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Analysis of the historical structural change in the German hard coal mining Ruhr area

(case study)

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Abstract

This case study examines the structural change in the Ruhr area caused by the low international competitiveness of German hard coal mining over the investigation period from the late 1950s to 2015. The case study describes the historical structural change process and analyses the structural policies that were implemented as a reaction to this process. Its objective is to make this knowledge available for future structural change processes in other (coal) regions. For this purpose, the case study categorises the structural policy interventions as “preserving”, “reactive” and “forward-looking” and evaluates their (intended) impact by using the dimensions “economy”, “social welfare”, “ecology” and “regional identity”.

Initially, the structural policy interventions in the Ruhr area had a very preserving orientation and aimed to maintain the coal and steel industry and to cushion social hardships. This was also reflected in the societal discourse in and about the Ruhr area, which was mainly characterised by the paradigm “no miner shall be unemployed”. The regionalised structural policy of the late 1980s and the more forward-looking sector expertise-orientated structural policy since the turn of the millennium made a diversification of the economy possible. Using the impact dimensions developed by the project consortium, the structural policy interventions in the Ruhr area are primarily to be classified as serving the “economy” and the “social welfare” impact dimensions. The “ecology” and the “regional identity” impact dimensions were addressed primarily from the late 1980s through innovative structural policy interventions, such as the International Building Exhibition (IBA) Emscher Park. Important findings include the fact that many structural policy interventions in the Ruhr area could only be implemented because specific framework conditions (time, financial resources, social security systems, social partnership, co-determination in the coal and steel industry) allowed it and that it is important not to just let change happen but to actively shape it with a comprehensive cross-policy (labour market policy, education policy, etc.) integrated package of forward-looking interventions (to strengthen endogenous development potential) and reactive interventions (to cushion social hardships).

Kurzbeschreibung

Gegenstand der vorliegenden Fallstudie ist der, durch die geringe internationale Wettbewerbsfähigkeit des deutschen Steinkohlebergbaus ausgelöste, Strukturwandel im Ruhrgebiet im Untersuchungszeitraum von Ende der 1950er Jahre bis 2015. Die Fallstudie beschreibt den historischen Strukturwandelprozess und analysiert die in Reaktion auf diesen Prozess umgesetzte Strukturpolitik mit dem Ziel, dieses Wissen für zukünftige Strukturwandelprozesse in anderen (Kohle-)Regionen zur Verfügung zu stellen. Zu diesem Zweck kategorisiert die Fallstudie die strukturpolitischen Interventionen in „konservierend“, „nachsorgend“ und „vorausschauend“ und bewertet ihre (intendierten) Wirkungen anhand der Dimensionen „Ökonomie“, „Soziales“, „Ökologie“ und „regionale Identität“.

Die strukturpolitischen Interventionen im Ruhrgebiet waren zunächst stark konservierend ausgerichtet und zielten auf den Erhalt der Montanindustrie sowie auf die Abfederung sozialer Härten. Dies spiegelt sich auch in den gesellschaftlichen Diskursen im und über das Ruhrgebiet wider, die zentral durch das Paradigma „Kein Bergmann fällt ins Bergfreie“ geprägt waren. Erst die regionalisierte Strukturpolitik ab Ende der 1980er Jahre und die stärker vorausschauend ausgerichtete, kompetenzfeldorientierte Strukturpolitik seit Beginn der Jahrtausendwende ermöglichten eine Diversifizierung der Wirtschaft. Legt man die vom Projektkonsortium entwickelten Wirkungsdimensionen zugrunde, so lässt sich der überwiegende Teil der strukturpolitischen Interventionen im Ruhrgebiet den Wirkungsdimensionen „Ökonomie“ und „Soziales“ zuordnen. Die Wirkungsdimensionen „Ökologie“ und „regionale Identität“ wurden vor allem ab Ende der 1980er Jahre mit

innovativen strukturpolitischen Interventionen, wie der Internationale Bauausstellung Emscher-Park, angesprochen. Wichtige Erkenntnisse sind u. a., dass viele strukturpolitische Interventionen im Ruhrgebiet nur umgesetzt werden konnten, weil spezifische Rahmenbedingungen (Zeit, finanzielle Ressourcen, Sozialversicherungssysteme, Sozialpartnerschaft, Montanmitbestimmung) dies ermöglichten, und dass es wichtig ist, Wandel nicht zuzulassen, sondern ihn mit einem politikfeldübergreifend (Arbeitsmarkt, Bildung, etc.) integrierten Gesamtpaket aus vorausschauenden Interventionen (zur Stärkung endogener Entwicklungspotenziale) und nachsorgenden Interventionen (zur Abfederung sozialer Härten) aktiv zu gestalten.

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List of abbreviations

| | |
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| APR | Aktionsprogramm Ruhr [Ruhr action plan] |
| CDU | Christlich Demokratische Union Deutschlands [christian democratic union of Germany] |
| EPR | Entwicklungsprogramm Ruhr [Ruhr development programme] |
| ERDF | European Regional Development Fund |
| EU | European Union |
| FDP | Freie Demokratische Partei [German free democratic party] |
| GA | Government accounting |
| GDP | Gross domestic product |
| IAT | Institute for Work and Technology |
| IBA | International Building Exhibition |
| IG BCE | Industriegewerkschaft Bergbau, Chemie, Energie [German mining, chemical and energy industry trade union] |
| IG BE | Industriegewerkschaft Bergbau und Energie [German mining and energy industry trade union] |
| KVR | Kommunalverband Ruhr [Ruhr municipal association] |
| NRW | North Rhine-Westphalia |
| PT | Public transport |
| RAG | Ruhrkohle Aktiengesellschaft [Ruhr coal corporation, a stock corporation for coal from the Ruhr area], today: RAG Aktiengesellschaft [RAG corporation] |
| RVR | Regionalverband Ruhr [Ruhr regional association] |
| SGB | Sozialgesetzbuch [German Social Security Code] |
| SPD | Sozialdemokratische Partei Deutschlands [social democratic party of Germany] |
| wmr | Wirtschaftsförderung metropol Ruhr GmbH [metropolis Ruhr economic development company] |
| ZIM | Zukunftsinitiative Montanregion [coal and steel region future initiative] |
| ZIN | Zukunftsinitiative für die Regionen Nordrhein-Westfalens [future initiative for the regions of North Rhine-Westphalia] |

Context and summary

The challenge of structural change in coal regions is a topic that has greatly grown in political importance both in Germany and around the world in recent years. The objective of climate neutrality, an imperative to fulfil countries' commitments under the Paris Agreement, does not only require the increased use of renewable energies but also a decrease in fossil fuel consumption. Irrespective of the question whether net zero emissions still permit a small amount of fossil fuels, the largest share of fossil fuels must be removed from the energy mix over the coming years and decades. Coal, as the most emission-intensive fossil fuel, is of particular importance in this regard. Therefore, in recent years the discussion about a phase-out of coal has intensified both domestically in Germany and internationally.

The discussion shows that the phase-out of coal and the associated structural change in coal regions is more than just a topic for energy policy. It is not only a question of how to ensure a safe supply of energy, if the generation of power from coal is phased out, but it also concerns **structural policy challenges**: What happens to the regions, the companies and the jobs, which today are still dependent upon coal? How can the phase-out be fairly structured in line with a "just transition"? Which societal measures are necessary in order to create a balance between those, who profit from the change (e.g., because renewable energies bring new jobs to the region) and those, who disproportionately bear the burden (e.g., because the jobs in coal mining are concentrated in a few districts and are then lost)?

These questions have been discussed in depth in Germany by a commission, which developed proposals for a coal phase-out and structural policy interventions for affected regions (Kommission "Wachstum, Strukturwandel und Beschäftigung" [Commission on Growth, Structural Change and Employment]). However, the coal phase-out and just transition processes have also been discussed and decided upon in many other European countries and in the European Union's (EU) Initiative for coal regions in transition. August 2020 saw an important milestone when Germany passed a law to phase out coal by 2038 at the latest. This was accompanied by support measures for coal regions. Other countries have also presented corresponding plans and objectives. But the exact form of a just structural change is still under discussion. In this debate, two perspectives are important:

- ▶ **Structural change in coal mining regions is not a new phenomenon.** Closure is and has always been an inseparable part of the business model of mining because at a certain point, a mine's reserves become exhausted or at least can no longer be competitively extracted. It is typical for mining regions that the phase of (often very fast) growth is followed by a phase of mine closures – accompanied by all its negative consequences and challenges for the region. Compared to previous processes, change is now additionally being driven by a climate policy motivation.
- ▶ The **phase-out of coal will not be the last structural change process** that will be necessary in the course of transforming the economic system towards climate neutrality. The new paradigm of the European Green Deal assumes that ambitious climate policy objectives are compatible with growth and prosperity. At the same time, it is not only about the coal industry, but also about **transformation approaches for all sectors of the economy**. For these processes, it will be helpful to ask, which lessons from the phase-out of coal can be transferred to other sectors of the economy – and where completely new approaches must be found.

