



# PATHWAYS TO CLIMATE RESILIENCE

Adapting to Climate Change  
through Technologies from  
North Rhine-Westphalia in Germany



# NRW – GLOBAL FRONTRUNNER IN ADAPTING TO CLIMATE CHANGE

North Rhine-Westphalia is a pioneer in building a sustainable and resilient economy. As the first federal state in Germany to implement a targeted green economy strategy and climate change adaptation law, it has established a distinct and exemplary course. This strategic approach has paved the way for substantial growth in the field of climate adaptation and resilience. With its multitude of climate change adaptation measures, NRW is a shining example for other countries or administrations on how to move forward in addressing the impacts of climate change.



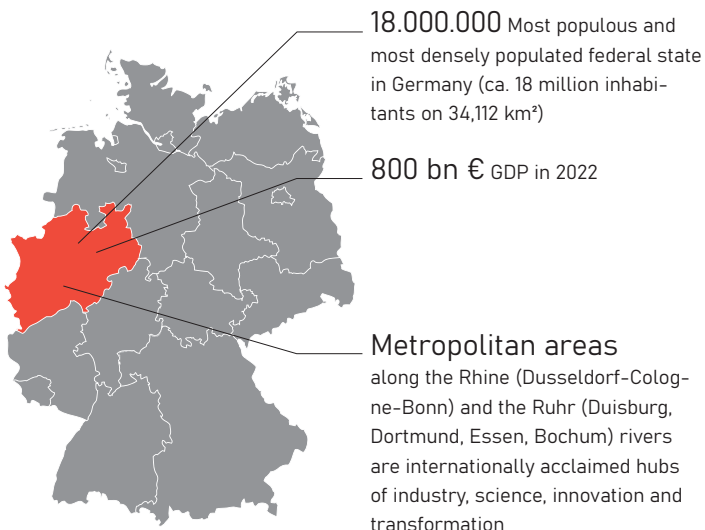
## Germany's first Climate Change Adaptation Act

With its robust and expanding green economy, adaptation sector and many years of extensive experience, NRW is well-positioned to assume a leading role in the global transition to a more sustainable future.

As early as 2009, NRW developed its first **climate adaptation strategy**, which was updated in 2015 in the **NRW Climate Protection Plan**. The state government has developed more than 60 measures in 16 fields of action. In 2021, North Rhine-Westphalia developed Germany's first **Climate Adaptation Act (KlAnG)** on a federal state level, which sets ambitious targets. In the future, the public sector will have to take the effects of climate change into account in its planning and decision-making.

## NRW IN NUMBERS

"Germany is the fourth biggest economy in the world – and NRW sits at its core"



## Easily accessible maps and data support local decision-making

Established in 2022, the **Climate Atlas NRW** provides comprehensive, first-class data on climate risks, impacts and vulnerabilities in North Rhine-Westphalia. The data is presented in interactive maps and detailed analyses of climate change in the region. By combining these different layers it also provides impact maps which are very effective and low-barrier tools to make informed decisions about how to effectively address the consequences of climate change and minimize environmental impacts.



[www.klimaatlas.nrw.de](http://www.klimaatlas.nrw.de)

# THE NKU – A NETWORK TO SUPPORT COMPANIES IN THE TRANSITION TO A CLIMATE RESILIENT FUTURE

The Network Climate Adaptation & Businesses.NRW (NKU) started its work in November 2021. It is a partner and link between companies and other stakeholders such as research institutions, associations and business development agencies on the topic of climate adaptation at a local and regional level in North Rhine-Westphalia.

The central aim of the network is to strengthen climate adaptation by and through companies in NRW.

We identify companies that provide adaptation technologies and solutions and make the diverse activities of climate adaptation „made in NRW“ visible. We promote the potential of the climate adaptation sector and support the development of new (inter)national markets.

Our goal is to further motivate companies in NRW to deal with their very own risks posed by climate change. We set up a platform with targeted support and information material to provide concrete information on the possibilities of climate adaptation in the private sector and to ensure an improved exchange between the different actors.

