

Mission Transformation



Research for
Sustainable Development

Our Objective: to Generate Zukunftswissen

When they hear talk of research, people still think of lab coats and somewhat eccentric behaviour. The idea of researchers as pioneers of change and active participants in the implementation process sounds somewhat utopian. However, we don't shy away from this role, because dealing with utopias is part of the Wuppertal Institute's business model. What really matters is that this work must have a scientific foundation.

One thing is clear: the world is changing and many of the problems associated with this are coming to a head. Anyone who wants to intervene in, alter, transform and influence the process of change in the face of an urgent need for action needs a lot of knowledge, a lot of passion and a good grasp of the situation. Since 1991, the Wuppertal Institute has been using its research to contribute ideas for solutions to the major challenges facing society. We play a decisive role in shaping the debate on issues relating to climate, energy, mobility and resources. How can a climate-neutral and resource-efficient world be made a reality? Our over 300 employees are working on this question together with partners from the fields of politics, public administration, economy, science, and civil society. In this, we set the bar high. We want to make a difference with our research, provide the momentum for practical implementation and, by making orientational knowledge available, help the relevant actors to make the right decisions in extremely complex and highly dynamic times. This ambition is our guiding vision.

What are our main areas of activity then? First of all, the Institute addresses today's

key **arenas of transformation**. What we mean by this is all those areas of society in which there is a great need for change. Energy, transport, industry, urban areas, and consumption – these are the aspects that we must address when it comes to shaping the future. But this cannot be done without looking at how they interact, understanding both synergies and conflicts. Exploring these interrelationships using scientific methods is one of five fundamental pillars of our work – the big “where” question: **where do we see a need for action, and what are the characteristics of the systems requiring change?**

We call the second key element of our mission **Zukunftskunst** (future literacy). Change cannot be brought about single-handedly or from just one perspective. In other words, technology and economics, politics and institutions, culture and society always play a role in the arenas of transformation. How can these different points of view be choreographed and integrated? The Wuppertal Institute refers here to the concept of **Zukunftskunst** – the art of pooling and forming areas of interdisciplinary expertise and thereby driving forward processes of change. This guiding princi-

ple and the art of shaping the future form another objective of our mission – the big “how” question: **how do you organise change?**

Thirdly, anyone who wants to shape the future needs knowledge about the future: **Zukunftswissen** (future knowledge). What we mean by this is knowledge about how systems function, how goals can be achieved and how transformations can be initiated and shaped. Only a three-pronged approach encompassing target knowledge, system knowledge and transformation knowledge can successfully move a transformation in the right direction. The Institute combines knowledge generation with a healthy dose of pioneering spirit within the framework of research that is both transdisciplinary and transformative. In doing so, we involve stakeholders from the scientific community and those active at society level in the development of solutions – the big “what” question at the heart of our work: **what contribution do we make to shaping processes of change?**

Multilevel governance is the fourth pillar of our work and is vitally important to our research. By this, we mean bringing together stakeholders in leadership

positions, from those active at a local or regional level all the way through to national and international figures. The Wuppertal Institute believes it is one of its core tasks to connect people and organisations who not only want change, but can achieve change by virtue of their position – the big “who” question: **who are the key players who can bring about change through smart joint actions?**

Last but not least, we are concerned with organising the exchange of knowledge and experience. North Rhine-Westphalia, the region of Germany in which the Wuppertal Institute is located, is one of the world's principal urban and industrial metropolitan areas. That makes it a potential model for other regions also currently facing particular transformational challenges. As a think tank focused on making a real-world impact, we work in close cooperation with the state government of North Rhine-Westphalia, not only to develop new solutions for the state but also to disseminate knowledge to the outside world. In doing so, we take lessons from the structural change that

has been experienced first-hand in the state for many years, and duly process the knowledge that has been gained here. But instead of keeping this knowledge to ourselves, we share it with the wider world through our many international projects. And that's not all: we also draw on insights from outside Germany and introduce good, successful approaches to North Rhine-Westphalia. This brings us on to the big question of “when”: **when and under what conditions can transformation processes be made widely applicable and transferrable?**

One Institute, five core missions. The terms may still seem somewhat abstract, but we will use real issues and draw on examples to clearly illustrate how and where the Wuppertal Institute has been initiating processes of change and shaping the **transition towards a climate-neutral and resource-efficient world** for three decades. One of the most important insights we have gained during this time is that **transformation** can be shaped actively and that science can help. We will describe exactly how this can be done on the following pages.

Limiting climate change

Ending the fossil fuel era, keeping global warming below 1.5 degrees Celsius and adopting a climate-friendly, just and sustainable economic system – this is all achievable with an ambitious and fair climate policy at national and international level, with the commitment of people in all countries, cities and companies, and with a low-carbon lifestyle. The Wuppertal Institute shows how this can be accomplished and supports all of the actors involved.



New Knowledge for the Great Transformation

To carry out research for sustainable development at all levels – in our region, across Germany, in Europe and around the world – to give future generations the opportunity to live in fairer societies that are both environmentally and economically viable: that is the Wuppertal Institute’s core concern. Through this research, we inspire politics, the economy, the scientific community and society as a whole to transform existing systems where necessary and to shape the future – that is our challenge. For many years, we have worked in line with real-world practice, within a wide range of networks and taken a transdisciplinary and transformative approach to our research in order to change the world with sustainability in mind.



Digital transformation

Digital technologies are opening up a wealth of new opportunities for sustainable development. On the other hand, their use is also fuelling the increased consumption of energy and natural resources by electronic devices and infrastructure. That is why it is important for the digital transformation to be actively managed so that it can contribute to a sustainable future without exacerbating social and economic crises. We play a role in steering the ongoing digital transformation in the direction of sustainable social, economic, and political development. For that purpose, we evaluate digital technologies and product developments, infrastructure and solutions with regard to their functions and interactions from a holistic perspective.