At this juncture, the research project, in which context this case study has been compiled, started its investigation. With an interdisciplinary team consisting of five research institutes, findings from historical structural change processes in coal regions in Germany have been collated.

The results are two case studies and a systematisation of the lessons from these processes:

- ▶ This case study examines the **Ruhr area**, where coal was mined underground. Alongside steel production, coal mining in the Ruhr area was the starting point of an industrial development of trans-regional to European importance. When hard coal became increasingly uneconomical, mining declined (relatively) slowly. This was supported by subsidies for decades so that it took a total of 60 years before the last mine was closed in 2018. Yet, even today the Ruhr area is one of the most densely populated and most industrialised regions of Germany.
- ▶ The second case study (Ragnitz et al., 2021a) examines the structural change in **Lusatia** after the system change from a centrally planned economy to a market economy. This system change was a structural change process that occurred very suddenly – a structural break. Within a few years of the sudden occurrence of the German reunification, the whole economic system of East Germany underwent a fundamental change. The massive decline in lignite mining was embedded in a general collapse of industry, not only in Lusatia but in many regions of East Germany. In contrast to the urban Ruhr area where hard coal was extracted in underground mines, Lusatia is a rural region where lignite is extracted from opencast mines.
- ▶ A third publication (Reitzenstein et al., 2021) categorises the **lessons** from the case studies in the context of technical, political, economic, social and cultural framework conditions and works out, which findings and experiences, depending on the context, can be helpful for other regions and sectors.

The objective of this detailed case study on structural change in the Ruhr area was to analyse the structural policy of the last 60 years, to reveal its economic and political framework conditions as well as to describe and as far as possible to evaluate its impact. No recommendations specific to the future of the Ruhr area have been extrapolated, but lessons have been sought that may be of interest to coal regions in Europe and in the rest of the world. Because structural policy must always be developed specific to the context, the experiences of the Ruhr area cannot be used as a blueprint and implemented in other regions in the exact same manner. However, the lessons from the Ruhr area could serve as an inspiration to other regions. This case study does not only present the successes of structural policy, but it also analyses the weaknesses. Therefore, the study communicates opportunities but also limitations for future structural policy interventions.

Definitions: Structural change, structural policy and impact dimensions

In economics, “structural change” is understood as the change in the structural composition of a statistically measured set (e.g., gross domestic product (GDP), employment). The term itself is neutral and should express that economic development does not occur in the same manner over all sectors and regions, but that it involves partial shifts on the various levels. Structural change may have endogenous or exogenous causes.

The authors understand “structural policy” to be interventions that are used to influence the structural change in a targeted manner. For the evaluation in the context of this case study, structural policy interventions were categorised according to their intended objective:

- ▶ **Preserving structural policy:** intends to impede or at least to delay structural change by preventing the contraction of the threatened sectors in order to avoid social distortions.
- ▶ **Reactive structural policy:** accepts the contraction of the sectors, however, the resulting social hardships are cushioned, e.g., through measures in labour market policy.
- ▶ **Forward-looking structural policy:** intends to anticipate future developments and to timely compensate the negative effects of the contraction by stimulating alternative

(economic) structures. Selective technology policy measures may also be included in this category.

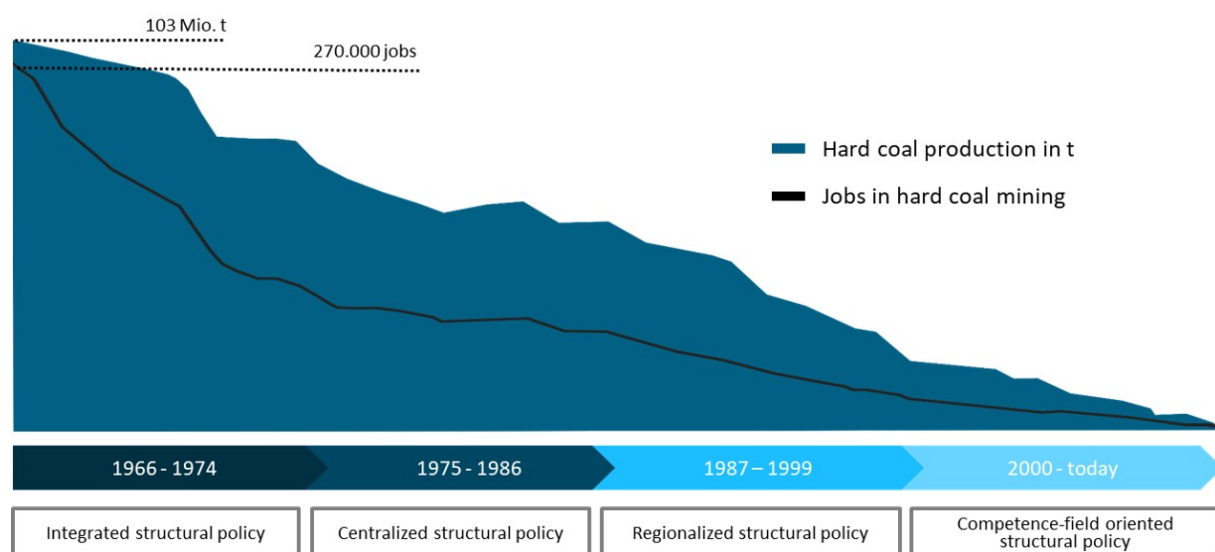
Furthermore, the case study examined the impact of the structural policy interventions according to the following dimensions:

- ▶ economy,
- ▶ social welfare,
- ▶ ecology and
- ▶ regional identity.

Structural change in the Ruhr area

In the Ruhr area, the phase-out of hard coal was a long-term process that occurred over several decades. Work in the hard coal mining sector was characterised by physically very demanding work on the one hand and a high level of labour productivity and high wages on the other hand. Despite great advances in productivity, the mining of hard coal in Germany was no longer internationally competitive; firstly, due to the high personnel costs and secondly due to the emergence of other fuels, e.g., nuclear energy. The large-scale loss of employment in the mining sector has still not been compensated to date. On the way towards a service economy, many new jobs were created, also in the Ruhr area. However, for the large majority of the population the wages for these jobs were far below what could be earned underground because the wage level in hard coal mining was higher than average compared to other sectors.

Figure 1: Employment in hard coal mining and hard coal production in tons in the Ruhr area



Source: Statistik der Kohlenwirtschaft e.V. (2019), own presentation: Wuppertal Institute

Overall, the regional economic development in the Ruhr area remained behind the German national trend due to lower productivity, lower value creation and due to income effects. However, the Ruhr area does not have a uniform economic and social structure. In the south of the Ruhr area, where the structural change already began in the late 1950s and where universities were established in the 1960s, the situation is much better than in the northern Ruhr area, which today is still characterised by high levels of (long-term) unemployment and lower economic power.

Analysis of the structural policy interventions

For many years, the structural policy interventions in the Ruhr area focussed on the “**economy**” and the “**social welfare**” impact dimensions. The policy orientation was **preserving** or rather **reactive**. This orientation was found in particular in the phases of the **integrated structural policy (1966–1974)** and of the **centralised structural policy (1975–1987)**.

In the framework of the first structural policy phase, the first regional and sector-specific structural programme was drawn up in the form of the Entwicklungsprogramm Ruhr [Ruhr development programme] (EPR). It integrated various policy fields (technology support, labour market support, infrastructure support and cushioning social hardships). During this phase, the first universities in the Ruhr area were established and the transport and leisure infrastructures were expanded.

In the framework of the centralised structural policy, these preserving and reactive policies were continued in the Aktionsprogramm Ruhr [Ruhr action plan] (APR). The focus of the programme was predominantly to support the existing (coal and steel) sectors in order to keep them competitive (Heinze et al., 1996). It was also during this phase that regional planning was relocated from what was then the Kommunalverband Ruhr [Ruhr municipal association] (KVR) to the State of North Rhine-Westphalia (NRW) with the consequence that the Ruhr area was no longer a unitary planning region but was segmented into the three administrative regions of Arnsberg, Düsseldorf and Münster. As a result, the position of the KVR was considerably weakened.

With the **regionalised structural policy (1987–1999)**, an attempt was made to involve regional key stakeholders in planning the measures. For this purpose, the Zukunftsinitiative Montanregion [coal and steel region future initiative] (ZIM) was initiated. It divided the Ruhr area into six different regions, in which regional conferences were held. However, the interventions developed with this approach were again very technology-orientated. However, in addition to the “**economy**” and the “**social welfare**” impact dimensions the topic of “**ecology**” was also addressed. Like the previous large EPR and APR programmes, also ZIM was expanded to the whole State of North Rhine-Westphalia (Zukunftsinitiative für die Regionen Nordrhein-Westfalens [future initiative for the regions of North Rhine-Westphalia] – ZIN). This reveals that in the Ruhr area many of the structural policy programmes were developed, tested and then shared.

