as Landau in the Palatinate Region or Ludwigshafen on the Rhine, it is noticeable that pupils are increasingly opting for schools with three courses of education (comprehensive schools) instead of those with two courses. Despite this development and the uncertainties caused by the corona pandemic, the direct route to the Abitur remains important. This trend is particularly evident in the districts of the Metropolitan Region in Baden-Württemberg, where the numbers and rates of those entitled to study are still declining. This underlines the increasing importance of vocational schools, which play a mediating role for general school qualifications that were previously not achieved.

Other educational initiatives in the Rhine-Neckar Metropolitan Region

Democracy education initiative by and for young people: Series role models from the region

The BMFSFJ's Future Package emphasizes the active participation of young people, especially those from socially disadvantaged groups, in the process of shaping their environment. The YEP project enables young people to take part in creative workshops and reflect on freedom and co-determination through youth art and culture. Projects such as YEP can help young people to strengthen their decision-making and have a positive influence on the transition rate to grammar schools by encouraging their participation and development.

Pimp up your volunteering & commitment goes to school:

The projects funded by the German Foundation for Commitment and Volunteering (DSEE) focused on intergenerational dialog and the development of sustainable structures to generate young talent for associations and charitable initiatives. In a further scaling process, ideas and concrete starting points for charitable engagement were developed together with students in an interactive format. Through this participatory learning process, the students were able to gain a deeper understanding of environmental issues, social justice and economic sustainability and raise their awareness of the importance of social participation and sustainable lifestyles.

Your learning box (chancebox)

Your Learning Box, also known as ChancenBox (chancebox), is an educational project initiated by BASF and supported in the Rhine-Neckar Metropolitan Region. It aims to help pupils in the region quickly and easily by bundling various support services such as language support, mentoring, tutoring and measures to strengthen the resilience of schoolchildren.

The ChancenBox modules are already being implemented in 15 municipalities in the Rhine-Neckar Metropolitan Region, including Mannheim and Ludwigshafen. The project was launched in response to the challenges posed by the COVID-19 pandemic in order to catch up on learning and improve educational opportunities.

By bundling various educational support services under one roof, the Lernbox (learnbox) or ChancenBox aims to provide pupils in the region with easy access to support services and thus improve their educational opportunities. The initiative is supported by BASF and other partners and aims to help mitigate the impact of the pandemic on the learning process.

4.2 Reduction in early school leaving by 2030

Target 4.1 is: "By 2030, all children and adolescents should be able to complete free, equitable and quality primary and secondary education leading to useful and effective learning outcomes." A high school dropout rate is in direct contradiction to this sub-goal, as students leave school early and do not graduate. Low early school leaving rates are therefore an important indicator of whether the goal of universal access to quality education up to secondary level is being achieved.

General: The early school leaving rate is defined as the percentage of pupils who leave school without having obtained at least a lower secondary school leaving certificate. Young people without a school-leaving certificate have an increased risk of not receiving vocational training and therefore remaining permanently unemployed. According to the Federal Employment Agency, this rate in the group "without completed vocational training" was 20.6% in 2023, while the overall unemployment rate for this age group was 5.7%. A lower level of education consequently reduces future income and at the same time reduces young people's chances of obtaining a higher level of education.

Region: The Rhine-Neckar Metropolitan Region has a lower drop-out rate than the national average. Nevertheless, the rates vary greatly at district level. Ludwigshafen on the Rhine, for example, has the highest dropout rate in the region with a rate of 13.5% in 2021 and also brings up the rear nationwide. Bad Dürkheim (10.6%) and Mannheim (7.3%) continue to have higher rates, although these are in line with the national average. Districts with a high proportion of academics and correspondingly higher-income households tend to have significantly lower rates (Heidelberg: 2.3%; Bergstraße: 4.5%).

Graph and trend: After a phase of stabilization around 5.5% until 2015, the school dropout rate rose again slightly until 2019. A decrease of around 0.5% was recorded for the 2019/2020 school year, although an increase in the rate to over 7% was recently observed. It can also be observed that the school dropout rate is often higher for boys. The decline in the 2019/2020 school year can be partly explained by simplified conditions for graduation during the Covid-19 pandemic, supported by adjustments to the curriculum, which, however, varied depending on the federal state and indicate regional differentiation in the Metropolitan Region. The renewed increase to 6.7% is currently still the subject of research, with the interaction of the long-term effects of the pandemic, including the economic and social consequences, and the ongoing Ukraine crisis being discussed as possible causes.

With the Chancenbox2040 project, the Metropolitan Region is bundling extracurricular support services for disadvantaged children and young people. The long-term support network for greater participation of children and young people includes various modules and is modularly bundled according to target groups and providers so that it can be targeted and used in a needs-oriented manner. The language support, mentoring and reading support modules are used to strengthen the skills of children and young people. The career guidance module is designed to help children and young people get to know their skills and ideas about the working world of tomorrow. The ABC care children and the healthy breakfast provided by Brotzeit are also intended to help empower children on the margins of society. The participation module, e.g. the EuropeNow module and the Democracy Day module, are designed to bring children and young people closer to democracy education.

4.3 Promoting vital skills for sustainable development

The concept of inclusive daycare facilities contributes in particular to sub-goal 4.5 of Sustainable Development Goal (SDG) 4. This target states: "By 2030, ensure that all youth and at least a significant proportion of adults, men and women, acquire and develop the skills they need to lead their lives, in particular through education for sustainable development and continuous vocational training."

General: Inclusive child day care facilities, or the percentage of facilities with inclusive services in relation to the total number of all child day care facilities, provides information on the extent to which the education system cares for children with and without special needs together. The figure is an important indicator of the level of education and educational equity, as it shows how well the education system is geared towards ensuring equal access to early childhood education for all children, regardless of their individual needs and opportunities. A high proportion of inclusive settings can point to a more inclusive and integrative education system, which in turn acts as a foundation for lifelong learning and social inclusion. Early childhood inclusive education concepts promote social skills and a willingness to learn, which are crucial for a successful school education, and create a basis for counteracting early school leaving.

Region: Based on the figures for 2023, there is a wide spread in the proportion of inclusive facilities. At 65.3%, the Bergstraße district in Hesse is well above the national average of 38.94%, while the Neckar-Odenwald district is also well above average at 42.3%. In contrast, the proportion in Neustadt an der Weinstraße, for example, is 8.1%. These differences can be attributed to different education policy strategies within the federal states.

Graph and trends: After stagnating at around 30.5% in 2018 and 2019, the rate of inclusive daycare centers showed an upward trend from 2020: initially rising slightly to 31.0%, then more significantly to 31.4% in 2021, reaching 34.8% in 2022 and finally 36.0% in 2023. This trend may reflect an increasing focus on inclusive education policy, increased investment and greater public awareness of early childhood inclusion. The trend is also comparable to the trend across Germany: in 2011, the number of inclusive daycare facilities in Germany rose by 13.6%. The temporary increase to 34.0% in 2017 suggests that certain initiatives or political measures can lead to fluctuations, but their sustainable effect requires continuous effort.

4.4 Increase in vocational training by 2030

Target 4.4 is: "By 2030, substantially increase the proportion of young people and adults with basic and professional skills (including technical and vocational skills), in particular through vocational education and training, technical and vocational skills, higher education and lifelong learning".

The "labor force without vocational training" indicator helps to measure progress towards this goal by showing how many people in the labor force have no formal vocational training.

General: The number of economically active persons without vocational training provides information on the proportion of the working-age population who have not completed any formal vocational qualification or training. It is calculated by comparing the number of employed and unemployed people who have not completed vocational training with the total number of people in employment. This figure is an important indicator of the level of education in an economy, as a high proportion of people without vocational training indicates unused labor force potential and can mean a lower level of productivity. As the interface between education and the labor market, it is relevant for assessing competitiveness and adaptability to technological and economic changes, as qualified workers tend to be better able to adopt new technologies and work in innovative environments. A low rate can therefore be interpreted as a sign of a high level of education and a strong, competitive economy, which in turn promotes investment and growth.

Region: The figures for 2021 vary from 13.1% in the Southern Wine Route to 24.6% in Ludwigshafen on the Rhine and Worms with 23.3%, whereby these figures stand out clearly and are significantly higher than the national average of 15 %. This contrasts with lower figures such as in the Südliche Weinstraße and the district of Bad Dürkheim, which at 13.1% and 13.3% respectively are below the national average of 15%. Cities such as Heidelberg, Mannheim and Speyer also have different figures, ranging from 17% to over 20%. The relatively high percentages in Ludwigshafen and Worms could be due to a lack of vocational training opportunities or structural problems in the local labor market, for example. The comparatively lower rates in more rural areas such as the Southern Wine Route could indicate a greater availability of training places or a different economic structure that requires less formal training. The data suggests that urban areas, with their diverse economic structure and higher population density, have a greater challenge in integrating unskilled workers.

5. Affordable and clean energy (SDG 7)

Goal 7 "Affordable and clean energy" describes general access to affordable, reliable and modern energy services. The share of renewable energy and the move away from fossil fuels are just as important strategically as increasing energy efficiency and reducing final energy consumption. Access to clean energy is a basic prerequisite for sustainable development. There are close links to climate protection and sustainable cities and communities in particular, with a focus on the economic, transport and housing sectors.