The Wuppertal Institute is a think tank focused on the future and on making an impact. It is particularly well known and highly respected for the far-sighted yet implementable and widely acceptable solutions it proposes. Increasing energy efficiency in conjunction with the switch to not only renewable energies but also a true circular economy and modern multimodal forms of transport, the restructuring of energy-intensive industries from steel manufacture to cement production, and the path to sustainable consumption patterns – these are just some of the issues that take centre stage.

With more than 250 experts from the research community, we show how the world can be made climate-neutral and use resources more efficiently. To do this, we draw on a wide range of expertise, including a team of researchers with backgrounds in humanities and social sciences as well as from technical and natural sciences. The challenges of limiting climate change and restricting resource consumption cannot be solved by one discipline alone, but rather only by taking an interdisciplinary approach. However, that is not all – a generous helping of **transdisciplinarity** is also needed. How? One method is to work in so-called **real-world laboratories**, where we engage very effectively in everyday scenarios with partners and members of the public to develop practical and feasible solutions.

In order for our voice to be heard in Germany and around the world, we depend on **highly professional science communication**. To help us involve

the general public as well, we attach great importance to communicating our solutions in understandable formats, including a highly accessible publication, a podcast, various films, and a large number of events for different stakeholder groups. Through our vast number of published works, lectures and conference appearances, we also inspire new ideas in the **scientific community** itself and cultivate scientific exchange. We are involved in numerous research networks at national and international level. Many Wuppertal Institute scientists also play an active role in research and teaching at universities both in Germany and abroad. We often use and refine innovative methods. In the Wuppertal Institute, researchers and scientific institutions find an open and experienced partner for research tasks and constructive cooperation on matters relating to sustainability. In everything we do, we always advocate scientific quality, knowledge sharing, putting research findings to the test and communicating them to the business community, policymakers and civil society.

The Wuppertal Institute is organised into **13 research units within four divisions**. It receives basic funding from the state government of North Rhine-Westphalia (NRW), which is also the sole shareholder in the non-profit limited company. This basic funding is supplemented by project-related grants and commissions, which account for about three-quarters of the research budget. The Institute also receives support from the fundraising association Friends of the Wuppertal Institute and from an alumni network.*

Since the Institute was founded in 1991, the number of scientists it employs has increased more than fivefold. A steadily growing dissertation programme helps us to encourage the next generation of scientists and generate new ideas for our research. We currently supervise around 200 externally funded projects, have research links in 70 countries, publish 200 scientific publications annually, give 40 internal lectures and deliver about 500 talks to audiences from the worlds of politics, economy, science, and civil society each year.

With more than 5,000 reports about us in the media, our research findings are actively accepted by society. This is something we are very proud of. The Wuppertal Institute has succeeded in creating a strong scientific organisation dedicated to working in important areas of social change. With our specialisation in **“transformation research”**, we not only play a decisive role in shaping scientific discourse but also contribute to real-world implementation through our research. Instead of sitting in an ivory tower, we draw public attention to sustainability issues and develop ideas for solutions by collaborating from the outset with stakeholders who are active in the field. This approach is what makes the Institute’s work so special and, in some cases, even unique.

* An overview of the Institute’s collaborations and networks can be found on wupperinst.org.

Making Utopia Possible

Making utopia possible – from political activists, start-ups and global players, civil society organisations and individuals, many people are working to make the seemingly impossible possible, building socially and environmentally just communities all around the globe. The Wuppertal Institute supports all of them with its research in order to drive change and expand the knowledge this requires. After all, offering all the world's inhabitants a good life within planetary boundaries is not simply a utopian idea – it is possible.



Sustainable Development Goals
Whether environmentally responsible business practices, the fair distribution of resources or sustainable urban development, an integrated approach to sustainability is indispensable when it comes to tackling these fundamental social objectives. Sustainable development must, therefore, take place within environmental and social constraints. This point is also reflected in the United Nations' Agenda 2030, the 17 Sustainable Development Goals and the Wuppertal Institute's research and consultancy work. Our ambition is to scrutinise, discuss and harmonise the interactions between these goals. We want to help transform the world without leaving anyone behind.

The Paris Agreement on limiting global climate change and the Sustainable Development Goals (or SDGs) set by the United Nations are pivotal keywords for this century and define the areas where action must be taken. They describe concepts and the specific goals derived from them with the aim of creating a world where over ten billion people can enjoy a good quality of life without harming the environment or the climate. The Wuppertal Institute has worked to make this "utopia" possible since it was first founded.

Not only has the Institute helped to shape the research undertaken for the energy transition, it has also raised awareness of the many ways in which prioritising the conservation of resources is vital. We develop strategies and plans for climate protection on behalf of municipalities, companies, megacities, countries, and regions. Ways in which the worlds of business and politics and public engagement

can cooperate to transform the energy system of the future are of just as much interest to us as the tools for reducing resource consumption and, above all, strategies to create a circular economy. From changing cities, the transition to a green transport system and sustainable nutrition to prosperity and consumption, the Institute carries out research into all aspects of the transformation and develops future-proof solutions. In the Wuppertal Institute, anyone concerned with these issues will find a partner that willingly devotes itself to exploring these matters from a scientific perspective. That is because the Institute sees its role as helping to make utopia possible – as a scientific driving force behind what we call the **Great Transformation**.