Services that the network offers its members include:

- A **funding navigator** to identify possible funding opportunities for adaptation measures
- Various **tools and checklists** that can be used to quickly derive an initial assessment of how an individual company is affected by climate change
- **Contact initiation** between companies that want to adapt and those that provide adaptation assets
- **Monthly consultations** on current developments and issues in the field of climate change adaptation.
- The **annual 'Forum on Climate Resilience'** as a meeting place for the adaptation industry
- **Market insights** for adaptation goods and services, e.g. in the field of foreign trade
- Collection and presentation of **best-practice examples** as a showcase and source of inspiration
- Numerous other **events** on the topic of climate adaptation in companies



## INTERESTED IN COOPERATION FOR CLIMATE ADAPTATION?

The thriving ecosystem of NRW's adaptation sector also relies on international partners, companies and innovators to complement its portfolio. NRW is therefore always happy to engage in international collaboration.

Do you want to make your company fit for climate change? Do you offer solutions that can make climate adaptation a success? Or are you interested in getting in touch with companies in the adaptation industry from North Rhine-Westphalia? Then **visit us on our website via the QR-code below** and become part of the community or send us an email to: [netzwerk@klimaanpassung-unternehmen.nrw](mailto:netzwerk@klimaanpassung-unternehmen.nrw).

**The best way to get to know the vibrant and diverse adaptation sector in NRW is to come to our yearly 'Forum on Climate Resilience' in Düsseldorf as the biggest meetup for companies in the adaptation sector!**



# FORMATION OF AN ADAPTATION SECTOR FOR A CHANGING CLIMATE

Without a doubt, the transition to a sustainable and resilient future is one of the most urgent challenges of our time. As this necessity for adaptation to climate change grows, so does the demand for adaptation solutions, offering high economic potential. The adaptation sector is the emerging industry offering these solutions. It covers products and services to prevent or mitigate potential damage and to strengthen resilience to actual and expected climate impacts.

Number of employees in the adaptation sector of North Rhine-Westphalia in 2021. Calculations based on the Envigos-model of Prognos AG



Climate change is already impacting most areas of life in Germany and North Rhine-Westphalia. **Heat, drought, heavy rains, river floods and storms** affect

the human life and the environment through a multitude of interrelationships and interdependencies. They cause direct damages (for example to buildings and infrastructures), but also lead to more indirect impacts on health and to reduced yields and increased susceptibility to pests in agriculture and forestry. These consequences of climate change make adaptation indispensable in addition to preventive climate protection.

North Rhine-Westphalia (NRW) is not only a **front-runner in the development of adaptation products and services** but also in defining and measuring this segment of the economy.

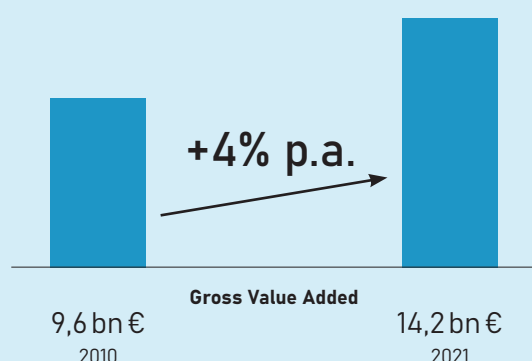
In NRW, the number of companies offering climate change adaptation products and services is **particularly high**, accounting for 2 percent of the total economy (measured by gross value added). Every 5th euro generated from the adaptation sector in Germany is generated in NRW.



# THE ADAPTATION SECTOR YIELDS A TRIPLE BENEFIT FOR THE ECONOMY, ECOLOGY AND SOCIETY

The adaptation sector in NRW is a strong and diverse industry with a triple economic benefit for society: its growth rate in gross value added significantly exceeds the annual growth rate of the economy as a whole, it is a stable and growing provider of jobs and lastly, it provides environmental benefits that lead to significant cost reductions at multiple levels.

