

## INHALTSVERZEICHNIS

1. GREEN TRANSITION IN EUROPEAN INDUSTRIAL CITIES .....	3
2. SOLINGEN: CURRENT SITUATION .....	3
3. EXISTING STRATEGIES AND POLICIES .....	6
4. PROBLEM IDENTIFICATION .....	12
5. VISION .....	15
6. MAIN INTEGRATION CHALLENGES.....	15
7. TESTING ACTIONS IN SOLINGEN / THE BERGISCHE CITY TRIANGLE .....	16
8. STRATEGIC OBJECTIVES.....	20
9. AREAS OF INTERVENTION .....	20
10. SPECIFIC OBJECTIVES .....	21
11. INTERVENTION LOGIC .....	22
12. ACTION .....	23
13. INTEGRATED APPROACH.....	25



## 1. GREEN TRANSITION IN EUROPEAN INDUSTRIAL CITIES

The URBACT In4Green network aims to empower and build the capacity of local actors in industrial areas to overcome the barriers that prevent the transition to greener economies while remaining competitive and inclusive cities.

The overall challenge that the In4Green network seeks to address is the green transition in small and medium-sized European cities with an industrial past. This is a significant challenge, as these areas face obstacles in adopting more sustainable practices due to their reliance on traditional industries and lack of resources.

However, it is crucial to include these cities in the transformation towards a greener economy. They contribute significantly to the economic development of their territories and represent an important part of EU employment and GDP.

The green transition can be an opportunity to revitalise these areas, improve the quality of life of residents and reduce pollution. To achieve this, it is necessary to equip public authorities with the right tools and provide training for industrial actors. Additionally, it is also essential to involve all stakeholders and civil society in the development and implementation of local green transition policies.

Collaboration and networking are key to overcoming challenges and moving towards a more sustainable future. Modernising industries and improving urban management are key elements in this process. Only through the joint efforts of all actors involved will we be able to lead the transformation towards a more efficient and environmentally friendly economy, ultimately enhancing the quality of life of our communities.

In summary, the green transition in industrial cities is essential to achieve sustainable development. Despite the challenges, these areas have much to gain by adopting more sustainable practices and promoting innovation. Working together, we can drive positive change and turn these cities examples of success in the transition to a greener economy.

## 2. SOLINGEN: CURRENT SITUATION

Together with Remscheid and Wuppertal, Solingen –Bergisches Städtedreieck (bergisch city triangle) is located in a traditional craft and industrial region, a "workshop region in the countryside" representing almost 650,000 inhabitants: Wuppertal: 360,000, Solingen: 165,000, Remscheid: 115,000. The central location of the three cities in Germany and in Europe is economically promising – between the Rhine and the Ruhr and, on a European scale, at the intersection of the growth axes between north and south, west and east. Within a radius of 30 to 50 km are metropolises such as Düsseldorf and Cologne, Essen and Duisburg. The nearest international airport (DUS) can be reached in less than 30 minutes.

The fact that Solingen is an old industrial city is hardly noticeable in the cityscape: The city is green, its residential value high. However, visitors will look in vain for a historic city center. Instead, Solingen is a kaleidoscope of small-town centers and rural farmsteads on a few ridges that grew together along the arterial roads and were only consolidated by the Prussian state in 1929 in the course of a municipal reform.

In between are stream valleys, which were never completely cultivated and today structure the city area as green lungs. To the east and south, the forested and rugged Wupper Mountains frame the city.

### Population Statistics and Demography:

Solingen has a population of approximately 165,000 residents ([status 2022](#)). A demographic challenge looms, as forecasts predict a population decline of 1,700 by 2040. This decline is primarily driven by a decrease of 11,000 residents aged 20–66, partially offset by an increase of 8,800 residents over 67. The aging population presents challenges for workforce availability and urban services planning.

The gender distribution in Solingen is relatively balanced, with 80,854 males (49.1%) and 83,955 females (50.9%). The aging trend is more pronounced among women, with 56.7% of residents over 64 years being female. Meanwhile, younger age groups show a slight male majority, as 51.4% of those under 16 are male.

Solingen is home to a diverse population, with 38.88% of residents having a migrant background. The largest communities include people of Turkish (7.1%), Polish (6.0%), and Italian (5.4%) descent, followed by smaller communities from Syria, Ukraine, Greece, Russia, Bulgaria, and Serbia. This diversity brings both opportunities and challenges in terms of social inclusion and workforce integration.

### Industrial and Economic Composition:

Solingen's economy has strong roots in manufacturing, particularly in cutlery and metalworking industries. The business structure is predominantly medium-sized, the level of education of the employees high. Despite structural changes, over 90% of Germany's cutlery companies remain in Solingen, contributing 21% of total manufacturing sales. New industries, such as automotive supply and surface technology, have emerged. The employment sector remains heavily service-oriented, with 72.6% in services and 27.3% in manufacturing.

The city's economic performance is strong, with a GDP per capita of €34,246 (2021), slightly below the NRW regional average of €41,440. Disposable income per capita in Solingen stands at €24,263 (2020), above the NRW average of €23,093. The retail-relevant purchasing power per capita is €7,442, which is slightly higher than the NRW benchmark of €7,391, indicating stable consumer spending.

Solingen hosts a total of 11,397 companies as of 2024, with a notable 27.3% engaged in manufacturing. The city's workforce consists of 53,131 employees (June 2023), with 47.6% of them being female. The total industrial revenue for Solingen in 2024 is projected at €2.312 billion, underscoring the city's economic resilience and industrial strength.

Educational attainment levels in Solingen reflect a strong foundation for workforce development. Among the male population, 30.4% have attained higher education qualifications, while 25.3% of females hold similar degrees. A significant portion of the population has completed secondary school (37.0% male, 38.2% female), while intermediate school graduates account for 21.0% of men and 24.9% of women. However, around 11.6% of males and 11.5% of females have no formal qualifications, highlighting the need for continued efforts in vocational training and education programs.

### Social Challenges and Inequality:

The city faces a range of social challenges, including ensuring equitable access to training and employment opportunities. Approximately 38.88% of the population has a migrant background, with notable communities from Turkey, Poland, and Italy. Educational attainment varies, with over 30% of males and

25% of females holding higher education qualifications, though a segment of the population lacks formal qualifications.

#### **Location and Territorial Context:**

Solingen and the region of the bergisch city triangle are one of the oldest industrial regions in Europe. Main sectors are cutlery and blade production, automotive, metal industry and galvanic industry: Solingen has been the heart of the European cutlery industry since the Middle Ages. Solingen's economic structure has changed in recent decades; the cutlery industry is no longer as important as it was in the 1950s: But: more than 90 percent of the companies in the cutlery and flatware industry are still located in Solingen. In Solingen today, it makes up an important branch of the economy, accounting for 21 percent of total manufacturing sales. The Industrieverband Schneid- und Haushaltswaren e. V. (Industrial Association for Cutlery and Household Goods) is also based in Solingen. So, the city is still the "blade city" of Germany.

Over the decades, however, other industries have been added, most notably automotive supply and electroplating. Among other things, car rims, vehicle accessories, mechanical engineering products, high-quality men's clothing, umbrellas and gummy bears also come from our city today. Around 150 companies can be assigned to the electroplating industry in Solingen, making the city a significant location for the industry nationwide. In addition, the city has been home to the Institute for Galvanic and Surface Technology (IGOS) since 1993, whose services include consulting and advanced training, coating and damage analysis, and corrosion testing. The largest representatives of the automotive supply industry in Solingen are, for example, the companies Accuride (formerly Kronprinz) or BIA Kunststoff- und Galvanotechnik (galvanization technology). The latter is now the largest private employer in the city. Wilkinson Sword, the second largest wet shaving manufacturer after Gillette, maintains a plant or its German headquarters in Solingen; the city is also home to Germany's largest Haribo plant.

Situated in the Bergisches Städtedreieck, Solingen benefits from a strategic position between the Rhine and Ruhr metropolitan regions. Well-connected by road and rail, it is close to major hubs such as Düsseldorf and Cologne. The cityscape is characterized by green spaces and valleys, contributing to its high residential value.

#### **Air Quality and CO2 Emissions Context:**

Solingen has made significant strides in reducing greenhouse gas emissions, with current per capita emissions at 5.3 tonnes CO2 equivalent. In 2020, greenhouse gas emissions by sector were distributed as follows: economy (40%), households (38%), traffic (18%), communal facilities (3%), and communal transportation (0.3%). Efforts to shift from heating oil to natural gas have contributed to emission reductions.