The use of renewable energies as an important component of climate-friendly and future-proof energy supply can reduce greenhouse gas emissions and lower the consumption of fossil fuels. Renewable energies are often characterized by a decentralized supply. Local authorities can actively support the expansion and thus help to increase the share of renewable energies in the local energy mix.

However, this and the increase in energy efficiency only have a positive effect on greenhouse gas emissions if final energy consumption falls overall. A "rebound effect", i.e. increased consumption due to efficiency measures and the resulting cost savings, should be avoided.

Description

Renewable energies are available in the form of solar energy, wind and hydropower, biomass and geothermal energy. The possible uses and potential vary greatly from region to region. In the Rhine-Neckar Metropolitan Region, there is great potential for the use of hydropower and wind power in particular, as well as solar energy in the form of solar thermal and photovoltaic systems and geothermal energy. The share of renewable energies in final energy consumption can still be significantly increased here in the coming years.

In addition to the increased use or the necessary switch to renewable energy sources, increasing energy efficiency is essential for reducing greenhouse gas emissions and thus for achieving the climate targets and necessities. The possibilities are many and varied and are the responsibility of a wide range of actors - from private individuals to large organizations.

Politicians can intervene at various levels to regulate and promote. Municipalities, commercial enterprises and private individuals can work towards reducing energy consumption through a variety of specific measures. In order to achieve greater progress, investments and measures should be stepped up. These include targeted energy management of municipal properties, the use of funding programs for investment measures, energy efficiency networks or the reduction of energy losses through the use of waste heat as well as sustainable construction methods in the residential and commercial sectors.

Climate neutrality and net zero emissions are key concepts in the context of sustainable energy supply (SDG 7) and combating climate change. Climate neutrality means that no additional greenhouse gases are released into the atmosphere. This can be achieved by offsetting the remaining unavoidable emissions through compensation measures such as reforestation or carbon capture and storage. Net-zero emissions also aim to reduce net greenhouse gas emissions to zero by offsetting the remaining emissions through sinks. Both concepts require a drastic reduction in emissions from fossil fuels and a switch to renewable energies as well as energy efficiency measures in accordance with SDG 7. At the same time, natural sinks such as forests and peatlands must be protected and reforested. This is the only way to decarbonize energy systems and achieve climate neutrality or net zero emissions.



FIGURE 12: SDG 7 IS HIGHLY RELEVANT IN THE REGIONAL CONTEXT, AS THE EXPANSION OF RENEWABLE ENERGIES AND THE INCREASE IN ENERGY EFFICIENCY REQUIRE CLOSE CROSS-BORDER COOPERATION BETWEEN MUNICIPALITIES, CITIES AND COUNTRIES IN ORDER TO PROMOTE THE ENERGY TRANSITION AND ACHIEVE CLIMATE TARGETS © ADOBE STOCK / TOBIAS ARHELGER

5.1 Promoting renewable energies

The indicator "Share of renewable energy in gross final energy consumption" relates to SDG 7.2, which focuses on promoting renewable energy and increasing its share of total energy consumption. The sub-goal aims to increase the share of renewable energy in gross final energy consumption in order to ensure a sustainable and clean energy supply. Increasing the share of renewable energies will make an important contribution to reducing CO₂ emissions and achieving climate targets. Only through a combination of massive renewable energy expansion and efficiency improvements can energy systems be fully decarbonized and net-zero emissions achieved. SDG 7.2 is therefore a basic prerequisite for the decarbonization of the economy, indispensable for a successful global energy transition and thus also for achieving the Paris Agreement and SDG 13.

Uniform regional plan - update of the sub-regional plan for wind energy and preparation of the sub-regional plan for open-space photovoltaics

The use of wind energy and photovoltaics plays a key role in a sustainable energy supply. The aim of the energy transition is to achieve a climate-neutral energy supply in the future while at the same time becoming independent of fossil fuel and heating fuel imports. An important strategy here is the expansion of renewable energies. The Rhine-Neckar Regional Association supports this as a key pillar of the energy transition. The long-term perspective is to fully supply the Rhine-Neckar Metropolitan Region with renewable energies, as far as possible from regional sources. As can be seen from the regional energy concept published by the Rhine-Neckar Regional Association, wind and solar energy in particular offer considerable potential.

With the regional planning offensive of the state of Baden-Württemberg, which was launched on 17.03.2022, a clear target has been formulated for the designation of areas for the use of renewable energies at regional planning level: Each regional association in Baden-Württemberg is to secure 2% of its respective regional area for the generation of wind and solar energy.

This safeguarding takes the form of regional planning priority areas for wind energy. In the Baden-Württemberg part of the Metropolitan Region, 1.8% of the regional area is to be made available for wind energy. After deducting this 1.8 %, there is a share of 0.2 % of the regional area that is to be made available for the use of solar energy. This provision is made for ground-mounted photovoltaics in the form of regional planning reservation areas.

For the Rhineland-Palatinate part of the Metropolitan Region, a final target value for wind energy is still to be assigned to the Rhine-Neckar Regional Association in accordance with the Rhineland-Palatinate State Wind Energy Areas Act (LWindGG) on the basis of a state-wide potential study. There is a mandate to designate at least reserved areas for ground-mounted photovoltaics. No lower area limits have been specified, but the use of arable land by new ground-mounted photovoltaic systems constructed after 31.12.2020 should not exceed 2% across the state.

With the law amending the Hessian Energy Act, the state of Hesse has stipulated that "priority areas for the use of wind energy" must be designated in the regional plans in proportion to the area contribution values of the WindBG. This provision is not relevant for the update of the wind energy sub-regional plan for the Rhine-Neckar Unified Regional Plan; instead, this applies to the South Hesse Regional Plan. Just under 1.9% of the land area in Hesse has already been designated for wind energy (as priority areas with exclusion effect). Accordingly, the area contribution value of 1.8% has already been reached in Hesse as of December 31, 2027. The highest state planning authority in Hesse intends to communicate the achievement of this area contribution value to the federal government as early as May 31, 2024. According to Section 1 (1) of the Act to Amend the Hessian Energy Act (HEG) and the Hessian Building Code of 22.11.2022, the target for the use of photovoltaic systems is 1 percent of the area of the state of Hesse.

This includes both roof-mounted and ground-mounted systems. According to the Hesse 2020 state development plan, the regional plans must define area categories in which the construction of ground-mounted solar installations is compatible with spatial planning requirements.

By updating the sub-regional plan for wind energy and drawing up the sub-regional plan for ground-mounted photovoltaics, the Rhine-Neckar Region Association is pursuing the goal of achieving the ambitious land use targets for the generation of renewable energies in the Metropolitan Region. In line with the regional planning offensive, the corresponding resolutions for the sub-regional plans are to be passed by the association's assembly by September 2025.

52 Ensuring energy services

The expansion of the charging point infrastructure, which is used as an indicator in this case, relates directly to the promotion of clean and affordable energy. The expansion of the charging station infrastructure will modernize the infrastructure in order to provide sustainable energy services and facilitate access to modern and clean technologies. The measure therefore contributes directly to the achievement of sub-objective 7.1 (Ensure universal access to affordable, reliable and modern energy services by 2030). Furthermore, the complex interaction between the various areas in the implementation of the Sustainability Goals becomes clear at this point. This is because the expansion of the charging station infrastructure also contributes to SDG 9, in particular sub-goal 9.1, which focuses on the development of high-quality, sustainable and resilient infrastructure. The goal includes the promotion of inclusive and sustainable industrialization and the modernization of infrastructure to make it sustainable. The expansion of the charging station infrastructure is an important step towards environmentally friendly and sustainable development in the area of infrastructure and mobility.