## GROSS VALUE ADDED THROUGH NRW'S ADAPTATION SECTOR

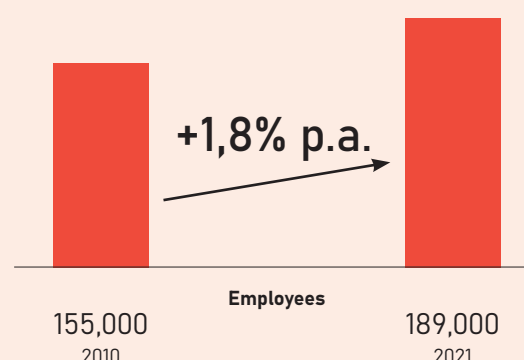


In 2021, the adaptation sector accounted for 14.2 billion euros gross value added in NRW and around 2 percent of the federal state's gross value creation. Between 2010 and 2021 the added value of the adaptation sector in NRW grew **by 4 percent annually in comparison to 2.7 percent of the overall economy**.

Activities in the sub-sector of energy efficient and resilient buildings play the most important economic role.

## EMPLOYEES IN NRW'S ADAPTATION SECTOR

In 2021, around 189,000 people were employed in the adaptation sector in NRW, compared with around 150,000 in 2010. The number of people employed in the adaptation sector thus **grew by 1.6 percent per year**. At the same time, the total number of employed people in NRW grew by only 1.2 percent. **Even in the years of the COVID pandemic**, the growth of the adaptation sector continued, proving its resilience to crises and its contribution to societal well-being.



In addition to its socioeconomic effects the adaptation sector also provides **environmental benefits**. This can be expressed in many ways, such as through the benefits for health and water management of urban green spaces or the avoided damage after climate-change related extreme weathers. It is not yet possible to quantify these benefits across the board.

However, a number of quantifiable examples already show that the benefits are enormous. For instance, in North Rhine-Westphalia, climate-resilient reforestation, sponge city concepts, health care and occupational safety can save **more than 380 million euros** annually. These effects were first quantified in the „Green Economy Report“ North Rhine-Westphalia 2022.

# “ADAPTECH MADE IN NRW” PROVIDES SOLUTIONS WORLDWIDE

The economic strength of NRW's adaptation sector is also visible through its export activities worldwide. Between 2010 and 2021, the annual export volume of adaptation products from NRW rose from 2.3 to 3 billion euros. The adaptation sector is thus a growth stimulus for export making up 1.5 percent of NRW's foreign trade.

The adaptation sector in NRW achieved an impressive annual **growth rate of 2.7 percent** between 2010 and 2021. This growth rate exceeds not only the overall export dynamics of North Rhine-Westphalia, which was 2.2 percent, but also that of the entire German adaptation sector, which also recorded a growth of 2.2 percent during the same period.