Our interdisciplinary and transdisciplinary approach and the fact that we look at problems from a whole system perspective make us particularly suited to this task. After all, various forms of knowledge are needed to achieve

sustainable change – including **target knowledge**. This addresses the question of which objectives are associated not only with the transformation process but also with the interplay of different target levels. Where are there points of conflict between environmental, economic and social levels, and what potential synergies need to be identified and understood? **System knowledge** helps to clarify which actors determine the system, how they reach their decisions and how the social, economic and technical variables are interrelated. Then there is **transformation knowledge**. This is knowledge about how stakeholders arrive at practical action, how they can make use of target and system knowledge – whether in the political sphere, within city councils or inside companies. This is an aspect on which we work particularly closely with the actors. We ask: what form could a decarbonised world economy take? What technologies would be required, and at what cost? How could this scenario be put into practice in

a way that treats everyone fairly? What does a sustainable city look like? How can business strategies be transformed to support sustainable development?

The Wuppertal Institute has been committed to transformative science of this kind for 30 years. Today, we organise our work into four divisions: (1) Future Energy and Industry Systems, (2) Energy, Transport and Climate Policy, (3) Sustainable Production and Consumption and (4) Circular Economy. For example, the divisions develop integrated pathways for climate-neutral energy systems and energy-intensive industries, draw up and evaluate policy strategies, analyse and develop technological and social innovations in real-world laboratories and investigate the role of digitalisation as a key prerequisite for closing material loops and how a circular economy can be implemented in specific practical terms. Through their work, they lay the foundation for making utopias possible now and in the future.

Shaping a New World

Today, there is a lot of talk about changing the world. At the Wuppertal Institute, we carry out research in this field, contribute to real change through our scientific work and use it to influence both public and academic discourse. As well as an exchange of ideas at societal level, changing the world calls for innovations with great impact. In our work, we engage very intensively with one particular type: so-called transformative innovations.

Industrial transformation

If global environmental and sustainability goals are to be achieved in time, there will need to be a change in thinking – not only by individuals but also by entire industries. The Wuppertal Institute works to support transformations that affect entire value chains. In the primary sector, for example, the most pressing questions are how to support the breakthrough of new process technologies and a decarbonised energy supply, and how recycling and the circular economy can be established along the entire value chain. We help industry partners engaged in such processes to identify and work together to overcome the technological, economic, political, and cultural challenges.

A wheel, a telescope, a hand axe, agriculture or a light bulb: today, these are everyday things. Therefore, it is easy to forget that in the past they more or less turned our physical and social environment upside down. In the context of the great challenges of the present, such fundamental innovations are needed more than ever. Once they are found and have survived the initial waves of resistance, their implementation and the associated impact can be very rapid. Think about the process of harnessing the potential of electric drive systems – not only but especially – for private transport. The Wuppertal Institute is, therefore, researching the impact of such innovations and how they can be put into practice. Given their characteristics, we call them **transformative innovations**, namely those that stand to make a significant contribution to a sociotechnical transition. These can be technical innovations, such as hydrogen-based steel production; they can have a systemic character, such as the realisation of a circular economy; or they can be social in nature, i.e. aimed at the implementation and dissemination of new social practices, as in the case of sharing economy concepts.

When innovations shake the world to its core, it often poses a great challenge to people and institutions, especially when it affects their very foundations and involves far-reaching system changes. Nevertheless, today's major challenges require disruptive changes of precisely this kind. That is because incremental changes, such as those that take place on a daily basis, are inadequate in view of the enormous tasks that lie ahead. Think about the goal of achieving greenhouse gas neutrality: if we take the related political and societal goals seriously, then tremendous changes will be imperative in the coming years. The Wuppertal Institute is working to identify innovation opportunities capable of bringing

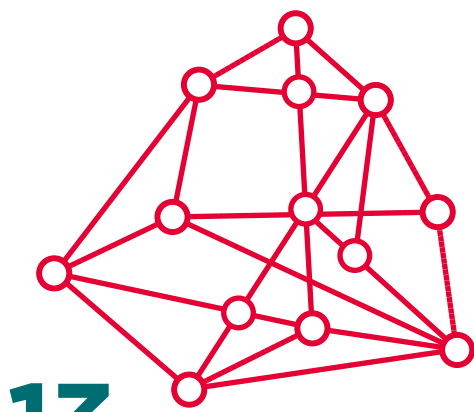
about change at a structural level and, in particular, to better understand their transformative effect – regardless of whether the structural changes are entirely deliberate or rather unintended side effects. We believe it is important to facilitate a systematic engagement with innovative approaches. This is explicitly about understanding where and how structural changes need to be proactively supported so that they meet with the necessary acceptance and are able to overcome resistance.

Our concept of **Zukunftskunst** (future literacy) helps us to analyse innovations, because it is all about looking at them holistically – from technical, economic, institutional, and cultural perspectives. However, not every invention is an innovation, and certainly not a transformative one. We focus our attention on those concepts that initiate a fundamental transformation, have a system-changing or system-shaping character and are at the same time realistic in terms of implementation. Niche products and pure pipe dreams must be disregarded, although we still believe in the effectiveness of small steps as well as in the worthwhile nature of big ambitions.

When it comes to the field of transformative innovations – as with all of our Institute's scientific work – the focus is on solutions designed to support sustainable, climate-friendly, and resource-efficient development. This is a crucial assessment criterion and demands a realistic analysis as regards implementation. We aim to provide decision makers from the political, business and social spheres with orientational knowledge, to help them evaluate and place new world developments in their decision-making contexts as well as choose the way forward that is right for them. As researchers, we want to generate a **sustainable impact** and make a positive contribution to social development.



The Wuppertal Institute in Figures*



13

research units in 4 divisions

The Wuppertal Institute faces challenges in the years ahead. In 2019, the strategic further development of its organisational structure was successfully implemented and now consists of 13 research units, each with a clearly outlined scope, within four divisions. This positions the Institute's research fields even more clearly from an internal and external perspective.



over 300

employees

Over 300 employees work for the Wuppertal Institute.