The International Building Exhibition (IBA) Emscher Park was also implemented during this phase. The objective was to develop an ecological and economic policy for renewal in the Emscher region. From the very start, the IBA Emscher Park was to last ten years and it had five main focusses: renaturation of the Emscher river, development of Emscher Park, conversion of old industrial buildings, “Working in the park” as well as new housing. It was the first time that cultural aspects (“**regional identity**”) as well as aspects of landscape development and renaturation (“**ecology**”) were explicitly and equally supported.

The increasing importance of the EU in shaping the structural policy in the individual states of Germany led to an increased **sector expertise-orientation of structural policy (from 2000)**. Since the 2007–2013 funding period, the State of NRW has chosen a competitive procedure in the individual sector expertise areas or lead markets, i.e., in those sectors in which the state shows particular expertise (policy of strengthening strengths), when awarding structural policy funding. Also for the Ruhr area, eight lead markets were defined: education and knowledge, digital communication, leisure and events, healthcare, mobility, sustainable consumption, resource efficiency as well as urban construction and housing – supplemented by the overarching “industrial core” as the dynamic driver of innovation for all lead markets (Nordhause-Janž & Rehfeld, 2011). In 2000, Project Ruhr GmbH (today business.metropoleruhr GmbH), an economic development agency for the Ruhr area, was established in order to manage the process of structural change. In this period, there were two central innovations: the “InnovationCity Ruhr – Model City Bottrop” and the “Ruhr.2010” European

Capital of Culture. The objective of the “InnovationCity Ruhr” was to develop and to test ideas and solutions in order to actively address climate change and to actively shape structural change. Under the motto “Change through culture – Culture through change”, stakeholders from the Ruhr area for the first time initiated a Ruhr area-wide campaign to participate in the competition in the framework of the “Ruhr.2010” European Capital of Culture. Building on the lighthouses of the IBA Emscher Park, the specially established enterprise “Kulturhauptstadt Europas RUHR.2010 GmbH” implemented numerous activities, which were funded among others with EU funds (Betz, 2011, p. 325).

With the lead market orientation, a more competition-orientated policy approach was pursued, which facilitated “future sectors or lead markets”. Therefore, this approach is also **forward-looking**. However, the selection of the lead markets was regarded critically because it also partially backed existing sectors. With “InnovationCity Ruhr”, all four impact dimensions (“**economy**”, “**ecology**”, “**regional identity**” and also “**social welfare**”) were considered, while the “Ruhr.2010” Capital of Culture placed great focus on the “regional identity” impact dimension.

Discourse Analysis

The discourse analysis in the study reveals that the political scope for action is essentially determined by the discourse and by the public perceptions, guiding principles and paradigms that are reflected in this discourse.

In particular the first decades of structural policy in the Ruhr area were characterised by two central motives: “**the Ruhr area must be preserved**” and “**no miner shall be unemployed**”. They effected a very strong structural preservation and prevented a quick transformation. In addition to the prominent economic importance of the mining industry and the large number of people economically bound to it, the reason for this policy of preservation is also to be found in the energy policy importance of hard coal as a guarantee of the national security of supply and above all in the historical importance of the Ruhr area as the **industrial heart** of Germany and the “motor” (Berghahn, 1985, p. 110) of Germany’s redevelopment. Correspondingly, the structural policy interventions of the first two phases of the structural policy (1966–1987) aimed above all to make the existing mining industry competitive again by way of economic rationalisation measures, **technological modernisation** and investments in a **knowledge and research infrastructure**.

From the mid-1980s, the paradigms in the structural policy discourse began to change: Instead of the previous hope for the modernisation of the coal and steel industry or a “big solution” (Bogumil et al., 2012, p. 17) to replace it throughout the Ruhr area, it was recognised that the disparities between the individual subregions of the Ruhr area required different structural policy answers. This led to an increased **regionalisation** of the structural policy and increasing efforts to further **diversify** the economic structure of the Ruhr area. Both approaches were reinforced in the following phase of the sector expertise-orientated structural policy with the guiding principle of “**strengthen strengths**” and they enabled forward-looking forms of structural policy (see above). At the same time, the discourse regarding structural policy interventions became clearly more differentiated. Instead of primarily focussing on the “economy” and the “social welfare” impact dimensions (in terms of job retention, attracting jobs and cushioning financial hardships) as had been previously done, questions regarding the **ecological state** of the region, the **quality of life** of the inhabitants and the future-orientated, cultural shaping of the **identity as an industrial and mining region** (e.g., through converting mines into public cultural sites) gained in importance, especially through the IBA Emscher Park.

During the whole investigation period, the “**consensus culture of the elite**” remained central to shaping the structural policy in the Ruhr area. Therefore, decisions and strategies for the future of the coal and steel industry were closely coordinated by the economic and political elite and the

trade unions. In the State parliament of North Rhine-Westphalia, the “coal parliamentary group” with members from all parties – led by the Sozialdemokratische Partei Deutschlands [social democratic party of Germany] (SPD), which at an early stage became established as the representative of miners – represented the interests of the mining industry and its employees from 1964 until its gradual collapse in 2005. The paradigms of consensus and the **socially compatible** shaping of all adaptation steps in the mining sector (in the form of financial security of employment and avoidance of compulsory redundancies) aimed to maintain the social and political stability of the Ruhr area and have remained influential throughout all phases of the structural policy.

Compared to the current discourse about the future of (lignite) coal, it is to be emphasised that the decline and ultimate end of German hard coal mining in 2018 was induced alone by its **low competitiveness** against imported coal and other fuels, and was not induced by **climate protection considerations**. Climate protection considerations were neither the driver of the structural change in the Ruhr area nor the primarily objective of its structural policy, with the exception of recent interventions, such as “InnovationCity Ruhr”.

Conclusions

The structural change in the Ruhr area is not a completed process, but has been ongoing since the first crises in hard coal mining in the late 1950s until today and is still continuing. For a long period, the structural policy interventions in the Ruhr area had a very preserving and reactive orientation towards the “economy” and the “social welfare” impact dimensions. For decades, the structural policy primarily pursued the objective of securing the German (hard) coal mining sector as the domestic source of energy from the Ruhr area and then – later – of retarding its discontinuation. For this purpose, on the one hand the mining industry was heavily subsidised and social security systems for the employees (in particular early retirement without a great reduction in income) were created. On the other hand, it was (in the end unsuccessfully) attempted to restore the market-based competitiveness of coal mining.

On the one hand, these forms of preserving and reactive structural policy achieved the large-scale avoidance of social distortions in the Ruhr area, e.g., in comparison to British mining regions. On the other hand, they caused enormous financial costs and have obstructed the necessary diversification of the regional economy for a long time, e.g., because mining companies refused to sell their brown-field sites to other companies.

The experiences from the Ruhr area clearly show how important it is to not just allow change to happen, but to also actively accompany and shape it at an early stage. This requires a forward-looking structural policy, which in a targeted manner strengthens the endogenous potential of a region and is supplemented by reactive interventions that cushion the social hardships arising from the structural change. In the Ruhr area, the (until the late 1950s) dominant mono-industrial structure could not be substituted by attracting large companies. Rather, it can be learnt from the Ruhr area’s experiences that economic diversification is more promising for cushioning the phase-out of coal consumption and mining.

Yet, structural policy is much more than economic development funding and policies to attract businesses. Rather, it is necessary to purposefully coordinate the different policy fields (e.g., structural policy, labour market policy and education policy). It is precisely the expansion of the regional infrastructure, e.g., ensuring and increasing mobility as well as the expansion of the research and education landscape, that constitutes forward-looking approaches to actively shape structural change and to mitigate undesired consequences. When developing structural policy interventions, the social security systems existing in the individual countries must also be considered.

Einordnung und Zusammenfassung

Die Herausforderungen des Strukturwandels in Kohleregionen ist ein Thema, das in den letzten Jahren einen massiven politischen Bedeutungsgewinn erfahren hat – in Deutschland und international. Das klimapolitisch notwendige Ziel der Treibhausgasneutralität erfordert nicht nur eine stärkere Nutzung erneuerbarer Energien, sondern auch eine geringere Nutzung fossiler Energieträger. Ungeachtet der Detailfrage, ob Netto-Nullemissionen noch einen kleinen Rest von fossilen Energieträgern zulassen, muss (mindestens) der allergrößte Anteil der fossilen Energieträger in den nächsten Jahren und Jahrzehnten aus dem Energiemix genommen werden. Kohle als emissionsintensivster Energieträger ist hierfür von besonderer Bedeutung. Die Diskussion um einen Kohleausstieg nahm deshalb in Deutschland und international in den letzten Jahren an Fahrt auf.