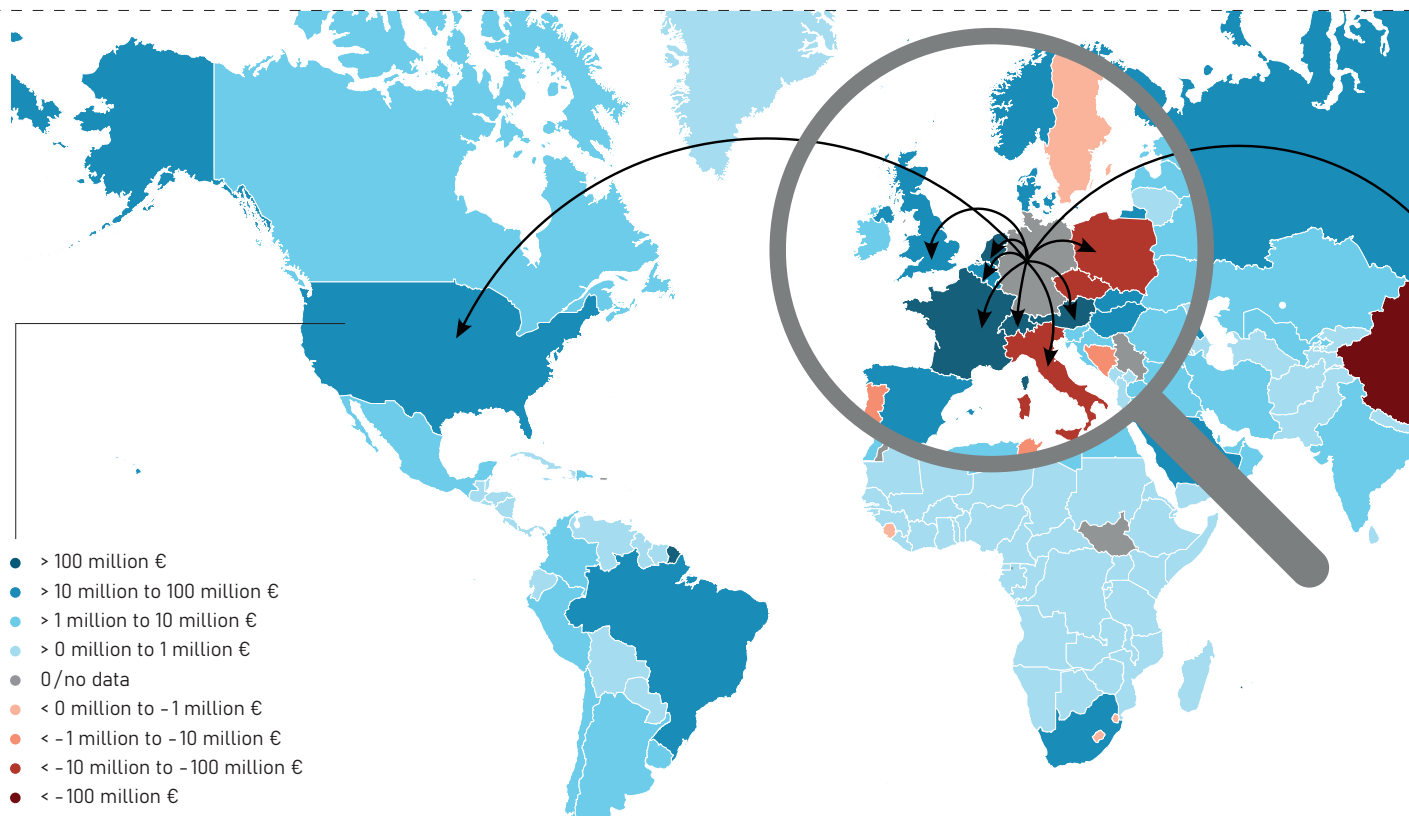
A significant portion of these export products comes from two main subsectors: **Energy-efficient and**

**resilient buildings and Infrastructure for water, waste water and flood protection.**

Together, these subsectors account for more than one-third of exported products valued at **approximately 3 bn euro** in 2021. The strongest growth in exports is seen in the subsector of products promoting climate-resilient land use, agriculture and forestry. This subsector **grew by about 5 percent** annually between 2010 and 2021.

## GLOBAL TRADE BALANCE OF GOODS FROM THE ADAPTATION SECTOR WITH NRW

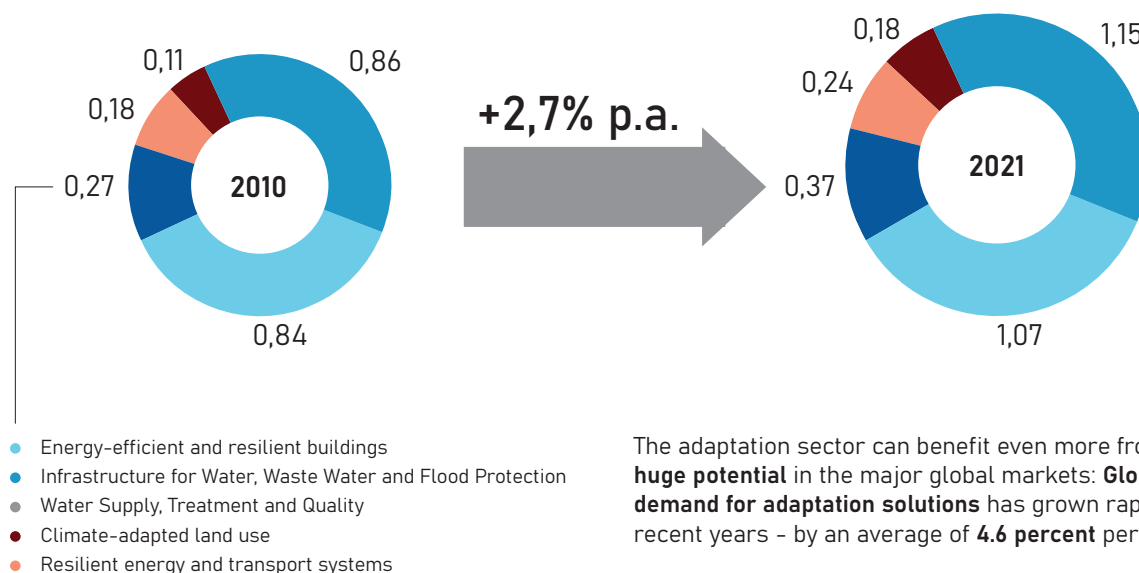
A net positive trade balance shows that exports from NRW into the respective country are bigger than the imports that NRW receives from the country.