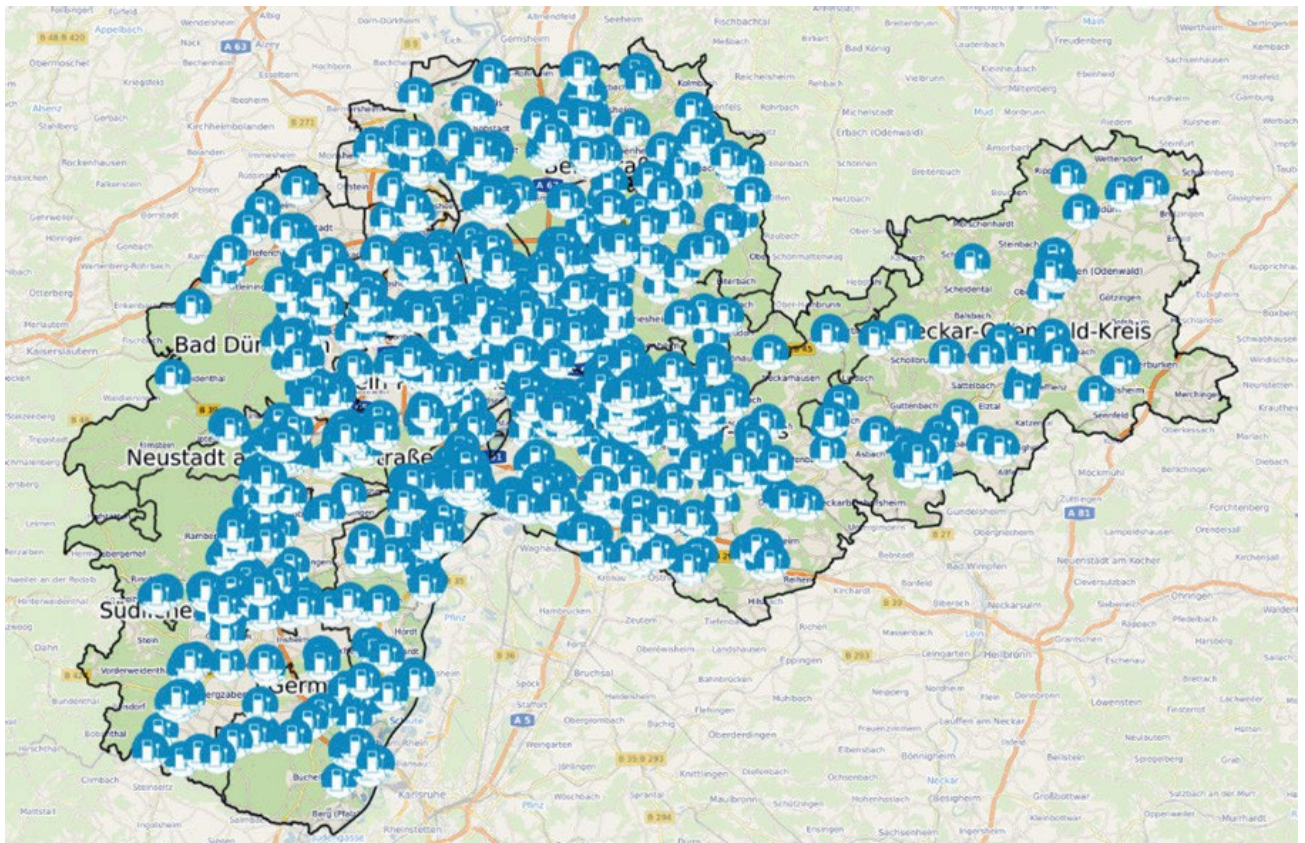


FIGURE 13: OVERVIEW OF THE CHARGING STATIONS IN THE RHINE-NECKAR METROPOLITAN REGION © VRRN

The number of charging points in the Rhine-Neckar Metropolitan Region is analysed. In 2023, 1,628 charging points, including 354 with fast charging connections, will be installed in the Rhine-Neckar Metropolitan Region.

The Ordinance on Minimum Technical Requirements for the Safe and Interoperable Installation and Operation of Publicly Accessible Charging Points for Electric Vehicles (Charging Point Ordinance), which came into force in 2016, makes a significant contribution to the expansion of the public charging point infrastructure. In addition, all operators are obliged to notify the Federal Network Agency in writing or electronically of their publicly accessible normal and fast charging points. Access to charging points will be made considerably easier, making motorized private transport (MIV) - especially in regions with a lack of mobility alternatives - generally more climate-friendly. E-charging stations and wallboxes should be operated with certified green electricity in order to fully exploit the environmental benefits of electromobility.

5.3 Increasing the share of renewable energy in the global energy mix

Sub-objective 7.2 aims to increase the share of renewable energies in total energy consumption. The indicator "Completed residential buildings with renewable heating energy" is used for this purpose. The use of renewable heating energy in residential buildings makes an important contribution to the promotion of clean energy, which in turn contributes to sustainable development and the reduction of CO₂ emissions.

Around two thirds of Germany's final energy consumption in buildings is attributable to the provision of space heating in residential buildings. Solar, district heating, the use of heat pumps and biomass as heating technologies that use renewable energy can therefore make a significant contribution to reducing energy consumption and therefore CO₂-emissions. As an economic side effect, the fixed energy costs of these technologies are associated with lower costs for private households. In line with the principle of holism, the indicator therefore relates to both the economic and ecological dimensions. As the nationwide new construction rate is less than 1%, the importance of new buildings arises indirectly from their function as examples of measures that can later be transferred as innovations to existing buildings and are associated with lower investment costs due to broader market penetration. An increase in the proportion of newly constructed residential buildings with renewable heating energy ensures that new buildings do not become refurbishment cases in the medium term and is therefore relevant in terms of intergenerational equity. This is particularly true in view of increasing energy requirements in the building sector.

The expansion of renewable energies in the building and residential sector is associated with a number of social challenges. High investment costs can lead to energy poverty among low-income households. In the tenant-landlord dilemma, there is a lack of incentives for tenants to invest in renewable energies. Information deficits and a lack of acceptance of new technologies also hinder expansion. A lack of public participation in projects in the residential environment can lead to acceptance problems. In addition, the costs and benefits of expansion are often unevenly distributed between households. Careful consideration of social aspects (e.g. through targeted funding programs, information campaigns, participation opportunities and compensation mechanisms) is crucial to ensure that the energy transition in the building sector succeeds and that all population groups can benefit from affordable and clean energy.

The share of completed residential buildings with renewable heating energy in newly constructed residential buildings is considered below. The basis for the calculation is: (number of newly constructed residential buildings with renewable heating energy) / (number of newly constructed residential buildings) * 100.

During the period under review, the proportion of completed residential buildings with renewable heating energy increased, despite a slight stagnation between 2018-2020. While the proportion in the Rhine-Neckar Metropolitan Region was still 42.8% in 2016, it had already reached 69.9% by 2022.

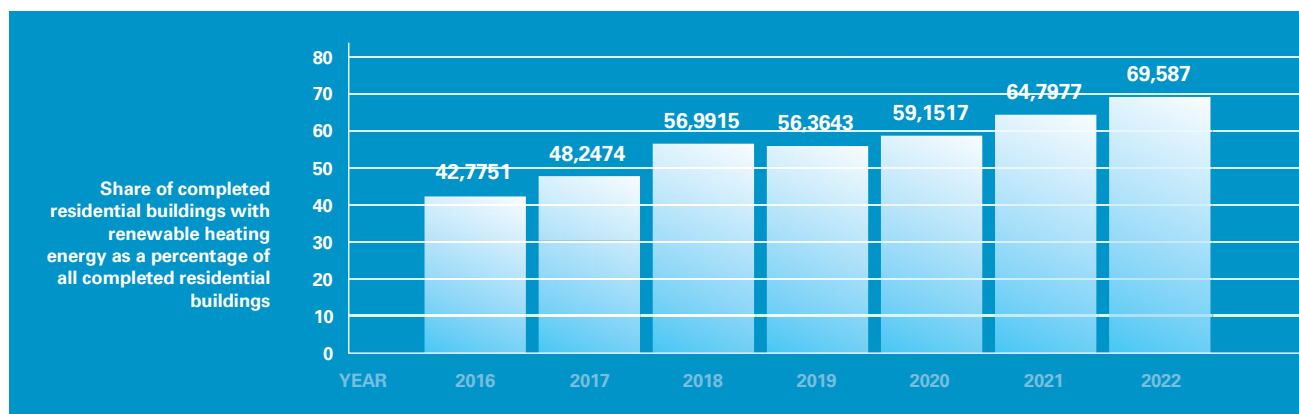


FIGURE 14: SHARE OF COMPLETED RESIDENTIAL BUILDINGS WITH RENEWABLE HEATING ENERGY IN PER CENT OF ALL COMPLETED RESIDENTIAL BUILDINGS © VRRN

6. Sustainable cities and communities (SDG 11)

Goal 11 "Sustainable cities and communities" is highly relevant for municipalities in Germany. An important issue, also against the backdrop of demographic developments, and one of the central challenges of municipal development is to create sufficient affordable living space and at the same time maintain liveable, climate-friendly and climate-adapted cities and municipalities by securing and further developing public and open spaces.



To this end, the expansion of local public transport and the improvement of infrastructure for cycling and walking are also key components of sustainable settlement development, especially in the rural areas surrounding regional centers, which also have important residential and recreational functions. Equalizing the quality of life and access to infrastructure in cities and rural areas also means taking demographic developments into account and continuously developing the more rural part of the region as an attractive location for business and innovation. Strengthening generations, participation etc. through involvement and commitment, e.g. through volunteer days (see 7.5).

Description

Low-income earners are particularly affected by high rental costs and often have to spend a much larger proportion of their income on housing than the recommended 30 percent. Renting can therefore become a poverty risk. In addition, high rental costs can become an obstacle to social participation for low-income earners, as a large proportion of their already low income has to be spent on rent, leaving fewer financial resources available for other areas of social life such as leisure, education or social activities. The displacement of socially disadvantaged people from urban areas due to high rents and the associated commuter traffic pose a major challenge to achieving the goal. The displacement to the suburbs forces many commuters to accept long and expensive journeys to work. This is at odds with the goal of ensuring access to safe, affordable and sustainable transport systems for all by 2030. The high level of commuter traffic also has a negative impact on the environment and air quality in cities.

Making rural towns and settlements more sustainable and therefore more viable for the future therefore means ensuring that they remain attractive and liveable for all sections of the population. In addition to affordable housing, this means expanding the supply of small apartments for young and old, creating barrier-free infrastructure and public spaces, ideally with meeting spaces for a social mix, multi-generational living and improved public transport services as well as routes for cycling and walking. Sustainable urban development of this kind also takes the environment and climate into account in the sense of a climate-neutral, climate-adapted and energy-efficient city that also provides ecological functions through blue and green infrastructure.