Renewable energy plays a key role in Solingen's sustainability efforts. Photovoltaic systems are the strongest growing source of renewable electricity, currently accounting for almost 50% of renewable energy production. Regarding heat generation, 64% of renewable heat comes from biomass, while the share of environmental heat is continuously increasing, representing a major area of potential growth. However, the contribution of solar thermal energy remains low and has seen little increase in recent years.

### 3. EXISTING STRATEGIES AND POLICIES

#### CITY LEVEL

Solingen has implemented a range of strategic policies to ensure sustainable urban and economic development. The **Sustainability Strategy**, adopted in 2018, integrates ecological, economic, and social goals to guide the city toward a greener future.

#### INFO BOX: SUSTAINABILITY STRATEGY SOLINGEN

The city's overall strategic work culminated in 2018 in the adoption of the Sustainability Strategy Solingen, which was developed over two years as part of a state-wide model project "Globally Sustainable Municipality" in a broad dialogue and work process with many participants from administration, city and civil society, business, science and politics. The council of the city of Solingen unanimously adopted this strategy and the programme of measures developed for it, thus creating the basis for a long-term commitment to work on this city-wide orientation. To this responsibility they were committed locally and globally, adapting and 'translating' the SDGs to the municipal level. The strategy focuses on the year 2030 and defines deliberately ambitious and concrete goals: It describes a desired vision of the future - pointing the way for the people of Solingen and for Solingen's partners in the world.

The Solingen Sustainability Strategy consists of two parts:

The overall concept (Part 1) explains the project framework in NRW and Solingen and the target system: **guidelines, strategic and operational goals** in the six prioritized fields of action. The fields of action are (1) **societal participation**, (2) **natural resources and environment**, (3) **climate and energy**, (4) **mobility**, (5) **labour and economy**, (6) **global responsibility and 'One World'**. Part 2 contains the more detailed programme of measures for the Solingen sustainability strategy, where the six fields of action are split up into more concrete policies.

The organizational and content-related **project coordination** is located directly in the office of the Mayor, in the Department of Strategic Planning (Strategy Area Sustainable Development), and is supported by the City Service Human Resources and Organization. In addition to this central anchoring, the very close coordination and explicit backing of the Mayor was and is also decisive for the development process.

A key component of Solingen's economic transformation is the **Masterplan "Work and Economy" (2023)**, which seeks to secure long-term economic prosperity while ensuring responsible land use. The master plan is intended to implement the strategic "Goal 3.2 of the Sustainability Strategy", which refrains from reclaiming unsealed open spaces for commercial use from 2030 onwards.

In addition, Solingen.Business is developing specialized campuses to foster innovation and economic growth. The **Change.Campus** focuses on circular sustainability, smart production, and new mobility, providing space for creative industries and future technologies. The **3D Startup Campus NRW** supports 3D

printing, Augmented Reality (AR), and Virtual Reality (VR), offering modern infrastructure and networking opportunities. The **International Business Center Solingen (IBCS)** facilitates international business relations, helping foreign companies establish themselves in Solingen while supporting local firms in global expansion.

These campus initiatives complement the **Masterplan "Work and Economy"**, which prioritizes the transformation of existing industrial areas into sustainable and innovative business zones. By integrating the campuses into this strategy, Solingen aims to create a future-oriented economic ecosystem that balances industrial heritage with modern, resource-efficient development.

#### INFO BOX: MASTERPLAN "WORKD AND ECONOMY"

The Masterplan sets a clear direction for the future development of Solingen's business areas.

The aim is to use the land in a resource-saving manner, among other things by reactivating brownfield sites. By 2025, up to two hectares of brownfield land are to be reactivated annually on the basis of an updated brownfield land register. The aim of the master plan is thus to show ways in which the economic development of companies is at least partially decoupled from the new use of open space.

For this reason, the masterplan not only focused on which site-relevant changes are planned in the near or medium future, but was also intended to bring to light alternative offers or novel approaches to land saving potential in existing buildings. Activities relating to greater **energy efficiency, sustainable use in existing buildings or future work processes** that can have an impact as good practice were also surveyed.

For individual industrial estates and development areas, approaches were developed with regard to the **future profiling as commercial locations** or sustainable, future-oriented development. The recommendations are based on urban planning and functional analyses of the site areas. The results are intended to promote the realisation of urban planning qualities and to ensure the functional preservation of commercial locations in terms of sustainable development. By fostering **circular economy practices**, supporting **energy-efficient building upgrades**, and enhancing **public transport connectivity**, Solingen aims to create future-proof business environments that align with climate protection goals while maintaining economic competitiveness.

Alongside this, the **ISEK Urban Development Concept (2019)** aims to revitalize the city center through sustainable urban planning, focusing on enhanced public spaces, green infrastructure, and improved mobility.

The city is also focusing on sustainable transport with its **Integrated Mobility Concept (2024)**, designed to reduce carbon emissions by promoting public transport, cycling, and electrified mobility solutions. The **Electromobility Strategy (2019)** further supports these efforts by encouraging the adoption of electric vehicles and related infrastructure development.

Institutionally, the city administration plays a leading role in implementing these strategies. It works closely with organizations such as **Solingen.Business**, the **Urban Development Institution**, and regional

actors like **Neue Effizienz**. Strong collaboration with universities and research institutions further strengthens these efforts, ensuring that evidence-based policies drive the city's sustainability and economic transformation.



## REGIONAL INITIATIVES

There are no regional strategic frameworks in place that target explicitly industrial transformation. However, a number of regional initiatives and cooperation mechanisms exist that are presented in the following.

### **Neue Effizienz gGmbH (New Efficiency, non-profit company)**

The Neue Effizienz are a non-profit think tank for sustainable transformation in the Bergisch city triangle. The core task is the cooperative design of transformation processes in the region. Neue Effizienz focuses on the topics of circular economy, energy transition, mobility transition and competence development. As an institution for research and knowledge transfer, its focus is on interdisciplinary approaches to business, municipal and institutional structures and the transformation of entire urban societies. Its claim is the holistic change of decisions and implementation. Neue Effizienz brings together project partners with different strengths to form a target-oriented consortium, usually using available funding opportunities.

Summary of current projects on the circular economy:

Bergisch.kompetenz (EFRE) // CE:Fire (EFRE) // Stotic (EFRE) // bergisch.circular (federal ministry of education and research) // Circular Insights (state ministry of environment) // Circular Office (EFRE) //

### **The Bergische Gesellschaft (for economic structure promotion)**

The Bergische Struktur- und Wirtschaftsförderungsgesellschaft mbH (BSW) works on three topics in a regional context in the so-called Bergisch city triangle – Remscheid, Solingen and Wuppertal: economic development, structural development and tourism.

The BSW's areas of responsibility include the organization of support for the regional corporate landscape, especially for automotive suppliers and mechanical engineering, the development of contemporary structural projects with special consideration of mobility, the implementation of projects to promote tourism, regional marketing as well as labour market and employment promotion and, last but not least, supra-regional, political cooperation in order to make the region visible for external funding.

Moreover there have been established the following coordination groups and regional concepts.

31 small and large mechanical engineering companies have joined forces in the **Mechanical Engineering Network Bergisch Land - Cooperation of Mechanical Engineers** (as of August 2022). From small businesses to companies with 250 to 1000 employees, from the mechanical engineering, metal processing, special machine construction and toolmaking industries. Mechanical engineering in the Bergisch region is a highly specialized industry - one of the most important economic sectors in the region. The network aims at strengthening the future viability of companies – among other things through the exchange of information and skilled workers, joint training of young talents and joint marketing. In addition, the entrepreneurs become lecturers: Together with the University of Wuppertal, they have developed the lecture series "Special Mechanical Engineering" in order to attract new skilled workers to the region. Two

to three network meetings are held annually, which are open to all interested parties and give the opportunity to present their own company to one of the members as hosts.

**bergisch.metall** is a regional network that connects companies from the metal industry in the Bergisches Land region of Germany. It fosters collaboration, innovation, and knowledge exchange among businesses, research institutions, and industry experts. The network supports its members through joint projects, events, and initiatives aimed at strengthening the competitiveness and future viability of the regional metal industry.