Die Diskussion zeigt, dass der Kohleausstieg und der damit verbundene Strukturwandel in Kohleregionen nicht nur ein energiepolitisches Thema ist. Es geht nicht nur um die Frage, wie eine sichere Energieversorgung gewährleistet werden kann, wenn auf Kohleverstromung verzichtet wird, sondern auch um **strukturpolitische Herausforderungen**: Was passiert mit den Regionen, den Firmen, den Arbeitsplätzen, die bis heute von der Kohle stark abhängig sind? Wie kann der Ausstieg gerecht im Sinne einer "Just Transition" gestaltet werden? Welche gesellschaftlichen Maßnahmen sind nötig, um einen Ausgleich zu schaffen zwischen denen, die vom Wandel profitieren (z. B. weil erneuerbare Energien neue Arbeitsplätze in die Region bringen) und denen, die überproportional an den Lasten zu tragen haben (z. B. weil die Arbeitsplätze im Kohlebergbau in wenigen Landkreisen konzentriert sind und dann fehlen)?

Diese Fragen wurden in Deutschland intensiv von der Kommission "Wachstum, Strukturwandel und Beschäftigung" behandelt, die Vorschläge für strukturpolitische Interventionen für vom Kohleausstieg betroffene Regionen erarbeitete. Sie werden aber auch international diskutiert – in vielen Ländern Europas und in der Coal-Regions-in-Transition-Initiative der Europäischen Union (EU). Als einen wesentlichen Meilenstein beschloss Deutschland im August 2020 ein Gesetz zum Ausstieg aus der Kohlenutzung, das mit Unterstützungsmaßnahmen für die Kohleregionen flankiert wurde. Auch andere Länder haben entsprechende Pläne und Ziele vorgelegt. Aber wie ein sozialverträglicher Strukturwandel konkret gestaltet werden kann, wird weiterhin diskutiert. Zwei Perspektiven sind in dieser Debatte wichtig:

- ▶ **Strukturwandel in Kohle- und Bergbauregionen ist kein neues Phänomen.** Die Schließung ist und war schon immer untrennbar ein Teil des Geschäftsmodells im Bergbau: An einem bestimmten Punkt sind die Vorräte einer Mine erschöpft oder zumindest nicht mehr konkurrenzfähig abbaubar. Es ist typisch für Bergbauregionen, dass auf die Phase des (häufig sehr schnellen) Wachstums eine Phase der Minenschließungen folgt – mit all ihren negativen Folgen und Herausforderungen für die Regionen. Neu ist, dass der Wandel zusätzlich aus einer klimapolitischen Motivation heraus vorangetrieben wird.
- ▶ Der **Ausstieg aus der Kohlenutzung wird nicht der letzte Strukturwandelprozess sein**, der im Zuge einer Transformation des Wirtschaftssystems hin zur Treibhausgasneutralität notwendig wird. Das neue Paradigma des European Green Deal geht davon aus, dass ambitionierte Klimaziele mit Wohlstandswachstum vereinbar sind. Dabei geht es nicht nur um die Kohleindustrie, sondern um **Transformationsansätze für alle Sektoren der Wirtschaft**. Für diese Prozesse wird es hilfreich sein zu fragen, welche Lehren aus dem Kohleausstieg auch auf andere Wirtschaftssektoren übertragbar sein können – und wo völlig neue Lösungsansätze gefunden werden müssen.

An dieser Stelle setzte das Forschungsprojekt an, in dessen Rahmen diese Fallstudie erarbeitet wurde: Mit einem interdisziplinären Team aus fünf Forschungsinstituten wurden exemplarisch Erkenntnisse aus historischen Strukturwandelprozessen in Kohleregionen in Deutschland

zusammengetragen. Ergebnis sind zwei Fallstudien und eine Systematisierung von Lernerfahrungen aus diesen Prozessen:

- ▶ Die vorliegende Fallstudie betrachtet das **Ruhrgebiet**, in dem Steinkohle unter Tage abgebaut wurde. Zusammen mit der Stahlerzeugung als Montanindustrie war die Kohlegewinnung im Ruhrgebiet der Ausgangspunkt einer industriellen Entwicklung mit überregionaler, bis hin zu europäischer Bedeutung. In dem Maße, wie die Steinkohle immer unwirtschaftlicher wurde, ging der Bergbau (relativ) langsam zurück – über Jahrzehnte gestützt durch Subventionen, so dass es insgesamt 60 Jahre dauerte, bis 2018 die letzte Zeche geschlossen wurde. Dennoch ist das Ruhrgebiet auch heute eine der am dichtesten besiedelten und am stärksten industrialisierte Regionen Deutschlands.
- ▶ Die zweite Fallstudie (Ragnitz et al., 2021b) behandelt den Strukturwandel in der **Lausitz** nach dem Systemwechsel von der Plan- zur Marktwirtschaft. Der Strukturwandelprozess dort erfolgte sehr kurzfristig – und kann als regelrechter Strukturbruch bezeichnet werden: Innerhalb weniger Jahre nach dem plötzlichen Ereignis der Wiedervereinigung erfuhr das gesamte Wirtschaftssystem Ostdeutschlands einen grundsätzlichen Wandel. Der massive Rückgang des Braunkohlebergbaus war eingebettet in einen generellen Zusammenbruch der Industrie, nicht nur in der Lausitz, sondern in vielen Regionen Ostdeutschlands. Die Lausitz stellt im Gegensatz zum urbanen Ruhrgebiet eine ländliche Region dar, in der nicht Steinkohle unter Tage, sondern Braunkohle im Tagebau abgebaut wird.
- ▶ Eine dritte Veröffentlichung (Reitzenstein et al., 2021) ordnet die **Lernerfahrungen** aus den Fallstudien in die Kontexte technischer, politischer, wirtschaftlicher, sozialer und kultureller Rahmenbedingungen ein und arbeitet heraus, welche Erkenntnisse und Erfahrungen – kontextabhängig – für andere Regionen und Sektoren hilfreich sein können.

Ziel dieser detaillierten Fallstudie zum Strukturwandel im Ruhrgebiet war es, die Strukturpolitik der letzten 60 Jahre zu analysieren, ihre ökonomischen und politischen Rahmenbedingungen aufzuzeigen sowie ihre Wirkungen zu beschreiben und – so weit wie möglich – zu bewerten. Es wurden keine Empfehlungen spezifisch für die Zukunft des Ruhrgebiets abgeleitet, sondern nach Lernerfahrungen gesucht, die für Kohleregionen in Europa und darüber hinaus von Interesse sein können. Weil Strukturpolitik immer kontextspezifisch entwickelt werden muss und wirkt, können die im Ruhrgebiet gemachten Erfahrungen nicht als Blaupause genutzt und eins zu eins auf andere Regionen übertragen werden. Die historischen Lernerfahrungen des Ruhrgebiets können aber anderen Regionen als Inspiration dienen. Diese Fallstudie präsentiert nicht nur Erfolge der Strukturpolitik, sondern analysiert auch deren Herausforderungen – und vermittelt damit einen Eindruck der Möglichkeiten und der Limitierungen für zukünftige strukturpolitische Interventionen.

Begriffsklärung: Strukturwandel, Strukturpolitik und Wirkungsdimensionen

Unter „Strukturwandel“ wird in den Wirtschaftswissenschaften die Veränderung der strukturellen Zusammensetzung eines statistisch gemessenen Aggregats (z. B. Bruttoinlandsprodukt (BIP), Beschäftigung) verstanden. Der Begriff selbst ist wertfrei und soll ausdrücken, dass wirtschaftliche Entwicklung nicht gleichförmig über alle Branchen oder Regionen hinweg verläuft, sondern mit Anteilsverschiebungen auf den verschiedenen Ebenen einhergeht. Strukturwandel kann endogene oder exogene Ursachen haben.

Unter „Strukturpolitik“ verstehen die Autorinnen und Autoren Interventionen, mit denen der Strukturwandel gezielt beeinflusst werden soll. Für die Bewertung im Rahmen dieser Fallstudie wurden strukturpolitische Interventionen nach ihrer beabsichtigten Zielsetzung kategorisiert:

- ▶ **Konservierende Strukturpolitik:** Hier geht es darum, durch Verhinderung der Schrumpfung bedrohter Branchen den Strukturwandel aufzuhalten oder ihn zumindest zeitlich hinauszuzögern, um soziale Verwerfungen zu vermeiden.

- ▶ **Nachsorgende Strukturpolitik:** Hier wird die Schrumpfung von Branchen akzeptiert, aber daraus resultierende soziale Härten werden, z. B. durch Maßnahmen der Arbeitsmarktpolitik, abgefedert.
- ▶ **Vorausschauende Strukturpolitik:** Hier geht es darum, künftige Entwicklungen zu antizipieren und die negativen Auswirkungen des Schrumpfens einzelner Sektoren frühzeitig durch die Förderung alternativer (Wirtschafts-)Strukturen zu kompensieren. Auch selektive technologiepoltische Maßnahmen können hierunter subsumiert werden.