40

current dissertations

The next generation of scientists. The Wuppertal Institute is a popular place to earn a PhD. Furthermore, working with doctoral candidates enhances knowledge sharing with cooperating universities. An average of 40 dissertations are supervised each year, supported as part of a programme designed to promote new talent. In addition to dissertations, the Institute supervises an average of 35 final theses.



5,000

media reports each year

In the public eye. Around 5,000 times a year, the Wuppertal Institute is referenced in specialist journals, media reports and online news portals, or the Institute's research scientists share their expertise through these outlets. The communications department plays a key part in this, but the research teams are not media-shy either.



500

talks to political, business, and scientific audiences

Whether it's a workshop, keynote speech, lightning talk or the Wuppertal Institute's own digital Zukunftssalon, in order to meet the fundamental goal of communicating knowledge and delivering strong science communication, its employees give talks to stakeholders active in the same, similar or entirely different fields and present their project findings.



around 200

projects in over 70 countries worldwide

The Wuppertal Institute is cosmopolitan.

In relation to around 200 research, consultancy, and support projects, we have a presence in over 70 countries worldwide – we think globally and act locally!

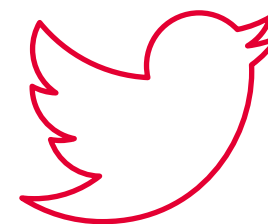


30 **Zukunftswissen.fm**

episodes of our

Institute's own podcast Zukunftswissen.fm

In the Zukunftswissen.fm podcast, experts from the Wuppertal Institute tackle exciting, urgent and important questions relating to sustainability, transformation, and innovation. They are joined by a range of guests who share their interesting insights and findings. Tune in – it's a fascinating listen: #ZukunftswissenFM



over 15,000

followers on Twitter

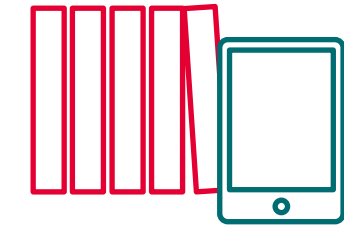
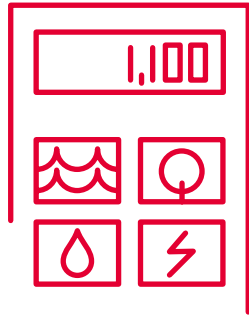
It is not easy for a research organisation to get its voice heard on social media, especially not in the Twitterverse. Around 15,000 followers who read, comment on, like and share our tweets are the impressive achievement of a science communications team that sees itself as integral to the Institute's impact-focused research work.

* All figures rounded or given as an annual average (2021)

1,100

calculations per month

Quick assessment. By answering questions in six lifestyle categories, from home life to travel, individuals can use the Wuppertal Institute's online resource calculator (ressourcen-rechner.de) to work out their personal annual resource consumption in just ten minutes. More than 1,100 people use the tool each month, and their average annual consumption of raw materials amounts to 30 tonnes. The sustainable target figure to be achieved by 2030 is 17 tonnes.



20,000

media items

In-house library. With access to printed and electronic monographs, external publications and project findings, research scientists have access to roughly 20,000 media items in total.



16

scientific experts

We also look at the bigger picture. 16 researchers contribute their sector-specific expertise through participation in committees and expert panels, including: the Club of Rome, the Intergovernmental Panel on Climate Change (IPCC), NRW.Bank, NRW Sustainability Strategy, the Science Platform Sustainability 2030 (wpm2030), the Sustainable Development Solutions Network (SDSN) Germany, ESYS, acatech, and the German-Japanese Energy Transition Council (GJETC).

20

Revenue of €20 million

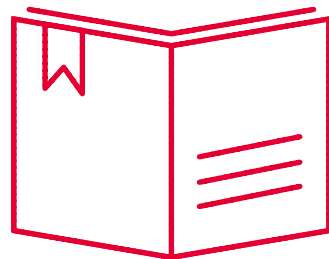
Healthy finances. The Wuppertal Institute generates a considerable turnover, which allows it to pay its workforce fairly and reinvest in intellectual and physical capital. It receives basic funding from the state government of North Rhine-Westphalia (NRW), which is also the sole shareholder in the non-profit limited company. This basic funding is supplemented by project-related grants and commissions, which account for about three-quarters of the research budget.



200

scientific publications annually

On average, one peer-reviewed article by scientists from the Wuppertal Institute is published in an international scientific journal each week. In addition, we issue two user-oriented publications for stakeholders acting in the fields of business, society, and politics nearly every week. The Institute also publishes several scientific books a year as well as the Zukunftsimpulse series, featuring assessments and recommended actions relating to current events and debates.



over 50

per cent women

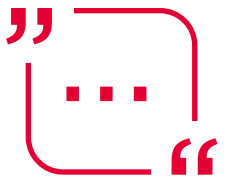
Women are in the majority at the Wuppertal Institute – more than half of the staff are female. Currently, 16 out of 35 leadership positions are held by women.



3,500

citations

The Wuppertal Institute also has a significant influence when it comes to scientific discourse – specialist publications by our researchers are regularly cited in the scientific community.

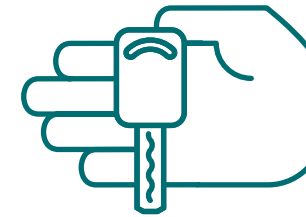


15

Zukunftswissen

films and Zukunftssalon webinars

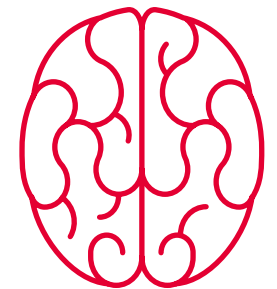
In an era of ever faster information transfer, moving images are absolutely key to daily communication work. The Wuppertal Institute releases about 15 films every year – from videos about its research and digital events in the form of Zukunftssalon webinars to clips explaining scientific topics. Social media and YouTube are a central part of the Institute's strategic visual communications.