The **Kommunale Arbeitsgemeinschaft Bergisch Land e.V.(KAG)** is a voluntary merger of the cities of Leverkusen, Remscheid, Solingen and Wuppertal as well as the district of Mettmann, the Oberbergischer Kreis and the Rheinisch-Bergischer Kreis. At the beginning of April 2019, they signed a cooperation agreement about the future of the Bergisches Land. The KAG sees itself as a political interest group that wants to position itself clearly vis-à-vis the federal and state governments – across party lines. As a regional Bergisch alliance, it makes the region more visible and powerful. The management of KAG was transferred to the Bergische Struktur- und Wirtschaftsförderungsgesellschaft mbH.

The Bergisches Städtedreieck, the cities of Düsseldorf and Leverkusen, the district of Mettmann with its towns belonging to the district as well as four neighbouring towns to the south of the districts of Ober-Berg (Hückeswagen) and Rhein-Berg (Leichlingen, Burscheid and Wermelskirchen) have jointly developed an "**Integrated Regional Mobility Concept (IRM)**" for regional public transport - especially rail-bound - and cycling. After all, mobility development only makes sense regionally, tying the big cities and the surrounding areas together. Together with all relevant actors and stakeholders, the existing plans and concepts and those currently being set up have been put together in order to uncover infrastructural needs on the one hand and to develop new mobility options on the other. The IRM shows the further development of regional networks for cycling and public transport by rail and road – integrated with aspects of urban development. The aim is to provide commuters with more effective everyday mobility in the future. The IRM is an "orientation framework" for municipal projects related to mobility and their meaningful linking with neighbouring projects. It is an "argumentation framework" for funding opportunities and offers approaches for follow-up projects.

In the **Bergischer Rat (Bergisch Council)** representatives of the three city councils of Solingen, Wuppertal and Remscheid come together on a regular basis to coordinate on questions of socio-economic regional development. An example of regional cooperation in this institution was a conference on "Flood Protection and Climate Impact Adaptation in the Bergisch City Triangle" organized with experts of hydrology a year after the floodings of summer 2021 that left all three cities affected.

## NATIONAL LEVEL

Germany has established a strong policy framework to promote the circular economy, focusing on resource efficiency, waste reduction, and sustainable production. The **German Circular Economy Act (KrWG)** serves as the legal foundation, emphasizing the waste hierarchy—prevention, reuse, recycling, and recovery. The **National Circular Economy Strategy**, currently under development, aims to align with the EU Circular Economy Action Plan, fostering innovation in sustainable materials, eco-design, and closed-loop production. Additionally, sector-specific initiatives, such as the **German Resource Efficiency**

**Programme** (ProgRes) and support for industrial symbiosis, strengthen the transition toward a low-carbon, resource-efficient economy.

## EUROPEAN AGENDA

At the European level, the **Pact of Amsterdam**, which establishes the **Urban Agenda for the European Union**, does not mention industry directly. However, many priority themes are linked to the industrial sector, in fact most of them are: Air quality, Circular economy, Jobs and skills in the local economy, Energy transition, Sustainable use of land and Nature-Based solutions, Urban mobility, and Digital transition.

The **European Union Cohesion Policy** is a set of funds aimed at supporting regional development and economic cohesion in the EU Member States. The policy is based on the principle that all EU citizens, regardless of where they live, should have access to the same economic and social opportunities.

Cohesion policy has been used to support a wide range of industry-related projects, including:

- The construction of industrial infrastructure, such as factories, ports and airports.
- Funding for industrial research and development.
- Supporting industrial innovation.
- Promotion of industrial cooperation between European companies.
- Helping small and medium-sized enterprises (SMEs) to access financial markets and technical assistance.

Cohesion Policy has had a positive impact on the EU's industrial sector. It has helped to create new jobs, increase investment and improve the competitiveness of European companies. Cohesion Policy has also helped to reduce regional disparities in the EU by providing stronger support to regions lagging behind.

Today, Cohesion Policy is being reoriented to focus on the challenges of the green and digital economy. The policy is being used to support European businesses to adapt to the transition to a more sustainable and digital economy. Cohesion Policy is also being used to support European regions most affected by the COVID-19 pandemic.

The **European Green Deal** is a European Union policy initiative that aims **to make the EU the first climate-neutral continent by 2050**. The Green Deal focuses on a number of areas, including energy, mobility, agriculture and industry. In the field of industry, the Green Deal sets out a number of targets, including:

- Reduce greenhouse gas emissions from industry by 40% by 2030 and 80% by 2050.
- Promote the development of clean and innovative technologies in industry.
- Increase energy efficiency in industry.
- Reduce the EU's dependence on fossil fuels.
- Create new jobs in green industry.

The Green Deal is an ambitious initiative, but it is necessary to tackle climate change and to ensure a sustainable future for the EU. Industry has a key role to play in the transition to a greener economy, and the Green Deal offers a number of opportunities for European industry to become a world leader in clean and innovative technologies. In this framework, the European Commission updated the **EU Industrial**

**Strategy** in 2022 to ensure that its industrial ambition takes full account of the new circumstances following the COVID-19 crisis and helps drive the transformation towards a more sustainable, digital, resilient and globally competitive economy.

**Small and medium-sized enterprises (SMEs)**, as the main innovation actors in the different ecosystems, must be taken into account in all actions carried out under this Strategy. This is reflected across the board in the increased focus on regulatory burdens for SMEs. New actions will greatly benefit SMEs and start-ups, whether through a strengthened Internal Market, reduced supply chain dependencies or accelerated green and digital transitions. The Strategy also includes some specific measures for SMEs, such as increasing resilience, tackling late payments and supporting solvency.

Across all these initiatives and policies the European Commission has identified the following **main challenges facing European industry**:

- **The transition to a greener and digital economy:** the EU is committed to achieving climate neutrality by 2050 and to being a leading digital economy. This will imply major changes for European industry, which will need to adapt to new technologies and forms of production.
- **Competition from other regions:** European industry faces strong competition from other regions, such as China and the United States. These regions are investing heavily in research and development, enabling them to develop new technologies and products.
- **Talent shortage:** European industry faces a shortage of skilled talent. This is due to a number of factors, such as an ageing population, low scientific literacy and a lack of investment in education and training.
- **Lack of investment:** European industry faces a lack of investment. This is due to a number of factors, such as the 2008 financial crisis, legal uncertainty and lack of public funding.

#### 4. PROBLEM IDENTIFICATION

Solingen faces multiple challenges in its transition to a greener, more sustainable economy. The city is undergoing an industrial transformation that requires significant adaptations in production processes, workforce skills, and policy frameworks. Solingen has set strategic goals for 2030, focusing on employment, sustainable business practices, land use and economic modernization. One of the primary concerns is supporting local businesses, particularly small and medium-sized enterprises (SMEs), in adopting cleaner and more energy- and resource-efficient production methods. Many companies in Solingen recognize the need for sustainability but lack the technical expertise, financial and personnel resources, or strategic guidance to implement these changes effectively.

#### LOCAL STRENGTHS AND OPPORTUNITIES

Solingen benefits from several local strengths that provide a solid foundation for achieving its transformation goals:

- **A growing ecosystem for transformation:** The city hosts a **strong network of institutions** supporting sustainable economic change, including Solingen.Business, the Start-up Support Center (GuT), coworking spaces, and an integrated sustainability and climate protection unit. These are further strengthened by broad participatory processes and collaboration with regional

partners such as Neue Effizienz, climate protection offices, universities and the regional chamber of commerce.

- **Strong political will and municipal support:** The city government is actively engaged in promoting sustainability and has committed to explicit support for policies that facilitate economic and industrial transformation (status 01/2024 – elections of the lord mayor in September 2025).

## LOCAL CHALLENGES AND WEAKNESSES

Despite these strengths, Solingen faces notable challenges in its sustainability transition:

- **Structural transformation from a metalworking city** to a digital and service-oriented economy: Traditional industries must adapt by adopting new **business models, digital solutions, and circular economy practices**.
- **Industry needs support** in implementing sustainability goals: Most businesses require **guidance, financial incentives, and expertise** to transition towards greener and more sustainable and circular operations. This includes modernizing industrial areas with eco-friendly infrastructure and securing skilled workers for industries undergoing transformation.