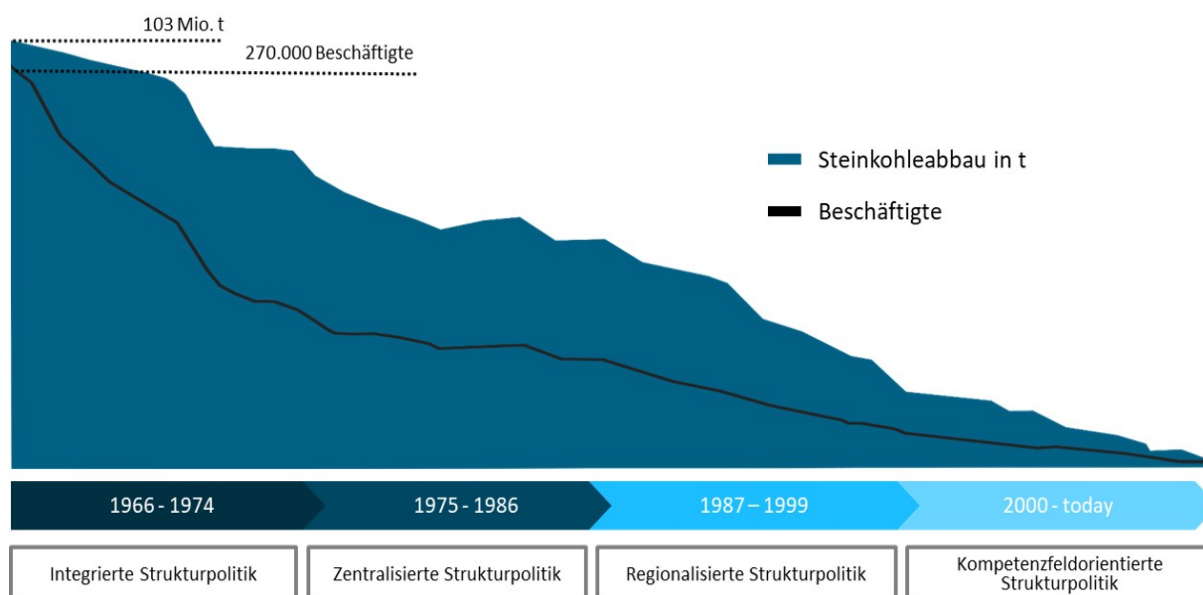
Darüber hinaus untersuchte die Fallstudie die Wirkungen der strukturpolitischen Interventionen entlang der Dimensionen:

- ▶ Ökonomie,
- ▶ Soziales,
- ▶ Ökologie und
- ▶ regionale Identität.

Strukturwandel im Ruhrgebiet

Der Ausstieg aus der Steinkohle war im Ruhrgebiet ein langjähriger Prozess, der sich über mehrere Jahrzehnte vollzog. Die Arbeit im Steinkohlebergbau war einerseits geprägt durch starke körperliche Belastungen, andererseits durch hohe Arbeitsproduktivität und hohe Entlohnung. Trotz großer Produktivitätsfortschritte war der Steinkohleabbau in Deutschland international nicht mehr wettbewerbsfähig; zum einen aufgrund der hohen Personalkosten, zum anderen aufgrund des Aufkommens anderer Energieträger wie z. B. der Atomenergie. Die hohen Beschäftigungsverluste im Montansektor konnten bis heute nicht kompensiert werden. Auf dem Weg zu einer Dienstleistungsgesellschaft wurden auch im Ruhrgebiet zahlreiche neue Beschäftigungsmöglichkeiten geschaffen. Diese erzielten für die breite Mehrheit der Bevölkerung jedoch bei Weitem nicht das Lohnniveau, welches unter Tage erwirtschaftet werden konnte, da das Lohnniveau im Steinkohlebergbau verglichen mit anderen Branchen überdurchschnittlich hoch war.

Abbildung 2: Beschäftigte im Steinkohlebergbau und Steinkohleabbau in Tonnen im Ruhrgebiet



Quelle: Statistik der Kohlenwirtschaft e.V. (2018), eigene Darstellung: Wuppertal Institut

Insgesamt bleibt die regionalwirtschaftliche Entwicklung im Ruhrgebiet aufgrund der geringeren Produktivität und der geringeren Wertschöpfungs- und Einkommenseffekte hinter dem deutschlandweiten Trend zurück. Jedoch weist das Ruhrgebiet keine einheitliche Wirtschafts- und Sozialstruktur auf. Im südlichen Ruhrgebiet, wo der Strukturwandel bereits Ende der 1950er Jahre einsetzte und wo in den 1960er Jahren Universitäten gegründet wurden, stellt sich die Situation deutlich besser dar als im nördlichen Ruhrgebiet, welches bis heute durch hohe (Langzeit-)Arbeitslosigkeit und geringere Wirtschaftskraft gezeichnet ist.

Analyse der strukturpolitischen Interventionen

Die strukturpolitischen Interventionen im Ruhrgebiet fokussierten über viele Jahre auf die Wirkungsdimensionen „**Ökonomie**“ und „**Soziales**“. Die Ausrichtung der Politik war **konservierend** bzw. **nachsorgend**. Dies galt insbesondere für die Phasen der **integrierten Strukturpolitik (1966–1974)** und der **zentralisierten Strukturpolitik (1975–1987)**.

Im Rahmen der ersten strukturpolitischen Phase wurde mit dem Entwicklungsprogramm Ruhr (EPR) erstmals ein regionales und branchenspezifisches Strukturprogramm aufgesetzt, welches verschiedene Politikbereiche (Technologieförderung, Arbeitsmarktförderung, Infrastrukturförderung sowie die Abfederung sozialer Härten) integrierte. In diese Phase fiel die Gründung der ersten Universitäten im Ruhrgebiet sowie der Ausbau der Verkehrs- und der Freizeitinfrastruktur.

Im Rahmen der zentralisierten Strukturpolitik wurde diese konservierende und nachsorgende Politik mit dem Aktionsprogramm Ruhr (APR) fortgeführt. Der Fokus des Programms lag stark auf der Förderung der bestehenden (montanindustriellen) Branchen, die hiermit wettbewerbsfähig gehalten werden sollten (Heinze et al., 1996). In diese Phase fiel auch die Verlagerung der Regionalplanung vom damaligen Kommunalverband Ruhr (KVR) – zentral – an das Land Nordrhein-Westfalen (NRW), mit der Folge, dass das Ruhrgebiet keine einheitliche Planungsregion mehr war, sondern durch die drei Regierungsbezirke Arnsberg, Düsseldorf und Münster zergliedert wurde. Damit wurde die Position des KVR stark geschwächt.

Mit der **regionalisierten Strukturpolitik (1987–1999)** wurde der Versuch unternommen, zentrale regionale Akteure mit in die Planung der Maßnahmen einzubinden. Hierfür wurde das Programm Zukunftsinitiative Montanregion (ZIM) aufgesetzt. Das Ruhrgebiet wurde hierfür in sechs unterschiedliche Regionen unterteilt, in denen jeweils Regionalkonferenzen stattfanden. Die sich hierdurch entwickelnden Interventionen waren jedoch wiederum stark technologieorientiert. Neben den Wirkungsdimensionen „**Ökonomie**“ und „**Soziales**“ wurde hier auch das Thema „**Ökologie**“ aufgegriffen. Die ZIM wurde – wie auch die vorherigen großen Programme EPR und APR auf das gesamte Land NRW ausgeweitet (Zukunftsinitiative für die Regionen Nordrhein-Westfalens – ZIN). Damit wird deutlich, dass im Ruhrgebiet viele der strukturpolitischen Programme entwickelt und erprobt und dann verbreitet wurden.

In diese Phase fiel auch die Internationale Bauausstellung (IBA) Emscher-Park. Ziel war ein ökologisches und ökonomisches Konzept zur Erneuerung der Emscher-Region. Die von Beginn an auf zehn Jahre befristete IBA Emscher-Park hatte die vier Themenschwerpunkte: Renaturierung der Emscher, Entwicklung des Emscher-Parks, Umwandlung alter industrieller Gebäude, Arbeiten im Park sowie Neues Wohnen. Hier wurden erstmals auch kulturelle Aspekte („**regionale Identität**“) sowie Aspekte der Landschaftsentwicklung und Renaturierung („**Ökologie**“) explizit und gleichwertig gefördert.

Die zunehmende Bedeutung der EU für die Ausgestaltung der Strukturpolitik in den einzelnen Bundesländern führte zu einer verstärkten **Kompetenzfeldorientierung der Strukturpolitik (ab 2000)**. Das Land NRW setzte bei der Vergabe von strukturpolitischen Mitteln seit der Förderperiode 2007–2013 auf ein Wettbewerbsverfahren in den einzelnen Kompetenzfeldern bzw.