Open spaces and bodies of water strengthen biodiversity, improve the urban climate and serve as meeting and recreational spaces. Achieving SDG 11 through integrated urban development, improved mobility and housing is an important basis for achieving the health goals of SDG 3, such as access to health services, the reduction of non-communicable diseases and the promotion of general well-being. Conversely, measures to improve public health, such as combating diseases and air pollution, contribute to achieving more sustainable and liveable urban development.



FIGURE 15: MARKET PLACE IN THE CENTRE OF MOSBACH IN THE NECKAR-ODENWALD DISTRICT © ADOBE STOCK / FIRN.

6.1 Participatory, integrated and sustainable settlement planning

"Population development in the Rhine-Neckar Metropolitan Region" is an important indicator and relates to SDG 11.3, which addresses the strengthening of urban and rural settlements and their inclusion, resilience and sustainability ("By 2030, make urbanization more inclusive and sustainable and strengthen capacities for participatory, integrated and sustainable settlement planning and management in all countries"). The development of the number of inhabitants in the region is an important indicator for sustainable urban development and the creation of liveable and inclusive cities. The goal of SDG 11.3, which aims to promote the inclusion and sustainability of cities and settlements by 2030, can be achieved through positive population growth. However, in order to ensure sustainable development, the maintenance of equal living conditions in urban and rural areas must be ensured through a complementary division of functions.

Description

Overall, population development in the Rhine-Neckar Metropolitan Region can be seen as an opportunity for sustainable settlement development in the sense of SDG 11. With its cities and networks, the region has good prerequisites for improving the quality of life of its citizens and at the same time overcoming ecological challenges. The region is characterized by a high population density, which facilitates the implementation of measures for sustainable urban development. In order to achieve the goals of SDG 11, the Rhine-Neckar Regional Association adopted a legally binding standardized regional plan back in 2014. This is binding for the Baden-Württemberg and Rhineland-Palatinate parts of the association's territory in accordance with Article 5, Paragraph 5, Sentence 3 of the State Treaty. The overall plan is intended to guide the spatial development of the region over the next 15 years. As a legally binding guideline, the plan formulates objectives for the development, organization and safeguarding of the region, principles as guidelines for consideration and discretionary decisions as well as non-binding recommendations for the specialist planning authorities. In line with the mission statement, the objective of regional planning and development in the Rhine-Neckar Metropolitan Region is to maintain its high attractiveness as a place to live and do business and to further increase its development opportunities. In addition to the 1st amendment of the plan chapters on residential and commercial development areas, the Rhine-Neckar Integrated Regional Plan includes the sub-regional plan for wind energy, which is currently being updated, and the redrafting of the sub-regional plan for open-space photovoltaics.

However, a study also reveals obstacles to the spread of climate change adaptation measures in the region. For example, the issue of adaptation competes with other challenges such as population pressure and economic interests. So far, only a few people see the need to consider adaptation as an integral part of future planning.

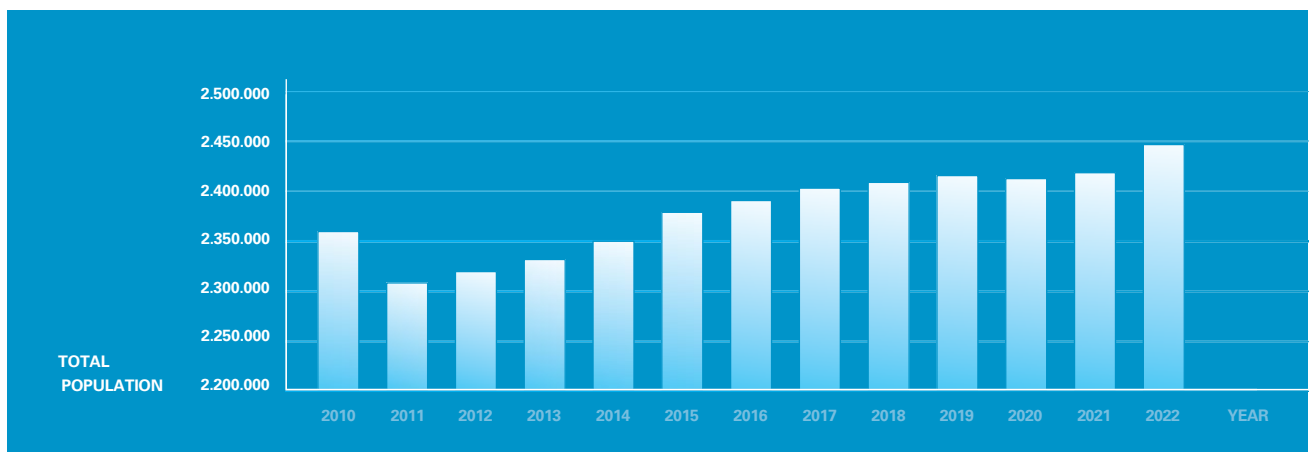


FIGURE 16: DEVELOPMENT OF THE POPULATION (TOTAL) IN THE RHINE-NECKAR METROPOLITAN REGION © VRRN

6.2 Secure and affordable housing for all

High housing costs lead to households being restricted in their other consumption decisions. Expenditure on housing of more than 30% of disposable household income is regarded as overburdening. The proportion of people living in households that spend more than 40% of their disposable household income on housing should therefore be reduced to 13% by 2030. This proportion is already 12.7% in rural regions, 13.3% in small towns and suburbs and 14.5% in urban areas. A key indicator that can be used to measure affordable housing for all is the rental price trend in the Rhine-Neckar Metropolitan Region.

The development of rents contributes accordingly to SDG target 11.1.1, which focuses on access to adequate, safe and affordable housing for all. The development of rental prices is an important indicator of housing supply and social justice in cities. The promotion of affordable housing supports the achievement of SDG 11.1.1.

Housing as a non-substitutable good plays a central role in the lives of all people and is therefore of elementary importance for quality of life. One's own home is essentially seen as a place of security, self-determination, safety and community and is therefore perceived as a central place to balance out the workplace. In large cities and university towns in particular, however, there are often major bottlenecks in the supply of affordable housing as a result of privatization and capitalization of the housing market. At the same time, other cities and municipalities are experiencing massive out-migration trends with associated problems of profitability for municipal providers and the resulting decline in housing quality. In both cases, the economic and social dimensions are affected, as high rents almost always lead to a reduction in other consumption options. This shows that a growing population in cities harbors both opportunities and risks for achieving sustainability goal 11. On the one hand, economies of scale mean that infrastructure and services can be provided more efficiently and economic dynamism can be strengthened. On the other hand, rising demand with limited housing supply often leads to rising rents and displacement processes. Whether the positive aspects outweigh the negative depends crucially on sustainable urban planning and policy. Investment in affordable housing, environmentally friendly mobility for all and inclusive neighbourhood development are the key to making cities liveable, inclusive and sustainable despite growth. In line with the principle of intergenerational justice - intergenerational justice refers not only to consideration for future generations, but also to equal opportunities within a generation - the effects of high rents are also associated with considerable consequences for socio-economically disadvantaged groups within a generation and have an intragenerative disadvantaging effect. The displacement of low-income households from cities due to rising rents contradicts both the principle of intergenerational justice and the creation of inclusive cities that are accessible to all in accordance with SDG 11. The refurbishment status of residential buildings also has a significant impact on the achievement of environmental Sustainability Goals. Energy-efficient refurbishment measures such as insulation, window replacement and heating optimization significantly reduce energy consumption and greenhouse gas emissions. Overall, a holistic refurbishment strategy for the housing stock is a key lever for achieving climate, resource and health targets, but on the other hand it generally has a negative impact on rental price development.



FIGURE 17: RENTAL PRICE DEVELOPMENT IN THE RHINE-NECKAR METROPOLITAN REGION © VRRN

6.3 Access to sustainable transport systems

SDG target 11.2 is: "By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all and improve road safety, in particular by expanding public transport, with special attention to the needs of people in vulnerable situations, women, children, persons with disabilities and older persons". In this context, the modal split refers to the distribution of means of transport used by people to move around a city. A balanced modal split, which increases the proportion of environmentally friendly modes of transport such as public transport, bicycles and pedestrians, helps to reduce traffic emissions and create liveable cities. The following section looks at the modal split in the Rhine-Neckar Metropolitan Region, which includes the indicators car density, share of electric cars and public transport use.

