

Sustainable North Rhine-Westphalia 2030 The Vision

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Sustainability Strategy NRW from the Science Perspective.”



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Sustainable North Rhine-Westphalia 2030 – The Vision¹

The Principle

North Rhine-Westphalia (NRW) is undergoing sustainable development – up to 2030 and beyond.

As the most populous federal state in Germany, NRW demonstrates how to implement successful change towards sustainable development while maintaining and reinforcing its industrial structures.

In so doing, NRW follows the guiding principles of social justice, economic reason and environmental responsibility², and has become measurably closer to achieving the targets derived from these principles since 2015. This contributes to the creation of a functioning social, economic and environmental structure for today's and future generations³.

NRW preserves and develops the well-being of all people and social prosperity in a healthy and intact environment.⁴ Global responsibility and the ecological boundaries of our planet⁵ are respected as a framework for action.

In 2030, NRW is a modern, eco-industrial state in which all people enjoy equal opportunities of personal development and a good life. People enjoy a high quality of life. Business is internationally competitive and operates on the basis of social and environmental principles. The environmental quality is perceptibly improved and ambitious environmental goals are being achieved. NRW drives its change through the joint commitment of citizens, the civil society, municipalities, science, educators, business as well as political and administrative stakeholders.

North Rhine-Westphalia plays an important pioneering role on an international level, contributes to achieving the sustainability goals of the Federal Government, the European Union and the world community, and benefits from new partnerships and dialogue with regions worldwide.

The State of North Rhine-Westphalia

NRW follows its Sustainability Strategy conscious of its particular responsibility as Germany's most populous state and as an important industrial hub. NRW is closely tied to international markets and places a great deal of importance on the responsible creation of upstream as well as downstream value chains.

NRW enjoys a diverse wealth of experience regarding change processes. This is particularly true for long-term structural economic changes. NRW utilises this knowledge to turn current and future challenges into profitable opportunities for the state. In this process, NRW focuses on major societal challenges, such as demographic change, the provision of healthy foods, new industrial and technical developments, the major challenge of a safe energy supply, climate protection and resource efficiency as well as social cohesion in the context of societal change. The state's decades-long experience as a land of immigration serves NRW well when it comes to integrating new people, bringing with them new knowledge and invigorating cultural life.

NRW is diverse: with different regions and traditions, urban and rural areas, growing and shrinking communities. For these reasons, the state of NRW develops its Sustainability Strategy with a view to the specific requirements and needs of its different communities. NRW's diversity and its wealth of experience give the state strength and inspiration to make it a place worth living in, so that its people can further develop and truly make it their home.

The People

People enjoy a high standard of living in the NRW of 2030. NRW is developing into a place where a self-determined life can be led in a society characterised by solidarity. All people have the opportunity to participate equally in socio-cultural and political life.

NRW closely follows the fundamental principle of gender equality in all aspects of social life and works to eliminate discrimination on the basis of sex. Gender mainstreaming helps ensure the equal participation of women in all types of decision-making, planning and implementation processes. Inclusion is embraced in all areas of society. People are part of an open, pluralistic and democratic NRW, in which participation in society constitutes an important element. NRW is a state where disagreements and conflicts can be resolved in an open and constructive manner. NRW's learning and creative society has a successful sustainable lifestyle.

The NRW of 2030 continues to be a land of immigration. This strengthens NRW's society and economy, as successful integration brings with it new skilled workers and alleviates the effects of demographic change. To achieve this, NRW has firmly established a society in which immigrants feel welcome and which demonstrates how to successfully achieve the bringing together of cultures and different people in a spirit of acceptance and development of diversity. Xenophobia and right-wing extremism have no chance in NRW.

NRW strengthens social cohesion. Intensive education and integration programmes redress poverty and social marginalisation. NRW takes preventative measures against the risk of poverty, particularly among migrants, single parents, the elderly, children and youths. NRW works to break down the physical, cultural and social divisions between the rich and the poor, especially in conurbations.