## LOCAL PRIORITIES

To address these challenges and leverage existing opportunities, Solingen will prioritize the following areas:

- **Transforming into a sustainable industrial city:** The city aims to **reduce carbon intensity**, improve the quality of life, and create structured pathways for the transformation of industrial areas in a circular way.
- **Strengthening connections between businesses and institutions:** By expanding **support services for companies** and ensuring they are aware of and can access available resources, Solingen will facilitate a more seamless integration of sustainability initiatives into industrial and economic development.

## ULG STAKEHOLDER LIST

To ensure a productive and efficient work setting, a size of about 12 representatives is aspired. The original target structure of the ULG has been amended to include more company / entrepreneurial representatives and less institutional representatives. Additionally, other stakeholders have been identified after the application process, with major interest in the green transformation. Acquisition of members for ULG has been started partially and will only pick up momentum in October 2023. Possible members who have been considered for participation are listed below (the final members of the ULG are highlighted in **bold green**):

### Potential institutional representatives:

- **Solingen.Business: local business development agency**
- Gründer- und Technologiezentrum Solingen: Business incubator and technology center – consulting for start-ups and young companies

- Bergische IHK: local chamber of commerce
- Smart City Board of the City of Solingen
- University of Wuppertal: Chair of Technology and Innovation Management
- University of Wuppertal: Institute for Technologies and Management of Digital Transformation
- University of Wuppertal: UNESCO Chair of Entrepreneurship and Intercultural Management
- CBS International Business School Campus Solingen
- SWS Stadtwerke Solingen: local public utilities company
- Coordinator's office for people with disabilities of the City of Solingen
- Zentrum für Transformationsforschung und Nachhaltigkeit (TransZent): Center for Transformation Research and Sustainability
- Equal opportunities office of the City of Solingen
- Stadtentwicklungsgesellschaft Solingen GmbH & Co. KG
- DGB local chapter: German Trade Union Federation (DGB), Solingen local chapter
- FGW Forschungsgemeinschaft Werkzeuge und Werkstoffe e. V.: Research Association Tools and Materials
- Wuppertal Institute for climate, environment and energy gGmbH

Potential business sector representatives:

- Mozart AG: cutlery & blades
- u-form Verlag – H. Ullrich GmbH & Co. KG: publishing
- Systemhaus Erdmann GmbH & Co. KG: information technology
- ROBUSO Stahlwarenfabrik Buntenbach & Sohn GmbH: cutlery & blades
- Windmühlenmesser-Manufaktur Robert Herder GmbH & Co. KG: cutlery & blades
- Brangs + Heinrich GmbH: packaging materials and solutions
- Moosbach & Kanne GmbH: metal surface galvanization
- Diefenbach Verpackungen GmbH: packaging materials and solutions
- Alfred Krohn GmbH: metal trading and container services
- Realer Wandel GmbH
- Industrieverband Schneid- und Haushaltswaren e.V.: Industry Association for Cutting and Household Goods producers
- STAHLWILLE Eduard Wille GmbH & Co. KG
- ZWILLING J.A. Henckels Deutschland GmbH
- Accuride Corporation
- Stadtparkasse Solingen
- Junior Economic Club (bergisch city triangle)

Over the years, many of the above-mentioned institutional actors have established a routinized relationship characterized by various joint projects. Some of the potential business sector members have been involved in voluntary sustainability networks of informal nature, were partners in research projects (EFRE / federal or state level) or have participated in programmes focusing on sustainable business practice. The list is not exhaustive.



## 5. VISION

Solingen aims to create a **less carbon-intensive economy** that fosters **resource efficient** innovation and leveraging its strong industrial heritage to transition toward a sustainable future.

The city will focus on fostering **strong collaborations** between businesses, educational institutions, and public authorities to support this transition toward sustainability. By embedding **circular economy** principles into local business practices, Solingen will reduce waste, improve resource efficiency, and create new economic opportunities.

## 6. MAIN INTEGRATION CHALLENGES

Solingen faces the challenge of implementing an integrated approach to sustainable urban and economic development. While some businesses have already begun integrating circular economy principles and digital transformation, many small and medium-sized enterprises (SMEs) still lack awareness, resources, and a clear understanding of how sustainability can enhance their competitiveness. Increased engagement from businesses in sustainability requires targeted communication strategies, best practice examples, and knowledge-sharing platforms that highlight the economic and operational benefits of green practices. Structured dialogue between sustainability pioneers and traditional industries, supported by industry associations and networks, can foster broader participation and gradual transformation.

Currently, the integration of economic, environmental, and social policies in Solingen is progressing but still requires strengthening. Collaborative efforts between businesses, policymakers, and research institutions are already in place, but more structured frameworks are needed to align sustainability goals with industrial and economic policies. Programs promoting cross-sector collaboration, funding incentives, and regulatory support can help advance this integration.

Collaboration between various actors, including businesses, institutions, and policymakers, is crucial for overcoming these challenges. It is important that existing plans and strategies are connected to leverage synergies and ensure long-term sustainability. Solingen should continue to foster a culture of dialogue and consensus, which has already contributed to the development and implementation of joint development plans and social agreements in the past. This integrated approach is supported by an interdisciplinary consideration of the challenges, involving all relevant stakeholders and avoiding duplication of efforts.

Regarding URBACT's cross-cutting themes, Solingen is actively addressing key aspects:

- **Green Transition:** The city prioritizes reducing industrial carbon footprints, enhancing resource efficiency, and implementing circular economy principles in its business districts.
- **Digital Transformation:** There is a growing emphasis on supporting SMEs in adopting digital tools to optimize processes, improve energy efficiency, and develop sustainable business models.
- **Gender Equality:** While economic development policies in Solingen ensure equal opportunities, further efforts are needed to actively promote gender diversity in traditionally male-dominated industries, such as manufacturing and engineering.

- **Inclusive Growth:** The transformation strategy aims to provide fair access to job opportunities across all social groups, ensuring that vulnerable communities also benefit from economic modernization.

To successfully navigate these integration challenges, Solingen will continue fostering collaboration between businesses, institutions, and policymakers while developing structured policies that align economic growth with sustainability and digital innovation.

## 7. TESTING ACTIONS IN SOLINGEN / THE BERGISCH CITY TRIANGLE

The philosophy of an URBACT network is to collaborate and identify possible solutions to a particular challenge. These solutions are developed into actions as part of an Integrated Action Plan. By including an opportunity for cities to test some of these solutions at a smaller scale before embarking on larger scale actions is an innovative way to bring about a culture change in city administrations.

To validate and refine the proposed approaches to sustainability and circular economy transformation, Solingen is implementing a series of **Testing Activities** that align with the overarching strategic objectives of the In4Green project. These activities aim to assess feasibility, stakeholder engagement, and practical implementation strategies before scaling up best practices city-wide.

### 1. Circular Economy Potential Service

The goal of this testing activity is to assess the **needs and potential for circular economy practices** among small and medium-sized enterprises in Solingen and the surrounding region. By identifying industry-specific challenges and opportunities, the city aims to develop tailored approaches to engage businesses in circular economy strategies.

To achieve this, Solingen will organize a series of structured discussions and engagement events to explore the specific challenges and opportunities for SMEs in adopting circular economy principles. Different methodologies will be tested, including individual interviews, group discussions, world cafés, and reverse brainstorming sessions. The objective is to determine which engagement format is most effective for gathering insights and facilitating meaningful discussions on circular business models, sustainable production processes, and innovative recycling strategies.

The initiative will target SMEs from Solingen and the Bergisches Städtedreieck, focusing on company decision-makers such as CEOs, sustainability directors, and technical managers. Neue Effizienz will be responsible for organizing and executing the events, including managing invitations, venue arrangements, and result analysis. Collaborating institutions, including the University of Wuppertal, the Wuppertal Institute, Solingen.Business, and SEG Solingen, will assist in designing questionnaires, facilitating discussions, and analyzing collected data.

The testing phase will run from **June to September 2024**, with multiple events scheduled, including a **World Café on June 17 in Wuppertal**, a **Group Discussion on June 18 in Solingen**, and additional sessions in August, September and October, both in-person and online.



To measure the effectiveness of this activity, an evaluation matrix will assess qualitative and quantitative aspects, such as the depth of discussions, the number and type of challenges identified, SME involvement levels, and the adaptability of cross-industry solutions. Participation rates and stakeholder engagement will also be key indicators of success.