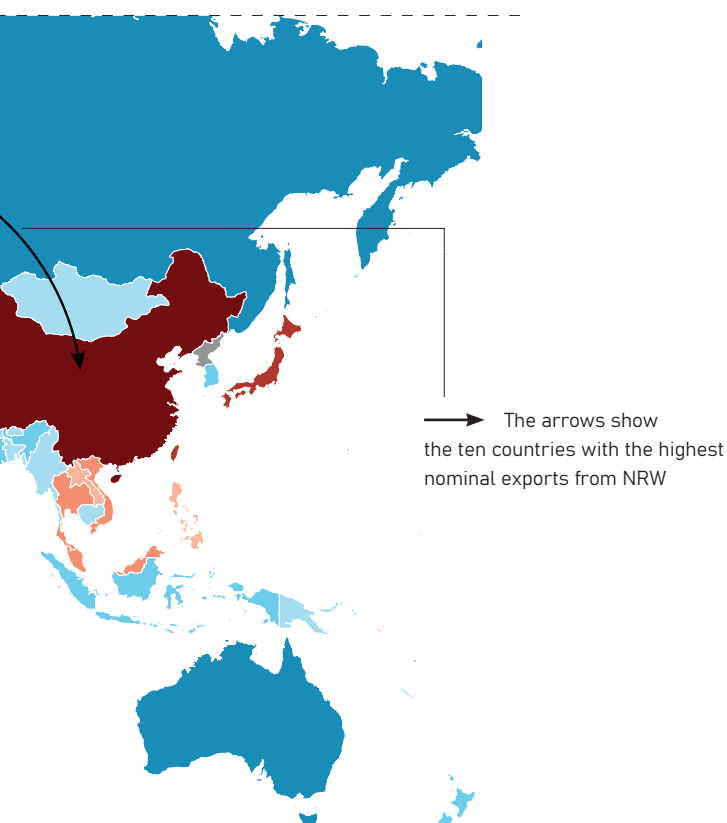
## EXPORT VOLUME OF NRW'S ADAPTATION SECTOR AND AVERAGE ANNUAL GROWTH RATE

Export volume of NRW's adaptation sector and average annual growth rate over the last decade in bn. euros. Calculations based on the Envigos- and the Global Trade Model of Prognos AG



The adaptation sector can benefit even more from the **huge potential** in the major global markets: **Global demand for adaptation solutions** has grown rapidly in recent years – by an average of **4.6 percent** per year.

The USA is currently the biggest import nation for adaptation-related goods on the global market with a share of around **20 percent of global imports**. NRW exported a total of 160 million euros worth of adaptation-related products to the USA in 2021, with an annual average **growth rate of about 4.4 percent** in the last decade.



### EMERGING MARKETS IN ADAPTECH

Besides the established global markets from industrial countries, there are a lot of markets from developing or emerging countries visible in the trade data from the last decade. These are mostly countries with a high vulnerability to climate change (e.g. due to sea level rise or increased probability and intensity of floodings) combined with a rapid increase in population, predominantly from the South-East Asian regions. This holds especially true for imports into **India** (+9 percent p.a.), **Viet Nam** (+9 percent p.a.) and **the Philippines** (+17 percent p.a.). Additionally, some European markets, albeit small, are also growing rapidly – Ireland (+12 percent p.a.) and Hungary (+11 percent p.a.) being the most prominent examples. It is generally to be expected that **the demand for adaptation-related goods and services will be increasing further in the coming years**. This holds especially true for countries with a below-average preparedness for the impacts of climate change.

# IMPRINT

## Responsible

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