NRW's knowledge and education landscape is developing into an education system that enables lifelong learning and that promotes the disadvantaged and highly talented people alike. Education for sustainable development⁶ and cultural and political education are a firm part of this system. This is the basis for ensuring that children, youths and adults in NRW are aware of interrelations, that they are very much aware of the significance of sustainable development from an early age, and that they have the knowledge, creativity and design competence required to achieve this.

In many places, NRW offers flexible working time models and day-care centres for the successful reconciliation of family and working life. Older workers are valued; for this reason, they are given the possibility to have flexible employment relationships into old age.

In 2030, the social, economic and municipal infrastructures in NRW are better adapted to the transition brought about by demographic change: there is significantly more affordable family-friendly and age-appropriate living space – not only in shrinking cities and regions, but also in those that continue to grow. There are sufficient well-trained care staff for an ageing society in the neighbourhood. These services are valued by society and are therefore remunerated appropriately. Residential areas offer their inhabitants a continuously increasing quality of life.

The Economy

In 2030, NRW is a modern, dynamic and innovative industrial location and an internationally significant economic region. A diverse labour market offers ample jobs with good working conditions and fair wages. Business in NRW is internationally competitive and operates on the basis of social and environmental principles. This helps secure jobs in the long term and create new ones. The State Government continues to pursue the goal of full employment while striving to combine progress and employment with environmental quality.

Since 2015, perceptible environmental and industrial structural changes have occurred: together, climate protection, the efficient use of resources and energy, and sustainable development have served as a decisive engine of progress for prosperous business in NRW and as a guarantor for securing and creating jobs. Their smart connection to the megatrends of digitisation and Industry 4.0 have led to innovative products and processes that have made NRW a trendsetter in this area. This transformation has also reduced costs and increased competitiveness. In the process, NRW benefits from its balanced economic structure, in which small and medium-sized enterprises (SMEs) as well as large firms are closely linked with science, politics and society and contribute to this dynamic development. Companies themselves have developed their own sustainability strategies and have successfully marketed their own environmental and climate-protection technologies.

In 2030, the state of NRW and its municipalities have largely consolidated their budgets and balanced their books and therefore have the financial power to act. Public spending is in line with the goals of sustainable development, and the financing of sustainability activities in NRW's public sector has been secured for the long term.

In 2030, businesses in NRW have significantly increased their resource efficiency. They recycle the majority of resources and have come visibly closer to the goal of a closed circular economy⁷. Many products and services are created according to the principles of an eco-intelligent design⁸, reducing resource requirements from the very beginning. Socio-technical innovations in the form of smart products and services⁹ and numerous social and environmental initiatives ensure that the vision of a “resource-light society”¹⁰ is increasingly spreading. The “material footprint”¹¹ of private households has become much smaller in 2030.¹²

In 2030, NRW lives up to its special role as an energy state and has helped ensure the energy transition in Germany makes a great leap forward. The target ranges specified in the first Climate Protection Plan for NRW from 2015 have been achieved: the final energy demand¹³ in NRW in 2030 is up to 20% lower than in 2010, due to a considerable increase in energy efficiency.¹⁴ The NRW of 2030 produces around one-third of its electricity from renewable sources.¹⁵ Renewable energies are an important economic factor and employment sector in NRW. They ensure that NRW retains its status as an energy state after the cessation of coal production and the decline of lignite mining.¹⁶ This is also the case for the building and construction industry, since NRW has increased its annual energy refurbishment rates in existing buildings¹⁷ significantly.¹⁸ Thanks to their continued efforts, energy- and resource-intensive industries in NRW have reduced their consumption considerably.

NRW designs the energy transition in a socially just manner and prevents energy poverty. Many citizens benefit from the energy transition by investing directly in it. This leads to regional value creation, helping to ensure supply reliability.

NRW also contributes to sustainability in the mobility sector by transporting passengers and goods in a more environmentally compatible manner. In the NRW of 2030, people travel in a much more environmentally friendly way than in 2015 because society has managed to shift largely from motorised private transport to the environmentally friendly modes of transport (walking, cycling and public transport).¹⁹ Road safety has continued to improve considerably

in NRW because NRW is committed to achieving “Vision Zero”, i.e. zero road fatalities²⁰: the number of people killed in traffic accidents has been reduced considerably.²¹ The State Government promotes concepts for transport-efficient settlement structures and a wide mix of uses in cities, municipalities and neighbourhoods.²² Freight traffic and urban logistics²³ have also become more climate-friendly.