## 2. Circular Economy Hackathon

The Circular Economy Hackathon aims to **develop innovative circular solutions for SMEs**, focusing on areas such as organizational structures, production, logistics, and design. The event will generate new business models and raise awareness of the circular economy's potential.

The approach consists of a three-day hackathon featuring interdisciplinary teams working on real-world SME business cases. Methodologies such as Design Thinking, the Sustainable Business Model Canvas, and the Circular Economy Toolbox will be utilized to facilitate structured problem-solving. The event will include an Input Day, where participants receive foundational knowledge, a Case Day dedicated to working on specific business challenges, and a Pitch Day where teams present their developed solutions.

The hackathon will engage four SMEs that present business cases, additional SMEs interested in the developed solutions, Circular Economy experts, students, young professionals, and trainees. Neue Effizienz will organize and coordinate the event. The goal of this testing activity is to directly **involve** small and medium-sized enterprises from the **metal sector** – who often face challenges in adopting circular economy principles due to complex supply chains, material constraints, and traditional manufacturing processes – in the hackathon so develop practical and scalable solutions tailored to their needs.

The hackathon will take place in **September 2024** in the Bergisches Städtedreieck, hosted at [Living Lab NRW](#), an innovation hub for research and education at the University of Wuppertal, Faculty of Architecture and Civil Engineering, on the subject of climate-neutral and sustainable building in the city. The event is designed to facilitate hands-on collaboration between SMEs, researchers, and young professionals, providing a dynamic environment for creative problem-solving.

To evaluate the success of this activity, structured feedback mechanisms will be implemented. Post-event questionnaires will be distributed to participants to assess their experience and perceived usefulness of the proposed solutions. Additionally, follow-up meetings with participating SMEs will be conducted to determine whether the solutions developed during the hackathon are feasible and applicable in their business operations. The level of engagement, the practicality of the business cases, and the extent of implementation of the developed solutions will serve as key success indicators.

## 3. Involvement of Politics

This activity is designed to **integrate political decision-makers** into the discussion on sustainable industrial areas and circular economy strategies. The objective is to ensure **policy alignment**, gain **political support**, and facilitate the **inclusion of sustainability aspects** in land-use planning.

The approach involves presenting ideas for the sustainable development of industrial sites in different municipal committees to incorporate sustainability criteria into the city's master planning efforts. Based on feedback from policymakers, additional measures will be developed to refine and strengthen sustainability initiatives in land-use planning. Key stakeholders involved include the Advisory Board for Sustainable Municipality Solingen and various municipal committees responsible for environmental and urban development issues.

The engagement with political stakeholders will take place in June 2024, with presentations scheduled for **June 20** at the Council Committee for Climate Protection, Environment, Mobility, and Housing, and on **June 24** at the Committee for Urban Development, Urban Planning, and Digitization. Additional sessions may be scheduled as required to ensure comprehensive discussions.

To evaluate the impact of this activity, internal feedback from committee discussions will be collected and analyzed. Key success factors will include the level of support from political representatives, the effectiveness of the presented arguments, and the integration of circular economy principles into urban planning frameworks. The identification of key political advocates and potential areas of resistance will also inform future policy engagement strategies.

#### 4. Circular Economy Skills

The Circular Economy Skills initiative aims to test various training and learning formats to build circular economy competencies among SMEs. This includes developing skills in business model innovation, material sourcing, sustainable design, supply chain management, and other relevant topics.

The initiative will explore different engagement formats, such as individual workshops, networking events, and expert-led input sessions, all tailored to meet SME needs. The topics covered will range from general circular economy principles to specialized subjects such as sustainable material sourcing and corporate sustainability reporting.

The initiative will involve ULG members, SMEs participating in funding projects of the state of North Rhine-Westphalia such as [CE:FiRE](#) (EFRE), [bergisch.kompetenz](#) (EFRE), [Circular Office](#) (EFRE), and [Fab.Region](#) (EFRE), along with science partners from the University of Wuppertal and the Wuppertal Institute. Circular economy experts will also provide input and guidance.

##### Planned events include:

- **Networking Event:** July & August 2024
- **General Circular Economy Input Events:** August 2024
- **Circular Economy Hackathon:** September 2024 (Wuppertal)
- **Specialized Topic Input Events:** August – October 2024
- **Workshops:** September – October 2024

To measure the effectiveness of this initiative, structured feedback will be gathered from participants through post-event evaluations, capturing their insights on the relevance and applicability of the content. Additionally, engagement levels will be monitored to assess SME participation and interest in further training opportunities. Follow-up discussions with internal project partners will help refine future training formats and ensure alignment with industry needs.

These testing activities play a **crucial role** in refining Solingen's circular economy and sustainability strategies. By experimenting with various engagement methods, training formats, and policy integration approaches, the city ensures that solutions are **practical, effective, and aligned with business needs**. The

results will inform future **scalability, stakeholder collaboration, and long-term implementation strategies**, making Solingen a leader in sustainable industrial transformation.

## 8. STRATEGIC OBJECTIVES

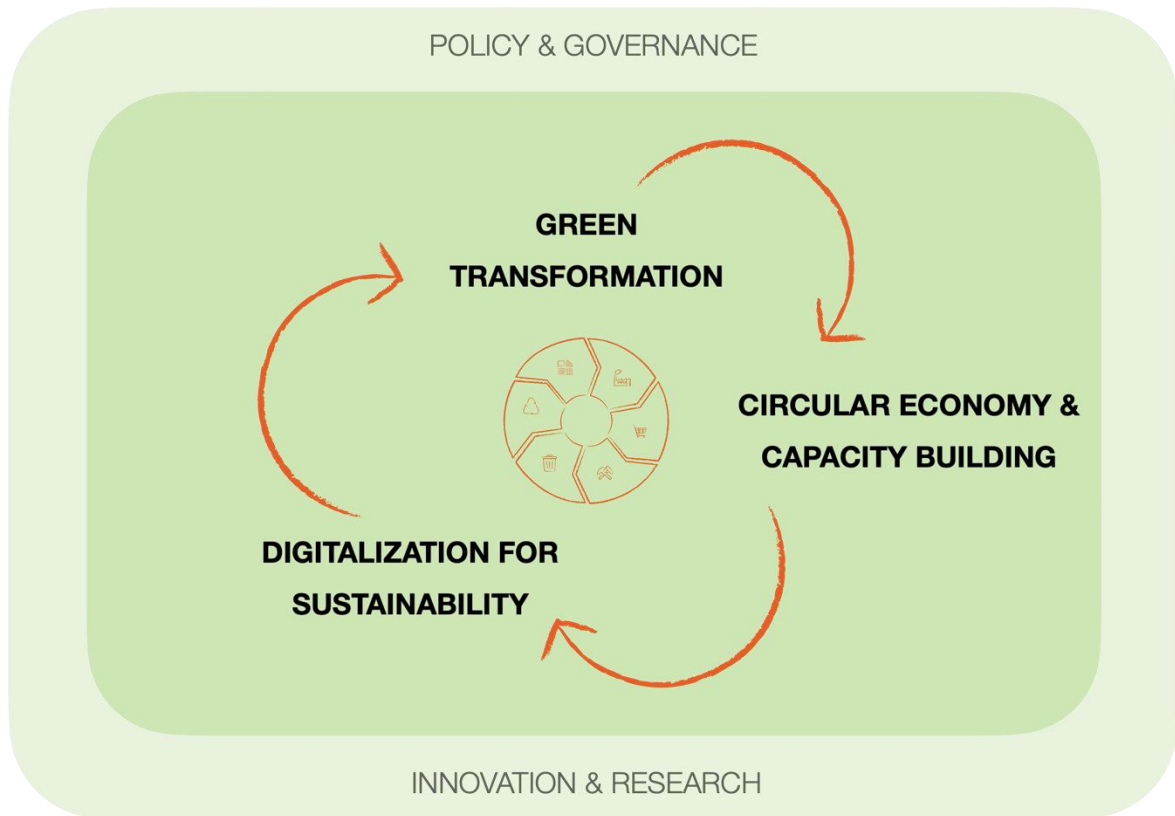
To achieve Solingen's vision of a sustainable and innovative industrial transformation, the city has identified the following strategic objectives:

1. **Fostering Decarbonizing the local industry:** Supporting businesses in adopting environmentally friendly technologies and renewable energy.
2. **Promoting Circular Economy in Industrial Areas:** Ensuring that industrial areas are designed through circular economy principles, energy efficiency measures, and digital innovations.
3. **Circular Economy and Sustainable Business Practices:** Encouraging companies to adopt circular economy models, supply chains and production techniques.
4. **Enhancing Workforce Skills and Employment Opportunities:** Developing training programs that align with the needs of the circular economy and securing skilled workers.
5. **Strengthening Collaboration Between Public and Private Sectors:** Creating stronger ties between businesses, research institutions, and public agencies to drive sustainable growth.