0

fleet vehicles

The Institute does not have its own fleet of vehicles. If a journey has to be taken by car, this is organised through car-sharing services.



40

lecture courses and 8 professors

Academics from the Wuppertal Institute pass on transformative knowledge in 40 courses at traditional universities and universities of applied sciences. One fifth of these are taught by the Institute's eight professors in the form of university, honorary, visiting or interim professorships.



4

new key terms

The Wuppertal Institute works constantly to translate its commitment to making an impact into communications that can be readily understood. A series of key terms – which are also explored in detail in this brochure – serve to illustrate the relevance of research in a practical sense. To help do this, we have coined and established the following key terms: Zukunftskunst (future literacy), Zukunftswissen (future knowledge), real-world laboratory and transformative science.

Policies that are based on scientific findings, are readily understandable and make the associated benefits clear create the conditions for sustainable development that protects the environment and livelihoods while engaging with people and gaining their approval. The Wuppertal Institute develops scientific findings and future-oriented solutions for necessary transformation processes that enable those actively involved in politics and policymakers themselves to make decisions that are realisable and have certain outcomes.

A Policy Mix for the Future



Changing cities

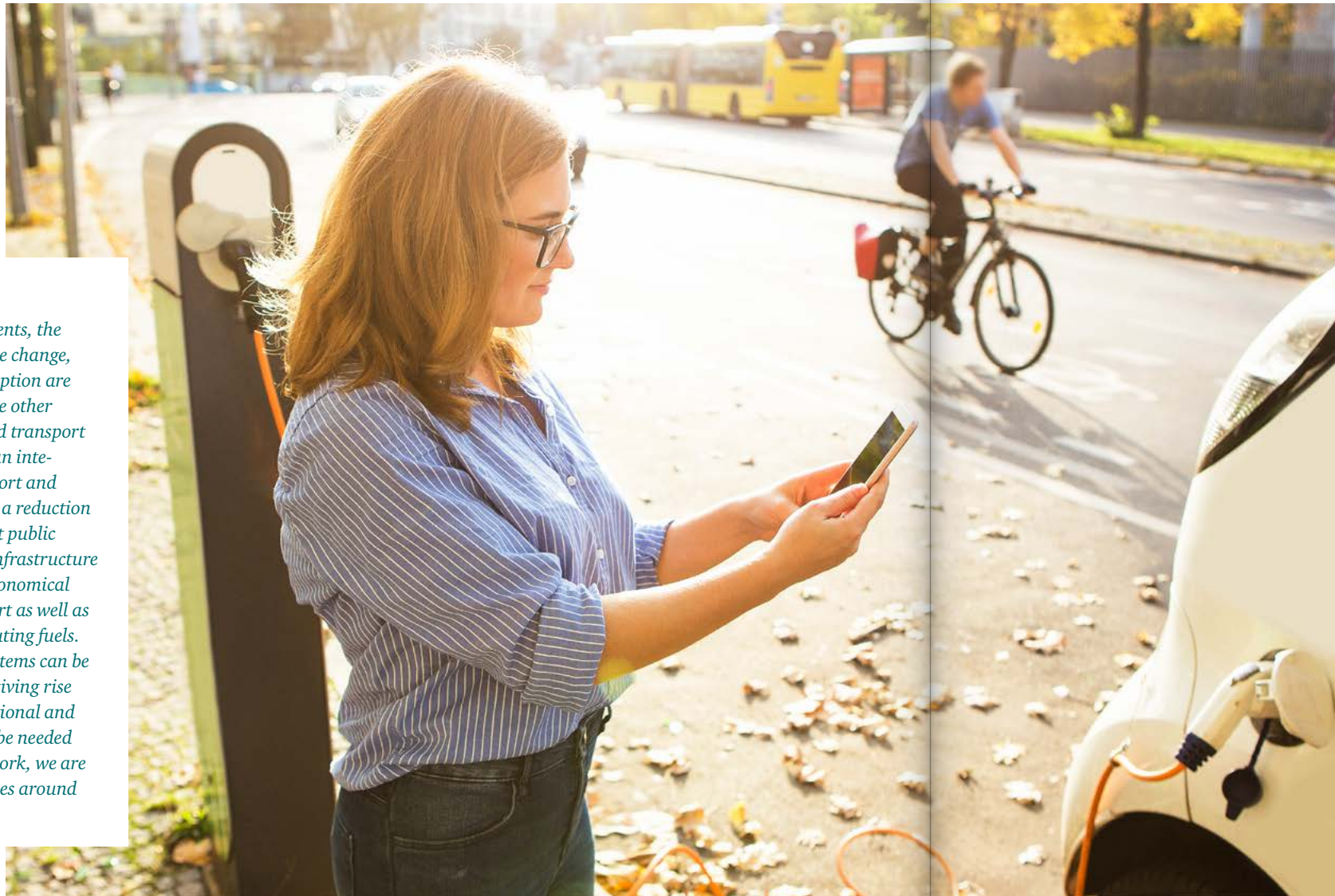
Cities are home to around half of the world's population. They are the source of 80 percent of global anthropogenic greenhouse gas emissions and responsible for consuming vast quantities of resources. Urban areas are focal points for the transformation as well as being the launch pad for technological and social changes. For this reason, they require support by means of appropriate policy frameworks at European, national and municipal level. Cities can thereby become real-world laboratories for research on and transitions to sustainable forms of development. Our research explores what it takes to achieve a transition to environmentally sustainable cities that are fit for the future and provide good quality of life.