The dense research network in NRW and the systematic implementation of the strategies from Fortschritt NRW (Progress NRW) play an important role in generating new knowledge for sustainable development, developing innovative technologies and practices, and ensuring intense exchange between researchers and practitioners. Transformative science²⁴ is a pivotal actor in designing change because science is aware of its social responsibility.

The Environment

In 2030, NRW has achieved ambitious environmental objectives in the areas of climate protection, biodiversity, nature and species conservation in open spaces and areas of settlement, as well as air pollution control, noise control and water quality.

As an energy state, NRW plays its part in tackling climate change by reducing its greenhouse gas emissions (CO₂ equivalents) by more than 40% by 2030 (compared to 1990 levels).²⁵ NRW therefore contributes to the achievement of European climate objectives and adherence to the global two-degree limit.²⁶ Many municipalities in NRW now actively back strategies and actions on their path to becoming CO₂-neutral cities. Citizens in NRW are actively involved in implementing the climate protection strategy and the energy transition. NRW’s ambitious climate protection policy makes it one of Germany’s pioneers in matters concerning climate protection and a highly regarded role model on the international arena – particularly because NRW continues to be a substantial industrial hub that cleverly combines climate protection with economic development. Climate protection strategies and strategies for adapting regions to the consequences of climate change, such as heavy rainfall and flooding, hot summers and storms, are pursued and implemented in parallel.

NRW has achieved considerable improvements in preserving and developing its biological diversity. The loss of species diversity has been halted and biodiversity has increased again.²⁷ To achieve this, a wide range of landscapes and habitats for plants and animals have been preserved and expanded in both rural and urban areas: in protected areas and biotope networks, in freshwaters, on agricultural land and also in NRW’s core urban settlements, e.g. on derelict industrial land.²⁸

In 2030, groundwater and surface waters in NRW have attained “good status”²⁹, featuring a high water quality and functioning habitats for native fauna and flora.³⁰ Many stretches of water that had previously been modified have since been renaturalised. Micropollutant contamination in freshwaters has decreased considerably.³¹

In 2030, NRW has reduced its daily land consumption by more than half (compared to 2012), which now stands at less than 5 ha per day and is approaching the long-term goal of net zero consumption.³² The recycling of brownfield sites, such as disused industrial, commercial and traffic areas,³³ plays an important role in this respect.

Agriculture in the NRW of 2030 has become much more ecological. Nitrate input into soils and groundwater from farming has decreased considerably. A fair and competitive market has developed for organic food. Organic farming has become much more widespread in NRW.³⁴ Regionalism has become a hallmark and regional value chains have been extended. Animal-friendly and welfare-friendly farming practices and animal protection have increased. The consumption and nutrition patterns of consumers have become more environmentally friendly and health-conscious than 15 years ago: the level of information they have about the environmental impact of the products and services they purchase has significantly improved.

In 2030, NRW has met ambitious environmental standards for the health of its citizens. The EU's limit values for particulate matter and nitrogen dioxide emissions are complied with.³⁵ NRW is well on the way to achieving the more ambitious target values of the World Health Organization (WHO) soon, too.³⁶ By implementing ambitious noise action plans supported by the state, NRW's municipalities have managed to largely avoid harmful noise levels during the day and noise levels that disturb sleep at night.³⁷ Many communities are even well on the way to achieving more ambitious quality targets in terms of quietness.³⁸

The Change

NRW in 2030 has come far on its path to designing a future-oriented society – the Sustainability Strategy of the State of NRW has been implemented and is continually being updated.

NRW drives its change through the joint commitment of citizens, civil society, municipalities, science, educators, business as well as political and administrative players. In various political settings, the people of NRW work proactively and cooperatively in the transformation to increased sustainability. With a smart governing strategy, the NRW State Government has successfully brought all these actors together for the joint advancement of sustainable development in NRW. Disagreements and conflicts in the designing of the transformation have been resolved democratically. In political affairs, all actions the State Government undertakes are reviewed for their sustainability, making sustainability a permanent part of the state's activities.