## 9. AREAS OF INTERVENTION

To support these objectives, Solingen's action plan will focus on the following key intervention areas:

- **Green Transformation of Industrial Zones:** encouraging the adoption of renewable energy sources, Implementing sustainable infrastructure projects, energy-efficient renovations, and green business initiatives.
- **Circular Economy & Capacity Building:** Encouraging companies to adopt circular economy models, sustainable supply chains, and eco-friendly production techniques; training programs and workshops; advisory services for SMEs; establishing business networks for knowledge exchange on circular inventions.
- **Digitalization for Sustainability:** supporting the integration of AI and IoT solutions to optimize industrial processes
- **Policy & Governance:** Strengthening governance structures, developing policy framework to support circular economy initiatives, fostering policy alignment between economic and environmental goals.strengthening public-private partnerships
- **Innovation & Research:** Supporting pilot projects, fostering collaboration between businesses and research institutions, and investing in circular economy innovations.



## 10. SPECIFIC OBJECTIVES

The following specific objectives were identified:

GREEN TRANSFORMATION	CIRCULAR ECONOMY & CAPACITY BUILDING	DIGITALIZATION FOR SUSTAINABILITY
Increase solar energy production for electricity and heating	Increase SME adoption of circular economy models	Provide access to digital technologies
Enhance energy efficiency in industrial areas	Facilitate industrial symbiosis	Increase SME adoption of digital technologies
Raise awareness for improving waste and water management	Establish business networks and knowledge-sharing platforms	Strengthen collaboration with innovation networks

## CROSS-CUTTING FRAMEWORKS

POLICY &  
GOVERNANCE

Mid-term continuation of the ULG

Enhance policy alignment with  
sustainability strategyIntegration of circular economy  
actions in the sustainability  
strategyINNOVATION &  
RESEARCHConsolidation of collaboration  
with universities and regional  
transformation organisations

Promote pilot projects

## 11. INTERVENTION LOGIC

The intervention logic follows a structured approach:

1. **Identifying Challenges:** Understanding the barriers that industries face in transitioning to sustainability and circular economy.
2. **Designing Targeted Actions:** Developing projects and policies tailored to local business needs and workforce skills gaps.
3. **Implementing Integrated Solutions:** Ensuring cross-sectoral cooperation and alignment with broader urban development goals. Strong collaboration between local government, businesses and science.
4. **Monitoring and Adjusting Strategies:** Regularly assessing progress and refining approaches based on feedback and impact evaluations.



## 12. ACTION

The operational objectives are concretized through several actions proposed:

### GREEN TRANSFORMATION

Increase solar energy production for electricity and heating

- intensify information events on photovoltaic in industries
- Expansion of the cadastre for photovoltaic areas
- Assessment of additional areas designated for PV through land-use planning

Enhance energy efficiency in industrial areas

- Transfer mobility concept Stöcken 17 to other industrial parks
- Expand public charging infrastructure for e-mobility in industrial parks
- Increase in the number of Solingen companies participating in the Okoprofi program

Raise awareness for improving waste and water management

- intensify information events in industrial parks

### CIRCULAR ECONOMY & CAPACITY BUILDING

Increase SME adoption of circular economy models

- Implement training programs on sustainable production, material efficiency, and waste reduction.
- Provide certification programs for businesses adopting circular practices
- Develop e-learning modules to make circular economy knowledge easily accessible for companies

Facilitate industrial symbiosis

- Introducing regulatory incentives for mixed-use industrial zones: Requirements for companies that settle; Complementary industries to create a circular flow
- Examination of a matchmaking platforms to connect businesses for exchanging materials, energy, or by-products.

Establish business networks and knowledge-sharing platforms

- Participation in the conception of a competence center for the circular economy in the region
- Create a local Circular Economy Network to connect businesses, research institutions, and policymakers. (Continuation of ULG)
- Launch an online platform to share best practices and connect companies with circular economy experts.

## DIGITALIZATION FOR SUSTAINABILITY

Provide access to digital technologies

- Create a shared digital innovation hub for businesses to experiment with new technologies (additive manufacturing, 3D printing, AI, IoT) to support sustainable business models
- Offer pilot programs where selected companies receive temporary access to digital tools

Increase SME adoption of digital technologies

- Provide advisory services and training on digital tools for resource efficiency
- Informative events on digital technology potential

Strengthen collaboration with innovation networks

- Host networking events and hackathons to promote digital innovations for sustainability
- Develop research collaboration on AI-driven circular economy solutions

## CROSS-CUTTING FRAMEWORKS

### POLICY & GOVERNANCE

Mid-term continuation of the ULG

Enhance policy alignment with sustainability strategy

Integration of circular economy actions in the sustainability strategy

### INNOVATION & RESEARCH

Consolidation of collaboration with universities and regional transformation organisations

Promote pilot projects



### 13. INTEGRATED APPROACH

Solingen's approach ensures that economic, environmental, and social aspects are considered in all planned actions:

- **Cross-sectoral Integration:** Actions are designed to involve multiple stakeholders, from businesses and educational institutions to policymakers, ensuring a holistic approach.
- **Sustainability Strategy:** Every action aligns with Solingen's sustainability strategy, ensuring long-term ecological and economic benefits through responsible business practices.
- **Policy Synergy:** Coordination with regional, national, and EU policies ensures alignment with broader sustainability and economic goals, enhancing policy impact and funding opportunities.
- **Monitoring and Adaptability:** The plan includes mechanisms for ongoing evaluation, allowing for adaptive planning to respond to new developments, challenges and opportunities and to maintain relevance and effectiveness.

By integrating these elements, Solingen aims to create a resilient, innovative, and sustainable economic landscape that benefits both businesses and the community at large, ensuring a balanced transition toward an environmentally responsible future.

## 14. SECTION 3

### 1. Implementation of a training program on sustainable production, material efficiency and waste reduction

Action Title	Sustainable Production & Resource Efficiency Training Program
Description	Develop and deliver a training program for local companies (focus on SMEs) to improve sustainable production practices, material efficiency and waste reduction.
Link to Vision & Objectives	Supports resource-efficient industrial ecosystem by equipping businesses with skills for circular economy transition.
Area of Intervention	Circular Economy / Industrial Sustainability
Implementation Steps	<ol style="list-style-type: none"> <li>1. Needs assessment for SMEs in Solingen</li> <li>2. Curriculum development</li> <li>3. Pilot training in Solingen</li> <li>4. Full rollout</li> </ol>
Timeline	01/26 – 06/27
Responsible Organisation(s)	<p>Lead: City of Solingen „Wirtschaftsförderung“</p> <p>Developing and implementing Partners: Neue Effizienz (bergisch.kompetenz)</p> <p>additional partners: Education partners</p>
Estimated Costs	<p>60.000 € staff (0,3 FTE); 5.000 € marketing; 2.000 € infrastructure</p> <p>67.000 € in total</p>
Funding Sources	<p>Ongoing funding projects (bergisch.kompetenz, Ce:fire)</p> <p>Municipal budget (Solingen.Business), EU and Regional grants (long term)</p>
Monitoring Indicators	<p>Output:</p> <ul style="list-style-type: none"> <li>- Number of companies trained</li> <li>- Number of training hours delivered</li> <li>- Participant satisfaction score</li> </ul> <p>Result:</p> <ul style="list-style-type: none"> <li>- Reduction in material use per company</li> </ul>

	- Percentage decrease in waste generation
Risk Assessment	<p>Risks:</p> <ul style="list-style-type: none"> <li>- Low participation from SMEs</li> <li>- Limited staff availability in companies</li> </ul> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>- Offer flexible scheduling</li> <li>- Subsidized participation fees</li> <li>- online training options</li> <li>- Awareness campaign / Marketing activities</li> </ul>

Activities	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7
Activity 1: Needs assesment							
Activity 2: Curriculum Development							
Activity 3: Pilot training							
Activity 4: Full rollout							

Risk	Likelihood	Severity	Mitigation measures
Low participation from SMEs	Possible	Intolerable	Subsidized participation fees, Marketing activities, good need assessment, precise information on hours for the training,
Limited staff availability in companies	Possible	Undesirable	Offer flexible scheduling and online training options

2. Participation in the conception of a competence center for circular economy  
(bergisch.kompetenz)

3.