Ensuring that the world's inhabitants can live in just social conditions and without harming the environment is a key responsibility of government. It must create the necessary parameters and the conditions for the public and companies to act sustainably. It must also identify where conflicts can arise and where compromises between different agendas need to be found, and where necessary, it must make courageous, effective and far-reaching decisions. Scientific findings can provide policymakers with guidance and help them make well-thought-through decisions. Providing **scientific policy advice** is one of the main areas of the Wuppertal Institute's work. Since its foundation, it has advised and offered guidance to political actors, whether in the parliamentary arena, at government level in Germany's federal and state governments, at European level and globally, or in local government. Our broad expertise and strong reputation, both nationally and internationally, make the Institute a reliable and sought-after partner and adviser.

To provide this advice, we need to understand a given situation from every angle. In each case, we examine the issue closely to ensure the economic, environmental and social factors are fully considered. Our analysis tools often allow us to map out well in advance what effects individual measures will have on the environment, how much money they will cost and what distributional effects are associated with them. For this purpose, we develop tailor-made models

and work with scenarios that are able to illustrate the impact of future action and bring the associated consequences to light. Given the complexity of the issues and the high speed with which decisions have to be made nowadays, policymakers are grateful for support from research. Questions arise, such as: how must a building renovation programme be adapted to have a sustainable effect and help overcome obstacles? How can resource consumption in society be recorded and controlled? What are the sociopolitical implications of eco-friendly structural change? Questions like these are not easy to answer, and there is no one-size-fits-all response – teamwork across the scientific and political divide is the key to success.

In fast-moving times, a reliable compass is needed to help set and further develop the research agenda. Our research and consultancy activities are based on the **Sustainable Development Goals (SDGs)**. With the Agenda 2030 adopted in 2015, the international community committed to 17 global goals for a better future under the auspices of the United Nations (UN). The goals encompass environmental and social factors – such as education, health, urban development, housing, production, consumption, and protection of the environment. At the Wuppertal Institute, we are involved in numerous projects to support the goals set by the UN at all levels through our research and consultancy work.



Rethinking mobility

In addition to the risk of accidents, the impacts of transport on climate change, air pollution and land consumption are widespread. However, there are other ways to keep people mobile and transport goods. Key building blocks in an integrated transition of the transport and mobility system are, above all, a reduction in private car usage, intelligent public transport options, attractive infrastructure for cyclists and pedestrians, economical and efficient means of transport as well as climate-friendly and non-polluting fuels. We, therefore, analyse how systems can be changed successfully without giving rise to new problems and what national and global policy frameworks will be needed to achieve this. Through our work, we are helping municipalities and cities around the world rethink mobility.

We not only work locally and nationally, but also provide guidance to policymakers all over the world on issues ranging from the design of sustainable transport systems in megacities to the implementation of country-specific strategies to protect the climate and resources. The Institute uses scientifically well-founded projects on the key challenges of our times as the foundation for its advice. To do this, we work with partners who contribute additional specialist expertise and, above all, cultural background at international level – alliances that we, and hopefully our partners, are very proud of.

In addition to our project-based work, we are also active participants in many political advisory bodies and commissions. The advice of individual scientists is sought-after in these contexts, for example, in commissions of inquiry set up by the German Bundestag, in the German-Japanese Energy Transition Council (GJETC) or in the Seoul International Energy Advisory Council (SIEAC). Parliamentary groups or committees regularly request expert opinions from the Wuppertal Institute. We are pleased to enjoy this level of trust and work to build these relationships a little further each day.

Project cases

NDC ASPECTS

As part of the Paris Agreement, the collective progress of the parties towards achieving the goals of the agreement must be reviewed in a global stocktake, or GST, every five years. The parties are expected to strengthen their nationally determined contributions (NDCs) based on the results of the GST. The objective of the NDC ASPECTS project is to provide input for the first GST and the possible revision of existing NDCs as well as the development of new NDCs for the period after 2030. (Funding: EU Horizon 2020 research programme)

NRW Sustainability Strategy

In 2016, with the Sustainability Strategy for North Rhine-Westphalia (NRW), the state government became the first in Germany to implement the global sustainability goals that make up Agenda 2030. In 2020, NRW published an updated Sustainability Strategy to be realised in the coming years. The Wuppertal Institute will support the process by providing scientific analysis until implementation. (Funding: State Agency for Climate Protection, Environment, Agriculture, Nature and Consumer Protection North Rhine-Westphalia)

MENA-Fuels

The requirements of the Paris Agreement are clear: the transport sector needs to be decarbonised as well. In cooperation with the German Aerospace Centre (DLR) and the Institute for Future Energy and Material Flow Systems (IZES), we are investigating the role that could be played by renewable fuels in Germany, analysing what areas of potential could be tapped in the MENA region (Middle East and North Africa) and showing what new trading relationships could be established. The project thus aims to provide orientation for actors in the worlds of industry and politics. (Funding: German Federal Ministry for Economic Affairs and Climate Action (BMWK))

OptiWohn

The gulf between housing shortages on the one hand and the ever-increasing use of land for housing on the other is vast. That is why, in the OptiWohn project, we want to find out how use can also be made of potential living space in existing buildings and what role municipalities can play in this. We will translate the results of our specific advisory and support services into practical municipal recommendations for action and develop a concept for a funding programme for space-efficient housing throughout Germany. (Funding: German Federal Ministry of Education and Research (BMBF))

Urban Pathways

There is tremendous potential for emerging economies to reduce their emissions. India, Brazil, Kenya, and Vietnam are the focus of the Urban Pathways research project, in which the Wuppertal Institute is working on the implementation of low-emission urban development through specific, local actions: what is politically, economically and financially feasible, and how can universal, equal access to basic municipal services be realised, especially with regard to mobility and waste disposal? Our involvement includes devising model scenarios, preparing development strategies, giving policy advice and providing close support for the implementation process. (Funding: German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV))

A Sustainable Economy

The global economic system is based on our natural means of survival. Climate change, increasing resource consumption and the loss of biodiversity clearly show that the planet's breaking point has already been exceeded. The focus of a sustainable economy is, therefore, on sustainable, resource-efficient and climate-neutral products, services and business models. The Wuppertal Institute provides companies, associations, and policymakers with the necessary analyses, strategy stimulus and innovative concepts.