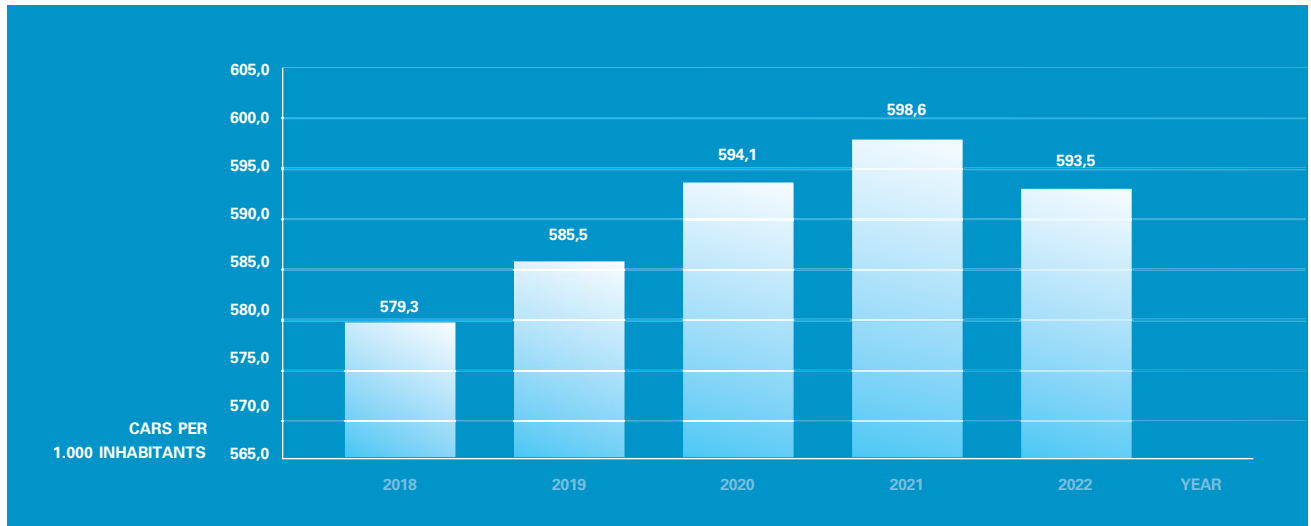


FIGURE 18: CARS PER 1.000 INHABITANTS © VRRN

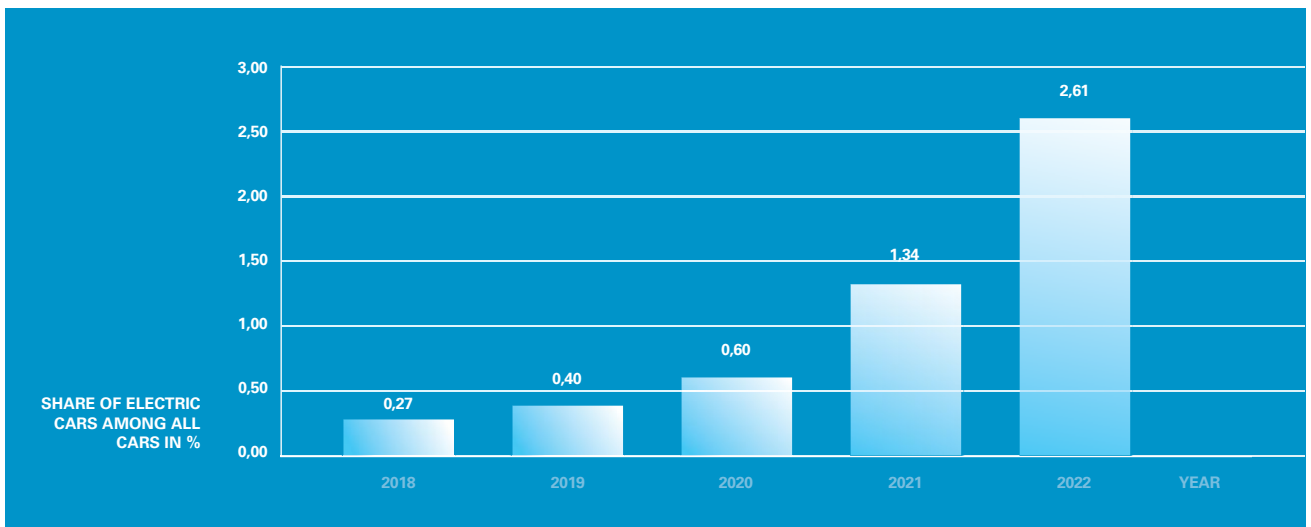


FIGURE 19: CARS WITH ELECTRIC DRIVES AS A PERCENTAGE OF ALL CARS © VRRN

In order to meet the transport challenges in the region, the stakeholders in the region agreed back in 2020 to jointly launch a mobility pact. To this end, the Rhine-Neckar Region Association is working together with the cities of Ludwigshafen and Mannheim, the Palatinate and Rhine-Neckar Chambers of Industry and Commerce, BASF, the Rhine-Neckar Transport Association and the three federal states of Baden-Württemberg, Rhineland-Palatinate and Hesse.

The Rhine-Neckar Mobility Pact includes a holistic concept for the mobility requirements of the region. Various measures and projects with short, medium and long-term perspectives have been bundled into the pact's five fields of work: These are local public transport, commuter and freight transport, traffic management, general mobility tasks and cycling and walking. Further fields of work can be added as required.

One measure currently being implemented is the creation of a cross-state traffic management plan for the Rhine-Neckar region. In this context, incidents and scenarios for their solution in the regionally significant transport network were developed together with the partners involved. A cooperation agreement is currently being coordinated, which regulates the various tasks and responsibilities in order to implement the traffic management plan in the region.

Another measure was the development of a standardized, cross-state traffic model that will be made available to the region's stakeholders free of charge. The model, which has initially been available for the core area of the region since the beginning of 2023, is to be expanded into the region in the future. In this context, a CO₂ component is also to be integrated in order to be able to evaluate measures not only in terms of transport, but also taking into account their CO₂ balance.

These measures will be flanked by accessibility analyses (using the smart mobility/smart region tool GOAT) for business parks and points of great interest, such as the TSG 1899 Hoffenheim stadium or companies with many employees at one location. These analyses serve as a sound data basis for optimization measures, especially for the first and last mile.

6.4 Sustainable use of land

The land use indicator is assigned to SDG 11.3, which describes the strengthening of urban and rural settlements and their inclusion, resilience and sustainability. The management of spatial development is an important aspect of sustainable land development, as it has an impact on the environment, the use of resources and the quality of life of the population. Sustainable land use aims to reduce the proportion of land consumed by settlements and transport while at the same time making optimum use of existing land.

The German government's 30 hectares target can be met by managing settlement development in such a way that existing settlement areas in urban and rural areas are made more compact and integrated in future, so that less land has to be used and traffic can be avoided. This requires integrated management approaches, as in the standardized regional plan by concentrating development on the basis of the spatial structure and by updating the residential and commercial areas in line with demand. The specification of values for urban development densities and the concentration of commerce at convenient locations help to conserve land.

As part of the spatial planning model project (MORO), space-saving settlement concepts are being brought as close as possible to municipal decision-making processes by planning new residential areas in a more compact and space-saving way in future. The objectives of the project are ensured by advising local authorities, raising awareness, exchanging knowledge and experience as well as informal concepts.

When using settlement areas, it is important to ensure that ecologically important areas are also conserved. Sustainable land use includes both the preservation and restoration of ecosystems and also secures valuable agricultural land in the vicinity of cities. With a view to a close spatial link between agricultural production and consumers in cities and municipalities, food systems can be made more sustainable. Sustainable land use thus also aims to improve value chains in the food system between urban and rural areas.

6.5 Public engagement for sustainable cities and communities

Intact, sustainable social structures are characterized in particular by a pronounced commitment of the population, a differentiated landscape of associations and commitment as well as an open society and a living culture of goodwill.

The Rhine-Neckar Metropolitan Region is considered a region worth living in and committed to. Through local projects, initiatives and activities, citizens contribute to improving their surroundings, shaping public spaces, protecting the environment, providing social services and promoting cultural offerings, which ultimately leads to a higher quality of life, ensures the influx of skilled workers and is therefore also an important factor in securing the region as a business location.

Against this backdrop, the promotion of civic engagement in the region was declared a strategic field of action. One of the most effective measures in this context is the Rhine-Neckar Metropolitan Region's Volunteer Day, which has been held every two years since 2008 and is considered the largest in Germany with over 5,000 participants. Under the motto "We create something", volunteers, companies, local authorities and schools support projects for the common good and thus make an important contribution to a sense of community and togetherness in the region. In addition to experiencing commitment, the aim of the day (from 2024, one volunteer day will become ten volunteer days in the week of civic engagement) is to appreciate and make visible the volunteers and their work for the social context. Volunteers experience the community and often stay involved. Over 60% of the participants surveyed wanted to get involved in the long term and over 95% wanted to take part again on the next Volunteer Day. <https://www.wir-schaffen-was.de/>.

7. Responsible consumption and production (SDG 12)

SDG 12 is closely linked to the decoupling of economic growth and resource consumption as well as the concept of sufficiency. The goal calls for a significant reduction in waste, the efficient use of natural resources and the promotion of sustainable production and consumption patterns. This requires a move away from the resource-intensive and waste-based linear economic model towards a circular economy, in which resources are kept in the economic cycle for as long as possible. This is the only way to decouple economic growth from resource consumption. Sufficiency, i.e. limiting consumption to what is necessary, plays a central role in this. A more conscious and resource-conserving consumption and lifestyle can help to respect the ecological limits of the planet. The question of how prosperity can be measured (in GDP or extended indices such as the National Welfare Index - NWI) is also relevant here. This touches on many subject areas: In addition to sustainable business practices, it is about the handling of chemicals, circular economy instruments, corporate responsibility, public procurement and a commitment to fair trade, i.e. respect for the ILO (International Labor Organization) core labor standards - both on the part of consumers and in the production and provision of goods and services. There are also links to education for sustainable development (Goal 4 - quality education) and sustainable tourism. Responsible consumption and production patterns can be illustrated particularly well using the example of the desired transformation of the food system by increasing the proportion of organically produced agricultural products, increasing the proportion of regional products (short distances) and products of organic quality both in private consumption and in communal catering, avoiding food loss and food waste (sub-objective 12.3), increasing the proportion of plant-based products consumed (sub-objective 12.8), increasing nutritional competence.