Action Title	Development of Bergisch Circular Economy Competence Center
Description	Participation in the Planning and design of a regional competence center to support research, innovation and business in the field of circular economy. The center will serve as a hub for knowledge exchange, project incubation and cross-sector collaboration.
Link to Vision & Objectives	Contributes to the IAP vision by creating a permanent structure for capacity building, innovation and knowledge transfer, supporting the transition of the local economy towards circularity.
Area of Intervention	Innovation Infrastructure / Circular Economy
Implementation Steps	<p>1.Engage in stakeholder workshops and advisory board to define center's functions.</p> <p>2.Support to develop a governance and funding model for Solingen to participate.</p> <p>3.Provide city-specific needs and create offers (Solingen)</p> <p>4.support Launch and outreach activities.</p>
Timeline	10/25 – 04/27
Responsible Organisation(s)	<p>Lead: Solingen.Business</p> <p>Partners: bergisch.kompetenz (regional EFRE project), Local SMEs, Universities, NGOs</p>
Estimated Costs	<p>11.000 € staff (0,1 FTE), 2.000 € infrastructure; 2.000 € marketing</p> <p>15.000 € in total</p>
Funding Sources	Municipal budget (Solingen.Business)
Monitoring Indicators	<p>Output:</p> <ul style="list-style-type: none"> <li>- Number of SMEs engaged</li> <li>- Finalized governance model</li> </ul> <p>Result:</p> <ul style="list-style-type: none"> <li>- Competence center operational</li> <li>- Number of projects/SMEs supported annually</li> </ul>

Risk Assessment	<p>Risks:</p> <ul style="list-style-type: none"> <li>- Insufficient commitments for launch or long term operation</li> <li>- Duplication with other regional initiatives</li> <li>- Low buy in from businesses</li> </ul> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>- Diversify income sources</li> <li>- Map existing offers and define a niche</li> <li>- Position the center in Solingen as a coordination hub, not a competitor</li> <li>- Formalize partnerships</li> </ul>
-----------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Activities	Quarter 1 Oct-Dec	Quarter 2 Jan-Mar	Quarter 3 Apr-Jun	Quarter 4 Jul-Sep	Quarter 5 Oct - dec	Quarter 6 Jan-Mar	Quarter 7 Apr-Jun
Activity 1: Define the centers functions							
Activity 2: Governance and funding model							
Activity 3: Create offers							
Activity 4: Launch and outreach							

Risk	Likelihood	Severity	Mitigation measures
Insufficient commitments for launch or operation	Improbable	Intolerable	Diversify income streams, develop a participation strategy for Solingen
Duplication with other regional initiatives	Possible	Acceptable	Map existing offers and define niche, position as coordinator not competitor, partnerships
Low buy in from businesses	Possible	Undesirable	Design tailored services, involve businesses in co-creation of the centers offer

3. Implement regulatory incentives for mixed-use industrial zones (requirements for companies that settle, and requirements for complementary industries to create a circular flow)

Action Title	Regulatory Framework for Mixed-Use Circular Industrial Zones
Description	Creation of regulatory incentives and requirements that encourage companies to co-locate in industrial zones where waste streams and by-products can be reused by complementary industries, fostering circular flows of materials and energy.
Link to Vision & Objectives	Advances the IAP aim of integrating circular economy principles into urban and industrial planning, promoting resource sharing and reducing waste.
Area of Intervention	Urban Planning / Circular Economy
Implementation Steps	<ol style="list-style-type: none"> <li>1. Review existing zoning regulations.</li> <li>2. Develop draft incentive and requirement framework.</li> <li>3. Conduct stakeholder consultation.</li> <li>4. Finalize and adopt regulations.</li> <li>5. Monitor uptake and adjust as needed.</li> </ol>
Timeline	01/2026 – 12/2028
Responsible Organisation(s)	<p>Lead: City Planning Department / Sustainability Department / Solingen.Business</p> <p>Partners: Environmental Agency, local industry associations / SMEs / Neue Effizienz</p>
Estimated Costs	<p>200.000 € staff (0,3 FTE); 30.000 € communication / marketing; 70.000 € external legal consultancy; 30.000 € engagement Workshops; 100.000 € infrastructure; 20.000 € monitoring</p> <p>450.000 € in total</p>
Funding Sources	Municipal Budget
Monitoring Indicators	<p>Output:</p> <ul style="list-style-type: none"> <li>- Number of industrial zones adopting mixed-use regulations</li> </ul>

	<p>Result:</p> <ul style="list-style-type: none"> <li>- Increase in material reuse between co-located companies</li> <li>- Reduction in material use per company</li> <li>- Percentage decrease in waste generation</li> </ul>
Risk Assessment	<p>Risks:</p> <ul style="list-style-type: none"> <li>- Resistance from existing businesses</li> <li>- Legal challenges</li> </ul> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>- Stakeholder engagement early</li> <li>- Phased introduction of requirements</li> </ul>

Activities	Half year 1	Half year 2	Half year 3	Half year 4	Half year 5	Half year 6
Activity 1: Review of zoning laws						
Activity 2: Draft incentives and requirements						
Activity 3: Consult Stakeholders						
Activity 4: Adopt and Monitor						

Risk	Likelihood	Severity	Mitigation measures
Resistance from existing businesses	Possible	Undesirable	Early stakeholder engagement
Legal challenges	Possible	Intolerable	Phased introduction of requirements

#### 4. Integration of circular economy actions in the sust. Strategy of Solingen

Action Title	Rooting Circular Economy in Solingen's Sustainability Strategy
Description	Review and update the city's sustainability strategy to include specific circular economy actions, targets and monitoring mechanisms across sectors.
Link to Vision & Objectives	Ensures that circular economy is embedded as a cross-cutting priority in the city's long-term policy framework, supporting holistic and systemic change.
Area of Intervention	Policy Integration / Circular Economy
Implementation Steps	<ol style="list-style-type: none"> <li>1. Review current sustainability strategy.</li> <li>2. Identify gaps related to circular economy in focus areas.</li> <li>3. Propose new objectives and measures.</li> <li>4. Public consultation and Discussion.</li> <li>5. Adoption of updated strategy.</li> </ol>
Timeline	10/2025 – 12/2026
Responsible Organisation(s)	<p>Lead: City of Solingen Sustainability Office</p> <p>Partners: City departments, Advisory Board Nachhaltige Kommune Solingen, local businesses</p>
Estimated Costs	<p>40.000 € staff (0,2 FTE), 10.000 stakeholder workshops; 5.000 € communication; 5.000 € monitoring</p> <p>60.000 € in total</p>
Funding Sources	Municipal Budget
Monitoring Indicators	<p>Output:</p> <ul style="list-style-type: none"> <li>- Updated strategy adopted</li> </ul> <p>Result:</p> <ul style="list-style-type: none"> <li>- Number of circular economy actions implemented as part of sustainability projects</li> </ul>
Risk Assessment	<p>Risks:</p> <ul style="list-style-type: none"> <li>- Limited political support</li> </ul>



	<ul style="list-style-type: none"> <li>- Delays in approval and revisions</li> </ul> <p>Likelihood/Impact:</p> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>- Broad stakeholder engagement</li> <li>- Alignment with existing climate commitments</li> </ul>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Activities	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
Activity 1: Review current strategy					
Activity 2: Identify gaps					
Activity 3: new objectives and measures					
Activity 4: Consultation					

Risk	Likelihood	Severity	Mitigation measures
Limited political support	Possible	Undesirable	Broad stakeholder engagement
Delays in approval and revisions	Possible	Tolerable	Alignment with existing climate and sustainability concepts