Leitmärkten, also jenen Branchen, in denen das Land besondere Kompetenzen aufweist (Politik der Stärken stärken). Auch für das Ruhrgebiet konnten acht Leitmärkte definiert werden: Bildung und Wissen, Digitale Kommunikation, Freizeit und Events, Gesundheit, Mobilität, Nachhaltiger Konsum, Ressourceneffizienz, sowie Urbanes Bauen und Wohnen – ergänzt um den übergreifenden „Industrieller Kern“ als dynamischer Innovationstreiber für alle Leitmärkte (Nordhause-Janz & Rehfeld, 2011). Zur Prozessteuerung des Strukturwandels wurde im Jahr 2000 die Projekt Ruhr GmbH (heute business.metropoleruhr GmbH), eine Wirtschaftsförderungsgesellschaft für das Ruhrgebiet, gegründet. Zwei zentrale Interventionen fielen in die Zeit: die „InnovationCity Ruhr – Modellstadt Bottrop“ sowie die Kulturhauptstadt Europas „Ruhr.2010“. Ziel der „InnovationCity Ruhr“ ist es, Ideen und Lösungen zu entwickeln und zu erproben, um dem Klimawandel aktiv zu begegnen und den Strukturwandel aktiv zu gestalten. Unter dem Motto „Wandel durch Kultur – Kultur durch Wandel“ wurde im Rahmen der Kulturhauptstadt Europas „Ruhr.2010“ erstmals durch Akteure des Ruhrgebiets selbst eine ruhrgebietsweite Aktion initiiert, um sich an diesem Wettbewerb zu beteiligen. Aufbauend auf den Leuchttürmen der IBA Emscher Park wurden durch die eigens gegründete „Kulturhauptstadt Europas RUHR.2010 GmbH“ zahlreiche Aktivitäten durchgeführt, die u. a. mit EU-Mitteln gefördert wurden (Betz, 2011, p. 325).

Mit der Leitmarktorientierung wurde eine Politik eingeläutet, die stärker wettbewerbsorientiert ist und auf „Zukunftsbranchen bzw. Leitmärkte“ setzt. Damit ist diese auch **vorausschauend**. Kritisch gesehen wurde jedoch die Auswahl der Leitmärkte, die z. T. auch auf bestehende Branchen aufsetzt. Mit der „InnovationCity Ruhr“ werden alle vier Wirkungsdimensionen „**Ökonomie**“, „**Ökologie**“, „**regionale Identität**“ und auch „**Soziales**“ in den Blick genommen, während die Kulturhauptstadt „Ruhr.2010“ stark auf die Wirkungsdimension „regionale Identität“ fokussierte.

Diskursanalyse

Die Diskursanalyse in dieser Studie verdeutlicht, dass politische Handlungsspielräume wesentlich durch Diskurse und die sich in ihnen widerspiegelnden öffentlichen Wahrnehmungen, Leitbilder und Paradigmen bestimmt werden.

Insbesondere die ersten Jahrzehnte der Strukturpolitik im Ruhrgebiet waren von den zwei zentralen Motiven – „**Das Ruhrgebiet muss erhalten bleiben**“ und „**Kein Bergmann fällt ins Bergfreie**“ – geprägt, die eine starke Strukturkonservierung bewirkten und eine schnelle Transformation behinderten. Der Grund für diese Politik der Erhaltung ist neben der herausragenden wirtschaftlichen Bedeutung der Montanindustrie und der hohen Anzahl an Personen, die ökonomisch an sie gebunden waren, auch in der energiepolitischen Bedeutung der Steinkohle als Garant der nationalen Versorgungssicherheit und vor allem in der historischen Bedeutung des Ruhrgebietes als das **industrielle Herz** Deutschlands und „Schwungrad“ (Berghahn, 1985, p. 110) des deutschen Wiederaufbaus zu sehen. Dementsprechend zielten die strukturpolitischen Interventionen der ersten zwei Phasen der Strukturpolitik (1966–1987) vor allem darauf ab, die bestehende Montanindustrie mittels ökonomischer Rationalisierungsmaßnahmen, **technologischer Modernisierung** und Investitionen in eine **Wissens- und Forschungsinfrastruktur** wieder wettbewerbsfähig zu gestalten.

Ab Mitte der 1980er Jahre vollzog sich langsam ein Paradigmenwechsel in den strukturpolitischen Diskursen: Statt wie zuvor auf die Modernisierung der Montanindustrie oder eine, sie ersetzende, „große Lösung“ (Bogumil et al., 2012, p. 17) für das gesamte Ruhrgebiet zu hoffen, setzte sich die Erkenntnis durch, dass die Disparitäten zwischen den einzelnen Teilregionen des Ruhrgebietes auch verschiedene strukturpolitische Antworten erforderten. Dies bedingte eine stärkere **Regionalisierung** der Strukturpolitik und zunehmende Anstrengungen, die Wirtschaftsstruktur des Ruhrgebietes stärker zu **diversifizieren**. Beide Ansätze wurden in der folgenden Phase der kompetenzfeldorientierten Strukturpolitik mit dem Leitbild der „**Stärken stärken**“ verstärkt und ermöglichten vorausschauende Formen der Strukturpolitik (siehe oben). Zugleich wurde der Diskurs bezüglich

strukturpolitischer Interventionen deutlich differenzierter: Statt wie zuvor vorwiegend auf die Wirkungsdimensionen „Wirtschaft“ und „Soziales“ (im Sinne von Arbeitsplatzverlust bzw. -neuansiedlung und Abfederung finanzieller Härten) zu fokussieren, erlangten vor allem mit der IBA Emscher Park Fragen nach dem **ökologischen Zustand** der Region, der **Lebensqualität** der Bewohnerinnen und Bewohner und der zukunftsorientierten, kulturellen Gestaltung der **Identität als Industrie- und Bergbauregion** (z. B. durch die Konversion von Bergwerken in öffentliche Kulturstätten) eine größere Bedeutung.

Während des gesamten Untersuchungszeitraums zentral für die Ausgestaltung der Strukturpolitik des Ruhrgebiets blieb die „**Konsenskultur der Eliten**“. Das heißt, dass Entscheidungen und Strategien zur Zukunft der Montanindustrie zwischen der ökonomischen und politischen Elite und den Gewerkschaften eng abgestimmt wurden. Im nordrheinwestfälischen Landtag vertrat die aus allen Parteien bestehende „gemeinsame Kohlefraktion“ – angeführt von der SPD, die sich frühzeitig als Vertreterin der Bergbaubeschäftigten etablieren konnte – von 1964 bis zu ihrem schleichenden Zerfall 2005 die Interessen der Montanindustrie und ihrer Beschäftigten. Die Paradigmen des Konsenses und der **sozialverträglichen** Gestaltung aller Anpassungsschritte im Bergbau (in Form von finanzieller Absicherung der Beschäftigung und Vermeidung betriebsbedingter Kündigungen), zielten darauf ab, die soziale und politische Stabilität des Ruhrgebiets zu erhalten und blieben über alle Phasen der Strukturpolitik hinweg wirkmächtig.

Verglichen mit den aktuellen Diskursen um die Zukunft der (Braun-)Kohle ist hervorzuheben, dass der Rückgang und schließlich die Beendigung des Steinkohlebergbaus in Deutschland im Jahr 2018 allein auf seine **geringe Wettbewerbsfähigkeit** gegenüber Importkohle und anderen Energiequellen zurückzuführen ist und nicht auf **Klimaschutzüberlegungen**. Klimaschutzüberlegungen waren weder Treiber des Strukturwandels noch – abgesehen von kürzlichen Interventionen wie der „InnovationCity Ruhr“ – primäres Ziel der Strukturpolitik im Ruhrgebiet.

Fazit

Der Strukturwandel im Ruhrgebiet ist kein abgeschlossener Prozess, sondern vollzieht sich seit den ersten Krisen des Steinkohlebergbaus in den späten 1950er Jahren bis heute und dauert weiter an. Die strukturpolitischen Interventionen im Ruhrgebiet waren über einen langen Zeitraum stark konservierend sowie nachsorgend auf die Wirkungsdimensionen „Ökonomie“ und „Soziales“ ausgerichtet. Über Jahrzehnte verfolgte die Strukturpolitik vor allem das Ziel, den deutschen (Stein-)Kohlebergbau als heimische Energiequelle aus dem Ruhrgebiet zu sichern bzw. – später – sein Auslaufen zu verlangsamen. Dafür wurden zum einen der Kohleabbau massiv subventioniert und soziale Sicherungssysteme für die Arbeitnehmerschaft (insbesondere eine Frühverrentung ohne größere Einkommensverluste) geschaffen. Zum anderen wurde (insgesamt erfolglos) versucht, die marktwirtschaftliche Wettbewerbsfähigkeit des Kohleabbaus wiederherzustellen.