Description

On the one hand, the goal relates to international value chains and the corporate responsibility of globally active companies, and on the other hand to compliance with standards such as the ban on child labor or gender equality. Companies should be encouraged to introduce sustainable processes. This can be done, for example, through sustainability management systems such as the WIN Charter, a management system of the state government of Baden-Württemberg for sustainable business practices. In the municipal context, social and ecological standards can be observed in procurement.

In the environmental sector, for example, the supply of high-quality drinking water is ensured. In waste management, the aim is to reduce and recycle waste, e.g. through targeted waste advice. This works towards the regional and high-quality use of waste and the saving of fossil energy. The Supply Chain Due Diligence Act (LkSG) aims to improve the international human rights situation by defining requirements for responsible supply chain management and ensuring that companies analyse human rights and occupational health and safety-related risks vis-à-vis their direct suppliers, initiate preventive measures, establish grievance mechanisms and take remedial action in the event of violations of the law. The LkSG will be updated in the coming years by the EU Corporate Sustainability Due Diligence Directive (CSDDD), which was adopted by the EU in 2024. Then, in addition to human rights aspects, environmental issues along the supply chain will be increasingly addressed and companies will have to develop a transition plan, for example, to show what their decarbonization pathway looks like and how they are contributing to the implementation of the Paris Agreement.



FIGURE 20: SDG 12 'RESPONSIBLE CONSUMPTION AND PRODUCTION' GOES FAR BEYOND THE TOPIC OF RECYCLING. IT AIMS TO FUNDAMENTALLY CHANGE THE WAY WE DO BUSINESS AND LIVE IN ORDER TO RESPECT THE LIMITS OF ECOSYSTEMS © ADOBE STOCK / VECTORMINE

7.1 Environmentally and socially responsible consumer behaviour

Fairtrade Towns contribute to the implementation of Sustainable Development Goal 12, which focuses on sustainable consumption and production. In particular, Fairtrade Towns contribute to Target 12.6, which aims to promote businesses that implement sustainable practices, improve transparency and promote sustainable production and behaviour along the supply chain. By promoting the Fairtrade concept, Fairtrade Towns, but also Fairtrade Schools, support the creation of fair trade conditions and responsible consumption, which contributes to a more sustainable world.

By becoming a Fairtrade Town, cities and municipalities are actively committed to fair trade and sustainable development.

Fair trade describes controlled trade in which the producers of the products receive an appropriate "minimum price". With the "Fairtrade Town" campaign, TransFair e.V. recognizes municipalities that are committed in this area. Cities, independent towns, urban districts, municipalities, districts, regions, islands and federal states can apply to become a Fairtrade Town. To be awarded the title "Fairtrade Town", a municipality must demonstrably fulfill five criteria that reflect its commitment to fair trade at all levels of a municipality: 1. the municipality adopts a council resolution to support fair trade. Fair trade coffee and another fair trade product are served at all council and committee meetings and in the mayor's office. 2. a steering group is formed to coordinate local activities on the way to becoming a Fairtrade Town and beyond. This group consists of at least three people from the areas of civil society, politics and business. 3. at least two fair trade products are offered in local retail stores and florists as well as in cafés and restaurants. The guideline here is the number of inhabitants. 4. public institutions such as schools, clubs and parishes implement information and educational activities on fair trade and offer fair trade products. 5. the steering group carries out public relations work on Fairtrade activities in the municipality. The local media report on local events. Until July 2016, the two-year title renewal was followed by a four-year cycle. Since July 2016, all upcoming title renewals have taken place in a uniform rhythm of two years.

A total of 28 municipalities in the Rhine-Neckar Metropolitan Region (including the MRN) have been recognized as Fairtrade Towns.

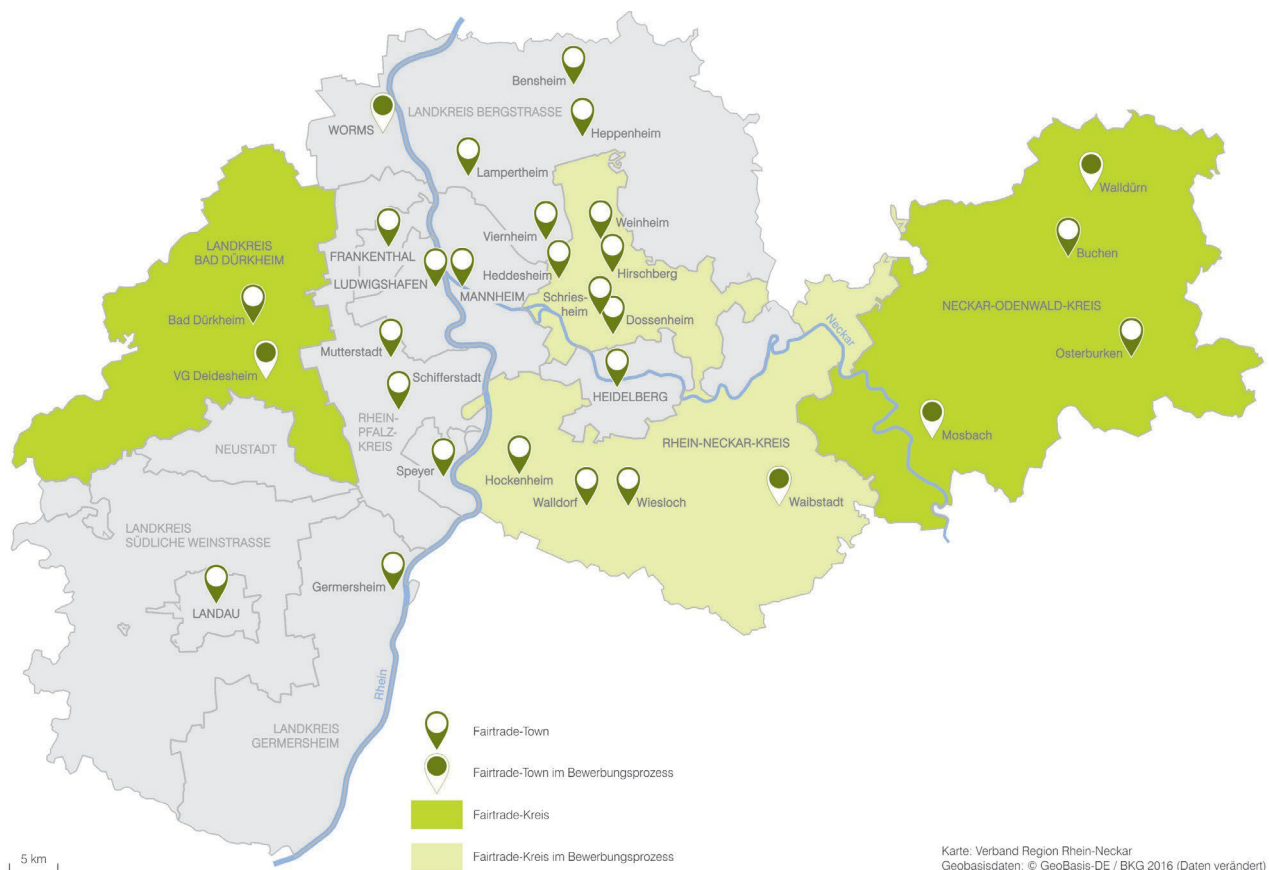


FIGURE 21: FAIRTRADE TOWNS AND DISTRICTS IN THE RHINE-NECKAR METROPOLITAN REGION © VRRN

In addition to actively supporting the Fairtrade Town movement in the region, initial measures to increase awareness of the region's potential for greater sustainability in the regional food system have also been initiated in the recent past. The networking of relevant stakeholders ensures greater transparency, visibility of opportunities for cooperation and awareness-raising at all stages of production and consumption and is to be gradually consolidated and expanded. The high-level exchange on the transformation and democratization of the food system as part of the European Forum Alpbach (2023/2024) also serves this purpose.