If companies and organisations want to be fit for the future, they need to take on social responsibility in order to remain competitive and ensure both security of investment and corporate survival. That is because consumers, business partners, investors, and policymakers increasingly expect companies to manage their globally interconnected value chains along environmentally friendly and socially responsible lines.

The importance of this has already been recognised by many businesses, ranging from global players to SMEs. Whole sectors are now aligning their practices with the global sustainability goals, and they have begun to redefine their corporate and industry strategies with a view to using sustainable products and services to tap into future markets. Innovative start-ups demonstrate how alternative business models can make a successful contribution towards solving social problems.

To help companies and associations to position themselves successfully in the complex interplay of digitalisation, ever-changing political and regulatory parameters and increasing pressure from stakeholders, the Wuppertal Institute supports companies and associations by means of **sound system and orientational knowledge**. The Institute's academics draw on a broad and **interdisciplinary knowledge base** to conduct research into the political strategies

for economic transformation as well as the necessary change management concepts for companies and sectors. By taking a **transdisciplinary approach to research**, the Wuppertal Institute regards itself as a mediator and develops alternative transformation pathways and economic models in collaboration with actors from the worlds of business, politics, civil society, and science. The researchers show how these pathways can be implemented in products, services, and business models – from the circular economy to strategies for a post-growth economy for the common good.

The challenge for companies here is that incremental changes are not enough in the light of the ambitious goals. An expanded (systems) innovation approach and agile management strategies are needed to establish disruptive technologies, products and services in markets worldwide, as well as the intersectoral collaboration structures that are often necessary for their implementation. There are not usually any blueprints for this. Therefore, it is wise to start by testing such innovations in so-called **real-world laboratories or living labs** under real-life conditions in order to better understand their impact and avoid unintended effects and risks. The Wuppertal Institute is committed to the continuous improvement of the methodology for real-world laboratories and living labs.

Shaping the energy transition

The complex energy system can be transformed on a sustainable and future-proof basis, not only at national and regional level, but also locally and globally through an intelligent interplay between technology, economy, politics, and public engagement. This has already been demonstrated by many of the Wuppertal Institute's projects and models. The Institute is one of the pioneers without whose findings politicians would not have embarked on this transformation. In addition to the technological expansion in the generation of renewable energies and the increase in energy efficiency, other factors will also contribute to making the transition sustainable, such as eco-sufficiency, sustainable lifestyles and modernised approaches to the organisation and interaction of systems.



Project cases

SCI4climate.NRW

As a core part of the IN4climate.NRW initiative, the scientific competence centre SCI4climate.NRW researches progress towards establishing a climate-neutral and future-proof industrial sector by 2050. We closely examine the technological, environmental, economic, institutional, and (infra)structural system challenges for the companies in the energy-intensive primary sector that manufacture their products in North Rhine-Westphalia. We cooperate with companies and the NRW state government to develop strategies and solutions for an industrial sector that is both climate-neutral and fit for the future. (Funding: Ministry of Economic Affairs, Innovation, Digitalisation and Energy of the State of North Rhine-Westphalia)

ComfortLab – Piaf, the indoor air quality bird

Public buildings are big consumers of energy, but they could achieve savings of up to 20 per cent simply by means of a user-centred building management system and other user behaviour. In the projects “EE Office” and “ComfortLab”, the Wuppertal Institute worked with the EBZ Business School, Bochum, and designer Christina Zimmer to develop an indoor climate assistant. “Piaf”, a digital device in the shape of a bird, measures the air quality in a room. In addition to monitoring the amount of CO₂ present, it also gathers data on the temperature and relative humidity and signals when the room needs to be ventilated. (Funding: Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) in the German Federal Office for Building and Regional Planning (BBR); German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU))

DiLink

Closing the plastics cycle while still producing high-quality materials is an important goal when it comes to the circular economy in Germany. But how can the use of recycled plastics in manufacturing processes be improved by taking advantage of digital applications, for example? This is where the DiLink project comes in. Through sensor technology, data analysis, and process management, DiLink aims to deliver the information and processes that will contribute to the correct use of recycled plastics. (Funding: German Federal Ministry of Education and Research (BMBF))

CirCoolDes – transforming resource use through sustainable product design

In order to establish a circular economy, as strived for at European level, the coordination of design and recycling has an increasingly important role to play. This is the only way to recover materials, replace them with recycled content in production processes and thereby save primary raw materials. We are developing a circular product design in the form of a specially developed concept for a fridge-freezer in a process focusing on resource consumption along the value chain. (Funding: German Federal Ministry of Education and Research (BMBF))



Keeping resources in circulation

Every year, Germany alone produces over 400 million tonnes of waste. Germany and the European Union have set themselves the goal of realising a comprehensive transformation towards a functioning circular economy. Waste must, therefore, be prevented as far as possible, products and components used for as long as possible and all waste comprehensively treated as a potential resource. The associated challenges and issues are among the Wuppertal Institute's core areas of research.