North Rhine-Westphalia is continuing to pursue its vision of sustainable development beyond 2030 and takes further action accordingly.

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- 1 The **vision was developed** in several iterative loops in dialogue with the Sustainability TEAM, the Inter-Ministerial Working Group for Sustainable Development and in a workshop with Professor Dr. rer. pol. Hannelore Küpers (Bochum University of Applied Sciences), Dr. Dieter Rehfeld (Institute for Work and Technology, IAT), Dr. Hubertus Bardt (Cologne Institute for Economic Research, IW), Dr. Sven Schreiber (Macroeconomic Policy Institute, IMK) and Henrik Riedel (Bertelsmann Stiftung).
 - 2 See Coalition Agreement 2012-2017 (NRW SPD, Bündnis 90/Die Grünen 2012): “To us, sustainability means linking social justice and economic reason with environmental responsibility” (p. 7) and the strategic position paper by the State Government of NRW (Landesregierung NRW 2014): “The State Government has declared sustainable development to be one of its guiding principles. In this connection, it seeks to combine social justice and economic reason with environmental responsibility” (p. 1).
 - 3 *ibid.*
 - 4 See strategic position paper by the State Government of NRW (Landesregierung NRW 2014): “In this sense, sustainable development should enable the preservation and development of the foundations of social prosperity and well-being for people so that, at the same time, an intact social, economic and ecological structure will be left for future generations” (p. 1).
 - 5 The scientific concept of “**Planetary Boundaries**” was developed by a 29-strong international work group in 2009, identifying ecological boundaries for Earth in nine sectors involving human activity (limits quantified for: 1. climate change, 2. ocean acidification, 3. ozone depletion, 4. nitrogen flows to the biosphere, 5. global freshwater use, 6. land system change, 7. loss of biodiversity; limits not yet quantified for: 8. chemical pollution, 9. atmospheric aerosol loading; see Wissenschaftliche Dienste des Deutschen Bundestags 2014). If these thresholds are crossed, however, the environmental conditions could change, presenting a risk for future generations (see Potsdam-Institut für Klimafolgenforschung 2009).
 - 6 **Education for sustainable development (ESD)** “teaches children, youths and adults to think and act sustainably. It enables people to make decisions for the future, assessing how their own actions will affect future generations or people’s lives in other regions of the world” (Deutsche UNESCO-Kommission e.V. [German Commission for UNESCO], no date).
 - 7 The aim of a **circular economy** (also referred to as “cradle to cradle”) is to return raw materials to the production process beyond the life-cycle of a product (Umweltdatenbank no date). With regard to waste management, improvements to environmental and climate protection and resource efficiency should be achieved by avoiding and recycling waste (see BMUB 2012, MKULNV NRW no date a).
 - 8 **Eco-intelligent design** (or ecodesign) is a systematic, comprehensive design approach that seeks to reduce the environmental impact throughout the life-cycle by improving the design of products and services (see UBA 2013).
 - 9 **Eco-intelligent (=eco-efficient) goods** are items, devices, machinery, vehicles, buildings and infrastructures that ensure optimal benefits for the longest amount of time possible (different benefits tailored to the needs of individual customers) by minimising material, energy, land requirements, waste, transport, packaging and dangerous substances throughout the life-cycle – from raw material extraction to recycling (Schmidt-Bleek 2007, p. 192). **Eco-intelligent (=eco-efficient) services** are the appropriate satisfaction of requirements using technical means involving the highest possible resource productivity and the minimum emission of dangerous substances (Schmidt-Bleek 2007, p. 225).
 - 10 The vision of a “**resource-light society**” describes the goal of reducing resource consumption. “The challenge is to secure prosperity while simultaneously reducing