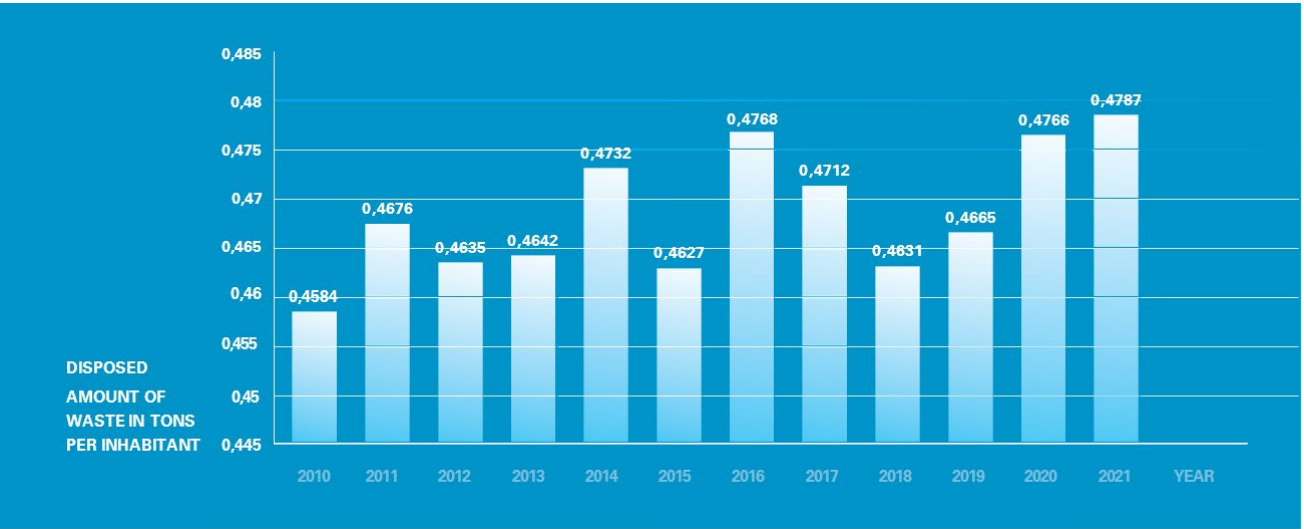
72 Promoting sustainable waste management

The "waste generation" indicator is linked to SDG 12.5, which describes the reduction of waste and the promotion of sustainable waste management. The sub-goal focuses on reducing per capita waste generation and promoting sustainable waste management in order to use resources more efficiently and minimize environmental impacts. Reducing waste generation makes an important contribution to promoting sustainable development.

The "waste generation" indicator is an important point of reference for progress towards sustainable waste management. A reduction in the volume of waste, particularly municipal waste and construction and demolition waste, shows that measures to prevent and recycle waste are taking effect. This is in line with the waste hierarchy, which gives top priority to waste prevention.

At regional level, waste management plans can help to set the course for sustainable waste management. They analyze the current framework conditions and waste streams and derive goals and measures from this

- for example, to promote the circular economy, increase recycling rates or reduce landfilling. Important levers at regional level are the introduction of separate collection systems, the expansion of recycling facilities and the promotion of repair and reuse concepts. The involvement of citizens through awareness campaigns also plays a central role. MRN GmbH has developed a "Bioeconomy Strategy for the Rhine-Neckar Metropolitan Region". The aim is to make the regional economy more sustainable and resource-efficient. To this end, more renewable, bio-based raw materials and biotechnological processes are to be used. This ties in with the German government's National Bioeconomy Strategy. The bioeconomy includes solutions for a circular economy in various sectors and contributes directly to the achievement of SDG 12.5.



Through the use of bio-based materials and products and the reduction of greenhouse gas emissions, the transformation to a greener, circular economy is to be driven forward in the Metropolitan Region.

FIGURE 22: AMOUNT OF WASTE DISPOSED OF IN TONNES PER INHABITANT © VRRN

8. Climate action (SDG 13)



Goal 13 relates to one of the most urgent challenges of our time. Since the beginning of industrialization, the concentration of CO₂ in the atmosphere has risen significantly and with it the global annual mean temperature. Greenhouse gases cause the atmosphere to absorb some of the heat radiation emitted by the earth and reflect it back to earth. The natural greenhouse effect is intensified by man-made greenhouse gas emissions. The result is global climate change with serious ecological, economic and social consequences.

According to the latest available data, the average global temperature rise due to anthropogenic climate change is around 1.1°C (DWD 2021, UBA 2024). This figure is based on a comparison with the pre-industrial reference period 1850-1900. In Germany, the temperature rise is significantly higher than the global average. Here, the warming since 1881 is already around 1.6°C (by 2021). In the last 50 years, the rise in temperature in Germany has even accelerated to around 2.3°C (DWD 2021, UBA 2024). The five warmest years in Germany were all after the year 2000. This regionally stronger warming in Germany is due to the fact that land areas are generally warming faster than the oceans. In addition, anthropogenic interventions in the composition of the atmosphere and land use have also influenced climate development in Germany (UBA 2024).

Long series of measurements of the CO₂ concentration in the air make it possible to distinguish between natural fluctuations in concentration and the effect of burning fossil fuels. They show an increase of 44 % since 1881. In contrast, the CO₂ concentration in the previous 10,000 years was largely constant. Carbon dioxide is enriched in the atmosphere through the burning of fossil fuels such as coal, gas and oil and through large-scale deforestation. The concentration of other greenhouse gases such as methane and nitrous oxide has also increased considerably over the past 150 years. Other greenhouse gases such as methane, nitrous oxide and fluorinated gases are converted into CO₂ equivalents by multiplying their emission quantities by a global warming potential. This greenhouse gas potential expresses the climate impact of the respective gas over a certain period of time in comparison to carbon dioxide. This enables a uniform comparison and balancing of total greenhouse gas emissions.

Although average annual temperatures fluctuate from year to year, climate-related extreme events such as heat records, droughts and heavy rainfall are steadily increasing worldwide. In addition to climate protection, adaptation to the consequences of climate change is also playing an increasingly important role.

Description

As a result of far-reaching climate change, the number of serious floods, landslides, storms, droughts and heatwaves, heavy rainfall and storm surges is increasing worldwide. Such climate-induced extreme events endanger people's food and livelihoods, especially in countries of the global South, which also has an impact on global migration patterns. Every year, around 21.5 million people worldwide are forced to leave their homes due to the consequences of climate change. The animal and plant world is also under threat and numerous species are becoming extinct. The damage caused worldwide amounts to several trillion dollars.

The increasing number of hot days in summer and longer periods of heat and drought are also increasing the health risks for certain (vulnerable) groups of people in Germany, such as the elderly and young children. Heavy rainfall events lead to massive damage to property and personal injury. Overall, climate change requires municipalities to adapt more in all sectors, e.g. in building development, the design of public green spaces, water management, critical infrastructure, agriculture and forestry.

SDG 13 "Climate action" comprises several sub-goals: Firstly, resilience and adaptability to climate-related risks and natural disasters should be strengthened in all countries. Secondly, climate action should be integrated into national policies, strategies and planning.

Thirdly, education, awareness and human and institutional capacities in the areas of climate change, adaptation and early warning should be improved. In addition, the industrialized countries should keep their commitment to provide 100 billion US dollars annually for climate financing in developing countries since 2020 and make the Green Climate Fund fully operational. Furthermore, mechanisms should be promoted to strengthen climate planning and management capacities in the least developed countries and small island states, with a particular focus on women, young people and marginalized communities.

Regional planning can make a significant contribution to the implementation of climate protection measures at regional level.

The energy transition aims to achieve an overall climate-neutral energy supply while at the same time achieving independence from the import of fossil fuels. The expansion of renewable energies is an important building block for this.

With the new federal regulations, clear area targets have been formulated for the Rhine-Neckar Metropolitan Region: By the end of 2032, 1.8% of the land area in Baden-Württemberg and 2.2% in both Rhineland-Palatinate and Hesse is to be made available for wind energy. As an interim step, 1.1 % of the land area is to be made available for wind energy by the end of 2027 in Baden-Württemberg, 1.4 % in Rhineland-Palatinate and 1.8 % in Hesse. To this end, the existing partial regional wind energy plan will be updated by the end of September 2025. For photovoltaic use, 0.2 % of the land area in Baden-Württemberg is also to be made available for photovoltaic use by the end of September 2025. These areas are to be secured by designating reserved areas for regionally significant ground-mounted photovoltaic systems. The fourth partial update of the Rhineland-Palatinate state development program LEP IV also stipulates that at least reserved areas for ground-mounted photovoltaic systems be designated at regional level. To this end, the Rhine-Neckar Regional Association will draw up a new sub-regional plan for ground-mounted photovoltaics by the end of 2025.

The long-term perspective is to fully supply the Rhine-Neckar Metropolitan Region with renewable energies. The exploitation of regional sources is an essential step in this process. Wind and solar energy offer considerable potential for this.



FIGURE 23: HYDROGEN-POWERED PUBLIC TRANSPORT IN THE METROPOLITAN REGION © ISTOCKPHOTO / SCHARFSINN86

8.1 Model region for hydrogen

Hydrogen is an energy carrier and storage medium that can make a significant contribution to the decarbonization of the economy and heavy-duty mobility. The Rhine-Neckar Metropolitan Region is involved in two key projects in this:

H2Rivers

A hydrogen project funded by the Federal Ministry for Digital and Transport Affairs (BMDV).

The H2Rivers project, which has been awarded the HyPerformer status by the BMDV, is establishing a hydrogen model region in the Rhine-Neckar Metropolitan Region. The project volume amounts to around €50 million with an investment grant of €20 million. H2Rivers is establishing hydrogen and fuel cell technologies (FC) in the transport sector and in infrastructure and is driving forward hydrogen production. The project is being funded as part of the National Innovation Program for Hydrogen and Fuel Cell Technology (NIP2). The funding guideline is co-ordinated by NOW GmbH and implemented by Projektträger Jülich.