Diese Formen der konservierenden und nachsorgenden Strukturpolitik konnten zwar einerseits erreichen, dass soziale Verwerfungen im Ruhrgebiet – anders als beispielsweise in den englischen Bergbauregionen – weitgehend verhindert wurden. Andererseits führten sie zu enormen finanziellen Kosten und dazu, dass die notwendige Diversifizierung der regionalen Wirtschaft lange blockiert wurde, z. B. weil Bergbaufirmen sich weigerten, ihre brachliegenden Flächen an andere Unternehmen zu verkaufen.

Die Erfahrungen aus dem Ruhrgebiet zeigen deutlich auf, wie wichtig es ist, Wandel nicht nur zuzulassen, sondern diesen auch frühzeitig aktiv zu begleiten und zu gestalten. Hierzu ist eine vorausschauende Strukturpolitik, die gezielt die endogenen Potenziale einer Region stärkt, ergänzt um nachsorgende Interventionen, die die sozialen Härten des Strukturwandels abfedern, förderlich. Im Ruhrgebiet konnte die (bis in die späten 1950er Jahre) vorherrschende monoindustrielle Struktur nicht durch die Ansiedlung einzelner Großbetriebe substituiert werden. Vielmehr kann aus den

Erfahrungen des Ruhrgebiets gelernt werden, dass eine wirtschaftliche Diversifizierung erfolgsversprechender ist, um einen Ausstieg aus Kohlenutzung und Bergbau abzufedern.

Dabei ist Strukturpolitik weit mehr als Wirtschaftsförderung und Ansiedlungspolitik. Vielmehr ist es erforderlich, die verschiedenen Politikfelder (z. B. Strukturpolitik, Arbeitsmarkt- und Bildungspolitik) gezielt aufeinander abzustimmen. Gerade der Ausbau der regionalen Infrastruktur, wie z. B. die Sicherung und Steigerung der Mobilität und der Ausbau der Forschungs- und Bildungslandschaft, sind zukunftsweisende Ansätze, um Strukturwandel aktiv zu gestalten und unerwünschte Folgen abzumildern. Bei der Entwicklung von strukturpolitischen Interventionen müssen die in den einzelnen Ländern bestehenden sozialen Sicherungssysteme mitbetrachtet werden.

1 Introduction

1.1 Aim of the case study

Mining regions have always been affected by structural change.¹ As a rule phases of economic growth were followed by phases of structural change, e.g., because the deposits were exhausted or they became economically unviable for various reasons. But the development paths were and are very different and the results range from “ghost towns”, e.g., after the end of the so-called “gold rush” in the USA, to regions, which “reinvent themselves”, e.g., the Pittsburgh region in the USA. In many of these cases, the structural change was accompanied by targeted policies.

The objective of the research project “Structural change in coal regions as a process of economic and socio-ecological transformation – Scope for action for a just transition in light of climate policy objectives” was to analyse historical structural change processes and on this basis to record experiences and to derive scopes for action for future structural change processes, which could be of interest for other countries in light of the international efforts to mitigate climate change.

Two case studies analysed the structural change processes in two very different German regions, which are closely linked to the decline in coal mining and consumption:

- ▶ in the Ruhr area and
- ▶ in Lusatia.

The analysis of the historical structural change in the Ruhr area (hereinafter: “Ruhr area case study”) investigated the phase-out of hard coal mining, which has been ongoing for approximately 60 years, and the accompanying structural change. The objective was to analyse the structural policy interventions² in the Ruhr area, to demonstrate their economic and political framework conditions as well as to describe and as far as possible to evaluate their impact.

1.2 Definition of terms: Structural change and structural policy

In economics “**structural change**” is understood as the change in the structural composition of a statistically measured set (e.g., gross domestic product (GDP), employment). The term itself is neutral and is intended to express that economic development does not occur in the same manner over all sectors and regions, but that it involves partial shifts on various levels. Referring to sectors, it is about changes in the sector structures and when referring to regions, it is about the different developments in the individual regions of a larger economic area. The structural changes in sectors and regions are not to be looked at independently of each other because sectors are not evenly distributed around the area due to regionally different location conditions or historical coincidences. If a branch of industry grows more strongly than another, it favours that specific region where this industry is of great importance. The causalities can have an impact in both directions. Therefore, shifts in the sector structure (e.g., through sector-specific technological advances) not only influence the affected regions in different ways, but changes to the regional location conditions (e.g., through the expansion of infrastructure) can also change the sectoral composition. Insofar, sectoral and regional structural change processes are to be observed together.

Structural change can have endogenous or exogenous causes, whereby the lines between them are fluid. Endogenous changes to the sector structure are regarded as part of economic development.

¹ It is not only mining regions that are subject to structural change processes, but any region whose economic structure substantially changes. A clear example is seen in port cities, such as Hamburg or Bilbao, which transformed from industrial centres to modern cities with culture and service industries.

² See Chapter 1.2 on the differentiation between the terms structural change and structural policy or structural policy interventions.

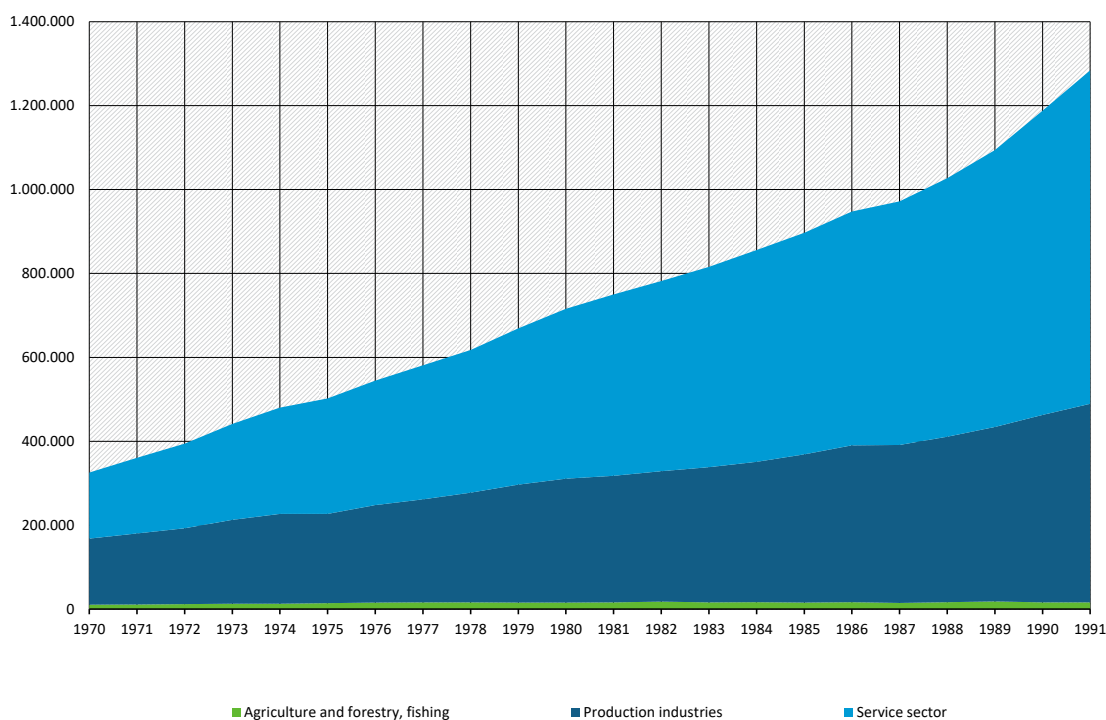
On the supply side, they could be caused, e.g., by productivity advancements that are different across sectors as a result of sector-specific innovations. This category can also include scarcity-induced changes in the price of individual production factors, which are deployed to a different extent in the different sectors subject to the technology used. On the demand side, structural change can be caused by a shift in the demand, for example, on account of changed consumer preferences. Subsequently, there are shifts in the relative prices of goods and as a result there are changes in the allocation of resources, whereby some sectors grow faster than others.

Exogenous causes of changes in sector structures are, e.g., changes in the legal or institutional framework (e.g., energy transition), economic policy interventions (e.g., subsidies for individual economic sectors) or shifts in the international division of labour (e.g., due to economic policy activities abroad).

Excursus: Central features of the historical structural change in Germany

The empirical picture for Germany shows that over the past decades there has been a massive shift in the sectoral structures in favour of the service sector, which today accounts for nearly 70 % of the (nominal) gross value added (see Figure 3). It occurred primarily at the expense of the production industries, i.e., in industry in the broader sense, whose share has fallen from 50 % to approximately 30 %. However, this pattern, also known as the “three sectors hypothesis” (Fourastié, 1949), masks huge shifts within individual sectors. For example, within the manufacturing industry, particular sectors that are labour-intensive (such as the textile and clothing industry as well as the shoe industry) have lost much of importance under the influence of globalisation, while human-capital-intensive sectors (such as machine manufacturing, vehicle manufacturing, electronics industry and the chemical industry) were able to gain in importance. A shift towards business-related services has been recorded in the service sector. It has led to a change in the regional growth centres in Germany. In particular, service-orientated conurbations (e.g., Frankfurt am Main or Munich) have developed favourably.