- resource consumption. This necessitates not only changes in production and consumption, but also changes to the political framework. It necessitates resource-light lifestyles as well as new economic models and radical technological and social innovations for greater resource efficiency and a closed circle economy” (Ressourcenkommission am Umweltbundesamt (KRU) 2014, p. 3).
- 11 The **“material footprint”** describes resource consumption in the manufacture, use and disposal of a product or a service, i.e. throughout the whole life-cycle from cradle to cradle (extraction, production, use, waste/recycling). The material footprint is calculated using the indicator “material input per service unit” (MIPS) (see Liedtke et al. 2014).
 - 12 **Target proposed by the Wuppertal Institute: halving the material footprint from 44 tons in 2015 to 19 tons per year in 2030**, derived from Lettenmeier, Liedtke, Rohn 2014 and Bringezu, Bleischwitz 2009.
 - 13 The **final energy demand** is the demand for energy from the sectors of industry, transport, private households and commerce.
 - 14 **Target proposed by the Wuppertal Institute: reduction of the final energy demand of up to 20% in 2030 compared to 2010 levels**, derived from the C scenarios in the Climate Protection Plan for NRW (Wuppertal Institut 2014a): the extrapolated order of magnitude for final energy savings by 2050 is 16.7% in 2030. Since it can be assumed, however, that energy efficiency can be increased more quickly in the first decades (due to unused potential), a 20% reduction is given as the target value.
 - 15 **Target proposed by the Wuppertal Institute: in 2030, NRW produces around one-third of its electricity from renewable sources**, derived from the scenarios of the Climate Protection Plan for NRW (the high expansion of renewable energies variant, see Wuppertal Institut 2014b, p. 39).
 - 16 See Landtag NRW 2014 concerning the decision to reduce open cast mining at Garzweiler II.
 - 17 The **refurbishment rate** given as a percentage per year describes the annual thermal refurbishment of buildings (see Wuppertal Institut 2014b, p. 73).
 - 18 **Target proposed by the Wuppertal Institute: 2% refurbishment rate in 2030**, based on the C scenarios in the Climate Protection Plan (see Wuppertal Institut 2014b, p. 72f; see also Forschungszentrum Jülich 2005, p. 59 for the derivation of energy refurbishment rates). The State Government of NRW would like to significantly increase the refurbishment rate: “We want to significantly increase the current refurbishment rate of one per cent and, in order to do this, link funding schemes of the German Federation with programmes in North Rhine-Westphalia” (see coalition agreement 2012-2017 (NRW SPD, Bündnis 90/Die Grünen 2012), p. 38f). The Federal Government’s target is to double the energy refurbishment rate from around 1% to 2% each year (see Energy Concept of the Federal Government (Bundesregierung Deutschland 2010, p. 27)). See also DBU 2014: “The energy refurbishment of our buildings is progressing too slowly. We will never achieve our climate change objectives at the current refurbishment rate of one per cent.”
 - 19 **Target proposed by the Wuppertal Institute: 4x25% modal split in 2030**, i.e. one-quarter of trips are made by pedestrians, by bicycle, by public transport and by motorised private transport (MPT); derived from the targets of the City of Essen (4x25% modal split share by 2035) in its application for the EU’s title of European Green Capital 2017 (Stadt Essen 2014a) and the vision of the Ruhr metropolis (modal split of 25% for all modes of transport, without a target year, see Regionalverband Ruhr 2014, p. 13). In the context of the scenario calculations for the Climate Protection Plan for NRW, the following modal split in passenger transport was assumed for trips made by 2030: pedestrians 24%, bicycle 22%, passenger car 43%, public transport 11% (Wuppertal Institut 2014b, p. 100). This estimate is based on the study entitled “CO₂ Emissions Reduction in the Transport Sector in Germany –