To find out how companies can pave the way for **resource-efficient and sustainable lifestyles** by means of innovative products and business models, we examine company strategies, processes, and technologies, linking them to alternative models of prosperity at appropriate stages. Our focus here is on industries with particular relevance to emissions and resources, such as the primary sector, and **transformation drivers** – including finance and insurance companies, information and communication service providers, as well as companies working in logistics, plant construction and mechanical engineering.

The Wuppertal Institute sets out **paths forward to decarbonise** energy-intensive industries. Above all, the production of steel, basic chemicals, aluminium, glass, paper, and cement account for a large proportion of global energy and resource consumption. For this purpose, we use systems analysis modelling to look at energy and resource flows along the value chain and prepare (scenario) analyses. Our results illustrate the political and institutional conditions under which new technologies and products can become successfully established on the market and reveal the infrastructural parameters that must be fulfilled for this to happen – such as the development of a hydrogen infrastructure.

The financial market has a pivotal role to play in the forthcoming transformation processes. The essential transformation towards a **climate-neutral and sustainable economy** will be made possible on the foundations of investments and finance. That is why the Wuppertal Institute, as an independent research institute, examines sustainability criteria and develops methods to evaluate the social and environmental impacts of financial products, investments, and business strategies on the basis of evidence.

More and more people want to counter the growing threats posed by climate change and resource scarcity by implementing a sustainable transition. Persuasive, knowledge-based concepts that have been carefully considered are needed to enable politics, business, and society to take action in support of the necessary transformations towards sustainability. The Wuppertal Institute helps sustainability-oriented organisations, companies, and associations to develop these concepts through its practical research projects, studies, and independent professional expertise.



Prosperity, consumption, and lifestyles
Technological efficiency alone will not stop climate change and hold back rising levels of resource consumption. Changes to patterns of production and consumption are needed alongside social innovations in order to reduce the pressures on the environment and pave the way for global prosperity. To support these objectives, we research new models for consumption and business, which focus on protecting the climate, conserving resources, satisfaction, quality of life, and social change. We are also concerned with a policy framework, economic support and Education 4.0 solutions that will make it easier to implement these models. We want to utilise people's creativity and skills to develop sustainable innovations in real-world laboratories and living labs so that the vast quantities of products and services surrounding them correspond to their lifestyle choices.

Together for Change

Project cases

WISIONS of Sustainability

Since its launch in 2004, the WISIONS of Sustainability initiative has supported the spread of small, sustainable energy solutions in the so-called Global South. Its long-term objective is to contribute towards meeting the energy needs of – predominantly rural – regions using renewable energies as standard and towards opening up opportunities for local sustainable development. The key to the WISIONS approach is to support local actors in identifying and using suitable technologies and implementation models. (Funding: Stiftung Pro Evolution)

Zero Waste Kiel

Waste is resource consumption. That is why the European Commission has stressed that waste prevention is the ultimate objective. Kiel, the state capital of Schleswig-Holstein, has thus set itself the ambitious goal of becoming the first Zero Waste City in Germany. At the Wuppertal Institute, we are working alongside Stakeholder Reporting GmbH and the Office for Environmental Science to help analyse the present situation and ways in which waste could be prevented. We are also collaborating with other partners to develop measures that will lead to a practical action plan as a basis for implementation. In 2021, Kiel's zero waste concept was chosen to receive the Hans Sauer Award 2021. (Funding: State capital Kiel)

The Sustainable Lifestyles

Accelerator – SUSLA

The project aims to motivate more than 70,000 private households in seven countries to analyse their material and carbon footprints and to actively shape behavioural change. The web application SUSLA was developed on the basis of user integration and calculates the impact of an individual's lifestyle in terms of carbon emissions and resource consumption. The app then uses this information to suggest ways of making everyday life more sustainable and helps users develop bespoke road maps. (Funding: KR Foundation)

CRIT – Coal Regions in Transition

The European Commission set up the Initiative for Coal Regions in Transition to help EU coal regions to become low-carbon regions. An international consortium of consultants, including the Wuppertal Institute, was brought together in 2019. We support the initiative by supplying knowledge and, in particular, by producing guides and case studies that help those active on the ground to put the changes into practice. (Funding: European Commission, Directorate-General for Energy)

Societies that want to be prepared for the future need people with the necessary skills to shape it. Therefore, they require information and knowledge that are accessible and widely communicated. We provide analyses and develop strategies so that they can successfully drive the transformation forward with us and build broad social support for it. Inspiring production and consumption solutions aimed at establishing **sustainable individual lifestyles** are guided by science and tested under everyday living conditions in so-called real-world laboratories or living labs.

In order to bring the agents of social change from civil society, economy, and politics together at one table, we act as **mediators between these worlds** for the purpose of removing obstacles and balancing interests. This creates not only a **sound knowledge base** that enjoys social and political acceptance, but also achievable strategies to bring about

change. Realistic and successfully **tested practical solutions** are the goal of our work. Many of our studies and publications initiate debate or broaden its scope or audience.

Socially relevant (research) questions often focus on the fair distribution of burdens: between generations, between regions or even within societies. For example, how are rising energy prices and mobility costs affecting a growing number of low-income households? Many people are concerned with these questions or are involved in tackling them through environmental organisations, charities, trade unions, churches, initiatives, agenda-setting processes, and associations. We support their discourse by providing scientifically sound and clearly formulated study results, by acting as discussion partners, through lectures or by offering scientific support to stakeholder processes.

Our research approach includes examining the feasibility of theoretical solutions in projects with an experimental and pilot character. This way, we are able to develop and test out concepts for sustainable lifestyles and economic activity in everyday situations experienced by consumers and members of the public. In this regard, the Wuppertal Institute rarely acts purely as a **think tank**, but instead also strives to **transfer** the research findings to the respective target group. By doing so, it aims to spread the word about best-practice examples and inspire more people and institutions to emulate them.

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