## 5. Transfer mobility concept of Stöcken 17 to other industrial parks

Action Title	Scaling Up Sustainable Mobility Concepts to Industrial Parks
Description	Adapt and replicate the sustainable mobility solutions piloted at Stöcken 17 to other industrial parks in Solingen, focusing on low-carbon commuting, shared transport and improved accessibility.
Link to Vision & Objectives	Supports IAP goals of reducing transport emissions, improving accessibility for workers and enhancing the attractiveness of industrial areas.
Area of Intervention	Sustainable Mobility
Implementation Steps	<ol style="list-style-type: none"> <li>1. Evaluate Stöcken 17 mobility concept outcomes.</li> <li>2. Select target industrial parks for replication.</li> <li>3. Adapt concept to site-specific conditions.</li> <li>4. Implement infrastructure and service changes.</li> <li>5. Monitor usage and adjust.</li> </ol>
Timeline	01/2026-12/2028
Responsible Organisation(s)	<p>Lead: City Mobility Department, Solingen. Business</p> <p>Partners: Industrial park Operators, public Transport Provider, Neue Effizienz</p>
Estimated Costs	<p>200.000 € staff; 1.000.000 € infrastructure; 50.000 € monitoring; 25.000 € communication</p> <p>1.275.000 € in total</p>
Funding Sources	Municipal Budget, EFRE Funding, state-level funding NRW (NRW.Bank, Kommunalrichtlinie, Mobil NRW, etc.); federal funding (sustainable urban mobility, BMUV, BMVI); Horizon Europe; private Partnerships (bike, car sharing operators, energy company)
Monitoring Indicators	<p>Output:</p> <ul style="list-style-type: none"> <li>- Number of industrial parks implementing mobility concept</li> </ul> <p>Result:</p> <ul style="list-style-type: none"> <li>- Reduction in car dependency</li> <li>- Increase in public and shared transport usage</li> </ul>

Risk Assessment	<p>Risks:</p> <ul style="list-style-type: none"> <li>- Low uptake by employees</li> <li>- Infrastructure constraints</li> </ul> <p>Likelihood/Impact</p> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>- Offer incentives for participation</li> <li>- Phased infrastructure rollout</li> </ul>
-----------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Activities	Half year 1	Half year 2	Half year 3	Half year 4	Half year 5	Half year 6
Activity 1: Evaluate Stöcken 17						
Activity 2: Targets for replication						
Activity 3: Concept adaptation						
Activity 4: Implement changes						
Activity 5: Monitor usage and adjust						

Risk	Likelihood	Severity	Mitigation measures
Low uptake by employees	Improbable	Tolerable	Offer incentives for participation
Infrastructure constraints	Possible	Undesirable	

## 15. SECTION 4

The following implementation framework sets out how the Integrated Action Plan (IAP) of the City of Solingen will be put into practice. While Section 3 describes individual actions in detail, this section provides the overarching structures, processes, and instruments that will ensure the IAP can be implemented effectively. It has been designed to remain both comprehensive and realistic, building on existing municipal systems and stakeholder platforms to avoid unnecessary duplication of effort.

### Governance

The successful delivery of the IAP requires a clear governance structure that ensures coordination across city departments and strong alignment with regional and EU policy agendas.

The Solingen.Business in cooperation with the sustainability department of the city will serve as the lead body responsible for overseeing implementation of the IAP as a whole. This office has the mandate and experience of coordinating sustainability and climate initiatives, making it well-placed to integrate the IAP into the city's wider strategic framework.

To reinforce cross-sectoral coordination, a cross-departmental IAP Steering Group will be formed. This group will include representatives from the Sustainability Office, Solingen.Business, Economic Development Department, Urban Planning and the Mobility Unit. The Steering Group will meet quarterly to:

- Track progress against agreed milestones,
- Align IAP activities with other municipal strategies and projects,
- Coordinate external communication with regional, national, and EU partners,
- Provide strategic guidance on necessary adjustments when external conditions change.

A designated IAP Coordinator, working within Solingen.Business (supported by Neue Effizienz), will manage the day-to-day follow-up. Their role will include preparing progress reports, ensuring smooth information exchange between departments, and serving as the main contact point for stakeholders and funders.

This structure ensures that governance is light but effective, rooted in existing institutions, while providing accountability and coordination at the city level.

### Ongoing Stakeholder Engagement

Stakeholder participation has been central to the development of the IAP through the URBACT Local Group (ULG). To maintain this participatory spirit during implementation and to leverage synergies with other projects in the region, the ULG will evolve into the advisory board of the [bergisch.kompetenz](#) project.

This advisory will bring together:

- Local businesses and industry associations
- Universities and research institutions
- NGOs and civil society representatives
- Municipal departments

It will meet at least twice per year to review progress, provide input into upcoming activities and identify opportunities for new partnerships.

The advisory board will also act as a communication platform to share results more widely with the community, raise awareness about circular economy and encourage more companies to get involved.

## Overall Costings and Funding Strategy

The actions presented in Section 3 are expected to require a total investment of approximately 1,9 – 2,5 million euro till 2028.

Funding will be secured through a diversified strategy based on available funding options that require formal applications:

- **Municipal budgets** allocated for sustainability, mobility and economic development will cover the baseline commitments.
- **Regional development funds** from North Rhine-Westphalia will provide support for regulatory and planning innovations.
- **EU funding** streams (ERDF, Cohesion Fund, Horizon Europe) will be pursued for training and competence center activities.
- **Private sector contributions**, especially from companies that directly benefit from training, infrastructure improvements or participation in circular industrial zones, will be leveraged as co-financing.

Additional capacities will need to be allocated for the preparation and submission of funding applications, as securing these resources requires dedicated effort and time. Partners such as Neue Effizienz or Realer Wandel can provide support in these efforts, helping with both technical expertise and application preparation.

## Overall Timeline

The IAP will be implemented in three overarching phases:

1. Preparation (10/2025 – 2027)  
Establish governance and stakeholder structures, find funding opportunities, develop training curricula and evaluate the Stöcken 17 mobility concept as a basis for scaling.
2. Implementation (2027-2028):
  - Roll out the training program for sustainable production and waste reduction.
  - Participate in the conception of the Bergisch Competence Center for Circular Economy.
  - Introduce regulatory incentives for mixed-use industrial zones.
  - Integrate circular economy principles into the sustainability strategy.
  - Begin replication of the Stöcken 17 mobility model in selected industrial parks.
3. Consolidation (06/2027 – 2028):  
Evaluate results from the first full implementation cycle, refine measures where needed, and integrate successful actions into long-term city strategies.

## Risk Assessment

The consolidated risk assessment complements the action-specific risks already described in Section 3.

Risk	Likelihood	Severity	Mitigation measures
Delays in securing funding or insufficient resources	Possible	Intolerable	Diversify funding sources; phase investments; secure co-financing commitments early
Limited stakeholder participation or engagement fatigue	Possible	Undesirable	Build on existing platforms; combine meetings with other forums; recognize and publicize stakeholder contributions
Shifts in political or policy priorities	Improbable	Undesirable	Align IAP with long-term strategies (EU Green Deal, NRW climate targets); highlight economic co-benefits
Capacity constraints within city administration	Possible	Undesirable	Use cross-departmental working group; appoint a part-time IAP Coordinator
External shocks (economic downturns, supply chain crises, pandemics)	Improbable	Intolerable	Maintain flexibility in timeline; prioritize adaptable, modular actions

By consolidating risks at a higher level, the city ensures that implementation remains resilient while avoiding duplication of detailed risk management work for each action.

## Monitoring and Reporting

Monitoring will be based on the key performance indicators (KPIs) defined in the IAP, ensuring alignment with the City of Solingen's broader sustainability objectives.

While a formal monitoring process has not yet been fully established, the Sustainability Office will take a coordinating role, with responsible departments providing updates on their respective actions where possible. Indicators will be considered at three levels:

- **Output indicators** (e.g., number of companies trained, training hours delivered, new regulations adopted, industrial parks applying mobility concepts).
- **Result indicators** (e.g., observable reductions in waste generation, increases in material reuse, shifts in modal split for commuting).
- **Strategic indicators**, drawn from the city's sustainability strategy (e.g., CO<sub>2</sub> emissions, resource efficiency improvements, proportion of companies engaged in circular economy initiatives).

Progress will be summarized in an annual brief report prepared by the Sustainability Office in cooperation with Solingen.Business. This report will provide a concise overview for the City Council, stakeholders, and the public. A final evaluation at the end of the action period will assess the overall impact of the IAP and inform the design of subs