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- Possible measures and their reduction potential” undertaken by the Federal Environment Agency in 2010 (see UBA 2010).
- 20 **“Vision Zero”** pursues the goal of reducing the number of road deaths and serious injuries to zero (see Ministerium für Bauen und Verkehr des Landes NRW 2006, p. 9). “Vision Zero – Zero Road Fatalities” is a principle that guides the actions of the State Government of NRW (coalition agreement 2012-2017, see NRW SPD / Bündnis 90/Die Grünen 2012, p. 70).
- 21 **Target proposed by the Wuppertal Institute: reduction in the number of people killed in traffic accidents by two-thirds by 2030 compared to the reference year of 2004**, derived from the interim target of the State Government of NRW: halving the number of people killed in traffic accidents in 2015 compared to 2004 (see Ministerium für Bauen und Verkehr des Landes NRW 2006, p. 9). In 2013, the number of people killed in traffic accidents fell by 44.4% compared to 2004: from 862 deaths in 2004 to 479 deaths in 2013 (see Netzwerk Verkehrssicheres Nordrhein-Westfalen 2014).
- 22 The **“city of short distances”** is a guiding principle of sustainable urban development that has been pursued since the 1990s. The aim is to achieve traffic- and space-saving urban development by creating a compact settlement structure, a mix of uses, and the attractive design of public spaces (UBA 2011, p. 5). In this way, distances between housing, work, education, shopping and leisure functions are kept short. A city or region of short distances also opens up synergies to other policy areas such as climate protection (possibility of local heating supply) and demographic change (local supply in the event of restricted mobility, see *ibid.* p. 23 and 53).
- 23 The State Government of NRW supports the goal of achieving CO₂-free city logistics by 2030: “We support the objective set out in the EU White Paper on Transport of achieving CO₂-free city logistics by 2030” (coalition agreement 2012-2017, see NRW SPD / Bündnis 90/Die Grünen 2012, p. 67).
- 24 The term **transformative science** is based on the definition of “transformative research” coined by the German Advisory Council on Global Change (WBGU) in 2011. According to this definition, transformative science is science that promotes “transformation processes through specific innovations (...). It specifically supports transformation processes by developing solutions as well as technical and social innovations; this includes diffusion processes in business and society as well as possibilities to speed them up, and requires at least in part systemic perspectives as well as interdisciplinary and transdisciplinary approaches, including the involvement of stakeholders” (Schneidewind/Singer-Brodowski 2014, p. 69).
- 25 **Target proposed by the Wuppertal Institute: reduction of greenhouse gas emissions by more than 40% in 2030 compared to 1990 levels**, derived from the reduction range of greenhouse gas emissions (in CO₂ equivalents) from 37 to 44% by 2030 compared to 1990 levels calculated in the scenarios of the Climate Protection Plan for NRW (Wuppertal Institut 2014b, p. 25).
- 26 The **two-degree limit** is a policy stipulation by the Intergovernmental Panel on Climate Change based on the latest scientific data. The aim is to limit global warming to two degrees Celsius relative to the pre-industrialisation level. “Our civilisation would face unprecedented challenges if global temperature rises more than 2 degrees Celsius, which would result in ‘dangerous interference with the climate system’. In order to avoid this, cumulative CO₂ emissions to 2050 should be capped at 750 Gt” (WBGU 2009, p. 1).
- 27 According to the **Biodiversity Strategy NRW**, a central objective of nature conservation policy in NRW is to “stop the decline in biological diversity in future years and to increase it again” (MKULNV NRW 2015, p. 13).
- 28 See Regionalverband Ruhr 2013 concerning the significance of brownfield sites for biodiversity in the Emscher Landscape Park.