H2Rhine-Neckar

A hydrogen project funded by the state of Baden-Württemberg.

In addition to H2Rivers, the H2Rhine-Neckar project has been established in the Rhine-Neckar Metropolitan Region and the central Neckar area. Here, the establishment of climate-friendly public transport in Mannheim and Heidelberg is being promoted through the purchase of FC articulated buses and the construction of hydrogen filling stations. The accompanying research will provide important insights that are relevant to the mobility transition beyond the project.

The total investment volume is around € 46 million, of which € 16.55 million is funded by the state of Baden-Württemberg. H2Rhine-Neckar has a term of 3.5 years. Implementation of the sub-projects started in February 2022.

The aim of the two demonstration projects is to solve the chicken-and-egg problem in establishing a new value chain. The creation of an appropriate infrastructure will create the opportunity and incentive for customer projects to settle in the region. This is why the continuation and scaling of the core project is a declared strategic goal of the Rhine-Neckar Metropolitan Region.

In addition, the establishment and continuation of an active hydrogen network is one of the main tasks of the MRN. In addition to the projects, regular events are offered for the hydrogen specialist group and the networking of existing and new partner companies is actively promoted.

In addition to the H2Rivers project, further hydrogen projects are being developed together with the sister project H2Rhine-Neckar, which are forming the MRN into an H2 Valley: e.g. further applications in the neighbourhood and building sector, decarbonization in industry, inland navigation, semi-stationary H2BZ plants and in sector coupling are being specifically promoted here by partners from the Energy and Environment Cluster in cooperation with other players. In addition, there is the development of a start-up scene, the promotion of networking with relevant partners from the MRN and cooperation with neighboring regions such as the Karlsruhe TechnologyRegion, West Palatinate, Rhine-Main, Wiesbaden/Darmstadt and Grand Est. The state strategies of Baden-Württemberg, Hesse and Rhineland-Palatinate are important benchmarks.

Milestones:

In October 2019, H2Rivers received the funding decision as a HyPerformer of the BMDV HyLand competition with a funding amount of EUR 20 million. A short time later, in January 2020, the state of Baden-Württemberg awarded H2Rhein-Neckar a grant of around EUR 17 million.

The refuse collection vehicles were delivered and commissioned in Heidelberg in March 2023, followed by Ludwigshafen in April 2023 and Mannheim in October 2023. The road service vehicle was also put into operation in the district of Esslingen in May 2023.

The first articulated buses were delivered in Heidelberg and Mannheim in November 2023. Regular operation is planned for the second quarter of 2024. The commissioning of 104 hydrogen cars took place in the fourth quarter of 2023, as did the H2HUB. The hydrogen demand study was presented in June 2023, while the H2 specialist group was launched in the first quarter of 2023.

Further exciting projects emerged in the Metropolitan Region's innovation cluster: BHYO received a funding decision for the construction of a hydrogen production plant in Speyer in the third quarter of 2023. The Bergstraße district presented its hydrogen strategy in October 2023 and received a funding decision for hydrogen filling stations in November 2023. The tender for 10 hydrogen buses in the Bergstraße district was also published.

Furthermore, the cooperation between Pfalzwerke AG and Messer Griesheim for the construction of an electrolyzer in Bad Dürkheim at BUGA23 was announced. The funding decision for the construction of an electrolyzer at BASF was presented in the fourth quarter of 2023.

8.2 Adaptability to climate-related risks and natural disasters

SDG 13.1 deals specifically with strengthening resilience and adaptive capacity to climate-related risks and natural disasters. For example, a high "settlement load in flooded areas" as an indicator points to a low adaptive capacity, as many people and infrastructures would be affected by flooding. At the same time, it also takes into account SDG 11.5, which integrates the reduction of the negative environmental impacts of cities, including flooding and other natural disasters. The annual Flood Protection Forum organized by the association addresses current developments in areas such as prevention and risk management. An innovative software tool for small-scale forecasting of heavy rainfall events and flooding risks at street level, which was presented in 2022, a few months after the flood of the century in the Ahr valley, is being tested in a pilot project by the city of Heidelberg and the district of Germersheim.

The indicator of new land use represents the often irretrievable loss of natural soils and open spaces for the purpose of land conversion for settlement and traffic areas. A further reduction in natural space leads to a loss of important soil and water balance functions. In addition to the more rapid formation of flood water, an increasing displacement of natural space also favors the effects of anthropogenic climate change and thus has a considerable influence on the resilience and sustainability of cities and settlements. New land consumption is the cause of an unsustainable, land-extensive economic growth model, which is often an expression of deficient inner development, inter-municipal competition and an excessive dependence on income and trade tax shares in municipal finances. In a holistic approach, the economic, ecological, social and administrative dimensions are influenced to an extent that emphasizes intergenerational equity in particular.

8.3 Climate protection activities in regional policies, strategies and planning

Energy and climate protection concepts contribute to the implementation of various sub-goals of the Sustainable Development Goals, but in particular they are aimed at sub-goal 13.2. This is: "Integrate measures to address climate change into national policies, strategies and planning." By developing and implementing energy and climate protection concepts, governments and organizations can help to reduce greenhouse gas emissions and adapt to the effects of climate.

Energy and climate protection concepts in the region

There are numerous projects and initiatives in the Rhine-Neckar Metropolitan Region in the area of climate protection and energy management. One example is the Competence Center for Energy Efficiency (KEFF), which supports municipalities in the introduction of professional energy management. By recording consumption data, drawing up energy reports and implementing optimization measures, local authorities can significantly reduce their energy consumption and CO₂ emissions. Another project is the hydrogen model region H2Rivers, in which the use of hydrogen and fuel cell technologies in the mobility sector is being tested. The aim is to make the region a pioneer in the use of this climate-friendly drive technology (see 8.1.). A regional climate protection concept has therefore been in place since 2012. On this basis, further projects and measures were implemented in order to achieve a full supply of renewable energy in the region in the future. The Rhine-Neckar Mobility Pact also pursues the goal of sustainable and needs-based mobility in the region by promoting the environmental network of public transport, cycling and walking as well as alternative drive systems.

The topic of preventive flood protection is and remains a major challenge for the Rhine-Neckar Metropolitan Region. At the annual Flood Protection Forum, a cooperation between the Rhine-Neckar Regional Association and the regional chambers of industry and commerce, representatives of local authorities, companies and other stakeholders gather information on various topics relating to flood protection and flood prevention. In addition to general issues relating to hazard identification, the significance of climate change, the specific effects of heavy rainfall and practical examples of successful flood risk management, information will also be tailored to the needs of local authorities and companies. The forum serves the practical exchange of experience and networking of the relevant players in the MRN. The aim is to minimize the risks of flooding in the region as far as possible and to find a coordinated cross-border approach. The requirements and strategies of the federal and state levels for future flood protection precautions in the region also play a major role here.

As part of the OECD program on territorial approaches to the SDGs, municipalities are also developing strategies on how the Sustainability Goals of the 2030 Agenda can be implemented locally - with climate protection playing a central role. Overall, there is a broad commitment to energy efficiency, renewable energies, innovative mobility solutions and sustainable development in the Metropolitan Region. By networking stakeholders and sharing best practices, synergies are to be exploited and the energy transition driven forward.

Pioneers in the region with far-reaching climate protection concepts are the cities of Mannheim and Heidelberg, two of a total of nine cities in Germany participating in the EU's 100 climate-neutral and smart cities mission. Both cities have already been awarded the EU Mission Label in recognition of the successful development of a Climate City Contract (CCC), which outlines the cities' overall vision for climate neutrality and includes measures and investment priorities. The EU label guarantees privileged access to EU.

9. Overview - opportunities and challenges

The Rhine-Neckar Metropolitan Region offers promising opportunities for sustainable development, but like every region it also faces challenges. As one of the strongest economic regions in Germany with a high level of innovation and quality of life, the Metropolitan Region is well placed to promote sustainability in the economic, environmental and social areas. The region has set itself the goal of implementing the United Nations Sustainable Development Goals (SDGs) at regional level. To this end, sustainability guidelines have been developed and SDG monitoring has been carried out in collaboration with the OECD. The sustainability monitoring page of the Rhine-Neckar Metropolitan Region provides current trends for municipalities and districts and detailed information on specific SDGs in the region.

Opportunities in the region include the expansion of renewable energies, the promotion of the circular economy and sustainable mobility as well as the strengthening of biodiversity. Digitalization also offers potential for greater sustainability, for example through intelligent traffic control or the networking of stakeholders. The region's high level of innovation can also produce new solutions for global challenges such as climate change. At the same time, demographic change, competition for land and the consequences of climate change such as heat and drought pose risks. Adaptation strategies need to be developed and the social consequences mitigated. The financing of sustainability measures can also represent an obstacle. A holistic approach involving all social stakeholders is necessary in order to exploit opportunities and mitigate risks. The Rhine-Neckar Metropolitan Region has taken important steps with its sustainability strategy and SDG monitoring. The task now is to consistently implement these goals and drive forward the transformation to a sustainable region.

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