- 29 The **objective of the Water Framework Directive** (WFD, 2000/60/EC) is for groundwater and surface waters to have achieved “good status” by 2015, with an extension to 2027. Definition of “good status” for surface waters: good ecological and good chemical condition; groundwater: good chemical and quantitative chemical status; for artificial or heavily modified water bodies: good ecological potential and chemical status (BMU/UBA 2010, p. 10f). In NRW, there are 40% natural running water bodies and 60% artificial or heavily modified water bodies (MKULNV NRW 2013, p. 93f).
- 30 See BMU / UBA 2010, p. 6: “The Water Framework Directive (WFD) stipulates that ‘good status’ is to be achieved for all European water bodies by 2015, i.e. high water quality and adequate habitats for native flora and fauna.” (BMU/UBA 2010, p. 6).
- 31 See Kompetenzzentrum Mikroschadstoffe.NRW (no date).
- 32 The State Government of NRW aims to restrict the **daily land consumption in NRW** to 5 hectares by 2020 (coalition agreement 2012-2017, p. 52, see NRW SPD, Bündnis 90/Die Grünen 2012). In 2012, land consumption was 10.4 ha per day; in 2013, it was 9.3 ha per day (LANUV 2014a).
- 33 **Recycling of brownfield sites**: “Land recycling is the planned rehabilitation of land previously used for commercial, industrial, traffic, military, residential or trade purposes, or land that used to accommodate public buildings and installations. (...) As a rule, the land has become wasteland or is underused prior to its reuse” (Heyer 2012, p. 142).
- 34 **Target proposed by the Wuppertal Institute: doubling organic farming between 2013 and 2030**. No specific target value has been determined for NRW yet. The Biodiversity Strategy NRW mentions the medium-term goal (= in approx. ten years) to “increase organic farming” (MKULNV NRW 2015, p. 15 and 76). For this reason, the target proposed by the Wuppertal Institute is derived from the objectives set by other federal states. Target for Bavaria: increase of organic farming to 10% of agriculture land (with no indication of the year; initial value: 6.8% in 2013), Rhineland-Palatinate: 10% by 2020 (initial value: 7.4% in 2013), Saarland: 15% by 2023 (initial value: 12.3% in 2013), Schleswig-Holstein: 7% by 2020 (initial value: 4.1% in 2013), Thuringia: 10% by 2020, in the long term 20% (initial value: 4.7% in 2013), Federal Government: 20% (with no indication of the year) (LANUV NRW 2014b).
- 35 **Target proposed by the Wuppertal Institute: compliance with the EU’s limit values for particulate matter and nitrogen dioxide emissions in 2030**, derived from the targets of the City of Essen in its application for the EU’s title of European Green Capital 2017, to comply with PM₁₀ and NO₂ limit values by 2020: “Objective 2020: Stabilisation of the PM10 annual average to <29 µg/m³. This would ensure compliance with the annual maximum of 35 days exceeding the daily average of 50 µg/m³, even in years whose weather conditions mean limited change of air” (see Stadt Essen 2014b, p. 11). For EU limit values, see EU Directive 2008/50/EC, transposed into German law with the 39th Ordinance Implementing the Federal Immission Control Act (Ordinance on Air Quality Standards and Emission Ceilings, BImSchV) (see European Parliament 2008, LANUV no date).
- 36 **Target proposed by the Wuppertal Institute: “NRW is well on the way to achieving the more ambitious target values of the World Health Organization (WHO) soon, too”**, derived from the objectives of the City of Essen for 2035 in its application for the EU’s title of European Green Capital 2017: “Objective 2035: Extensive compliance with the WHO guideline values for PM10 (20 µg/m³) and reduction of days when PM10 values exceed EU daily limit values (50 µg/m³) to 0. Compliance with EU limit values and WHO guidelines for NO₂: Annual average: 40 µg/m³, hourly average: 200 µg/m³ at 18 days exceeding limit per year” (see Stadt Essen 2014b, p. 11). For the limit values of the World Health Organization (WHO), see WHO 2006.

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- 37 Target proposed by the Wuppertal Institute: avoidance of harmful noise levels exceeding 65 decibels(A) over the day and 55 decibels(A) at night as comprehensively as possible by 2030**, derived from the objectives of the City of Essen in its application for the EU's title of European Green Capital 2017 to avoid noise levels exceeding the target values of L_{DEN} 65 dB(A) and L_{night} 55 dB(A) as comprehensively as possible by 2018 (see Stadt Essen 2014c, p. 14). In NRW, around 1.4 million people are currently exposed to harmful noise levels exceeding 65 decibels(A) over the day and 55 decibels(A) at night (MKULNV NRW no date b).
- 38 Target proposed by the Wuppertal Institute: reduction of maximum noise levels from 65 to 55 decibels(A) over the day and from 55 to 45 decibels(A) at night in many of NRW's communities in 2030**, derived from the objective of the City of Essen in its application for the EU's title of European Green Capital 2017: "The long-term objective of the City of Essen is to have no one affected by noise levels higher than 55/45 dB(A) all day / at night by 2035" (see Stadt Essen 2014c, p. 14).