Figure 3: Gross value added in million euros, West Germany 1970–1991



Source: German Federal Statistical Office, Fachserie 18 Reihe 1.5. (04.05.2018), presentation: Institute for Work and Technology (IAT)³

Structural change leads to economic and/or socio-political challenges, if the speed of the structural changes surpasses the readiness or ability to adapt of the stakeholders concerned (Polanyi, 1978). Such challenges occur in particular when the structural shifts do not only show relative changes in share but involve a complete contraction in individual sectors or regions. In this case, production factors (e.g., regarding qualification, technological expertise, capital equipment) are devalued, which can involve the temporary or permanent loss of income for the parties concerned. On a socio-political level, these adaptation difficulties become problematic, in particular in the case of long-term unemployment of people, who have no chance of re-employment in the profession they trained for. For this reason, processes of structural change can lead to loss of wealth in the regions affected, even though they can be macroeconomically wealth-increasing. This is particularly the case when in addition to the immediate economic effects, negative social implications also occur. This is one of the reasons that the public's perception of structural change is often negative.

Since time immemorial, politicians have attempted to influence structural change by way of various measures. Therefore, the authors understand “**structural policy**” to be interventions, with which the structural change is to be purposefully influenced. They are not limited to the field of economic policy in the more narrow sense but can also include measures, e.g., from competition, social or education policy. In principle, structural policy interventions either have equalising objectives (e.g., supporting structurally weak regions) or growth-orientated objectives (e.g., support of particularly dynamic sectors). The applied structural policy instruments range from direct fiscal incentives (e.g., by way of differentiated taxes and subsidies) and foreign trade interventions (e.g., customs) to infrastructure measures (e.g., motorways).

³ The data for this and the following figures are special analyses or data sets that are not (or no longer) publicly accessible. They are therefore not listed in the list of sources.

Interventions, which have an economic structural impact “only” as a side effect, are in this case study not counted as structural policy within its narrower meaning. State interventions in collective wage agreements (e.g., by way of a declaration of the general application of collective wage agreements or through the introduction of a minimum wage) are also not counted as structural policy in this case study, although such interventions often have a structural impact. Therefore, this case study only briefly touches on them.

For the evaluation in the context of this case study, structural policy interventions are categorised according to their intended objective:

- ▶ **Preserving structural policy:** intends to impede or at least to delay structural change by preventing the contraction of the threatened sectors in order to avoid social distortions.
- ▶ **Reactive structural policy:** accepts the contraction of the sectors, however, the resulting social hardships are cushioned, e.g., through measures in labour market policy.
- ▶ **Forward-looking structural policy:** intends to anticipate future developments and to timely compensate the negative effects of the contraction by stimulating alternative (economic) structures. Selective technology policy measures may also be included in this category.

1.3 Methodological approach

In the analysis of the structural change and the structural policy in the Ruhr area, various qualitative and quantitative methods of empirical social and economic research have been deployed.

In the analysis of the structural change, a quantitative analysis of selected indicators showing developments in the hard coal industry, population, labour market and economy has been carried out. Particular attention has been paid to the development of universities. Where possible, long-time series have been depicted. However, with the data available it was not always possible to do so for the same periods of time. In order to be able to evaluate the development in the Ruhr area and provided that the data situation permits it, the data for the Ruhr area is compared with the respective data for the State of North Rhine-Westphalia (NRW) and the data for Germany as a whole (before 1989 only for the West German states). In order to illustrate the regional nature of the structural change, data is also shown on the district level where possible.

Building upon the analysis of the structural change, in the following chapters the various structural policy interventions are first presented and then evaluated using already existing evaluation studies. Based on descriptions in the Prognos AG and InWIS-Institut studies (2015), the “Ruhr area case study” subdivides the structural policy in the Ruhr area into the following phases:

- ▶ “Integrated⁴ structural policy” (1966–1974),
- ▶ “Centralised structural policy” (1975–1986),
- ▶ “Regionalised structural policy” (1987–1999) and
- ▶ “Sector expertise-orientated structural policy” (from 2000).

The structural policy interventions in the Ruhr area between the mid-1960s and the late 1990s were different to those in other mining regions, such as Lusatia, firstly due to their specific framework conditions. Secondly, the Ruhr area was the first region in the Federal Republic of Germany for which a tailored regional structural policy programme was developed that integrated measures from different policy fields, such as labour market policy, education policy and infrastructure policy. Therefore, the investigation of the structural policy measures in the Ruhr area looks at these specific interventions and is therefore different to the case study on Lusatia, where there were no region-specific interventions. The focus of the description and evaluation is placed on those

⁴ On the meaning “integrated” in this sense, see Chapter 4.1.1

structural policy interventions, which are described in the literature and can be found on the basis of academic analysis and data on their efficacy. While interventions, which occurred many years ago from the 1960s to the 1990s, have been academically reviewed in detail, analyses and findings in particular on the efficacy of interventions in the most recent ten years are to date less common.

The impacts of structural policy interventions are classified according to the dimensions of:

- ▶ economy,
- ▶ social welfare,
- ▶ ecology and
- ▶ regional identity.

Furthermore, a frame and discourse analysis was carried out, in order to better understand the emergence of structural policy interventions in the socio-political context. Frames are the interpretation schemas that societal groups use to categorise and interpret societal discourse fragments and events (Creed, Langstraat, & Scully, 2002; Goffman, 1974). A list of the identified frames is attached in the appendix. The analysis of these frames provided information for the assessment of the question who supported which structural policy approaches and for which reason. It represented an important basis in order to evaluate the possible relevance of the experiences for other regions in the later stages of the research project.

The development of the structural policy in the Ruhr area was analysed in numerous publications, which already included academic evaluations of the most important discourses over time (especially Bogumil et al., 2012; Landtag NRW, 2009; Prognos AG & InWIS-Institut, 2015). Therefore, both the analysis of the structural policy interventions as well as the discourse analysis for the Ruhr area essentially rely on an evaluation of the available secondary literature as well as on interviews with experts. Primary sources, such as newspaper articles or position papers, are only drawn on to support or illustrate individual positions.

The objective of the interviews was to verify the insights gained from literature and to supplement them where applicable. The experts were selected primarily on account of their comprehensive knowledge of the structural policy in the Ruhr area and because they could make statements about past phases. Attention was paid to select experts with different backgrounds in terms of work and experience (politics, administration, industry). The interviews were structured according to an interview guide, recorded and documented. The following people were interviewed for the “Ruhr area case study”⁵:

- ▶ Prof. Stefan Goch, Director of the Institut für Stadtgeschichte Gelsenkirchen [institute for the city history of Gelsenkirchen],
- ▶ Prof. Dr Rolf G. Heinze, Chair of Sociology, Work and Economy at the Ruhr-University of Bochum (RUB),
- ▶ Alexandra Landsberg, Head of the department “Umweltwirtschaftsstrategie und Strukturpolitik” [environmental economy strategy and structural policy] at the Ministry for Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia,
- ▶ Michael Schwarze-Rodrian, Regionalverband Ruhr [Ruhr regional association,] (RVR),
- ▶ Udo Wichert, Commercial director of STEAG GmbH.

In order to better understand why which structural policy interventions were initiated in which phase and how they worked, it is recommended to look at the three analysis parts of this case study (structural change, interventions and discourse) together.

⁵ The positions listed were held at the time of the interview (2017).

2 Structural change in the Ruhr area

2.1 Historical overview

The Ruhr area encompasses the four districts Ennepe-Ruhr district, Recklinghausen district, Unna district and Wesel district as well as the eleven urban districts of Bochum, Bottrop, Dortmund, Duisburg, Essen, Gelsenkirchen, Hagen, Hamm, Herne, Mülheim an der Ruhr and Oberhausen.

No other region in Germany or Western Europe has been as deeply shaped by hard coal mining or the mining industry as the Ruhr area. One reason was the size of the hard coal deposits and another was the companies in the downstream industries of coal processing, i.e., in the iron and steel industry, and also in the electricity sector, which settled in the Ruhr area.

Already in the Middle Ages, farmers in Muttental in the south of the Ruhr area mined the first hard coal deposits for their own use. In these holes, which were close to the surface, the first mini-open-cast mines were established. In the 18th century, adit mining began. This is where the first state-regulated hard coal was mined. In the 19th century, the increasing industrialisation meant that shaft mining was used so that the deeper hard coal deposits in the central and northern regions of the Ruhr area could be mined. With the increasing expansion of the coal and steel industry, the population in the Ruhr area rapidly grew. Before the industrialisation, the Ruhr area was mainly composed of villages but afterwards towns grew up around the individual colliery sites. From the middle of the 19th century until the 1920s, i.e., approximately 70 years, the number of inhabitants increased tenfold to approximately 3.8 million (Betz, 2011, p. 326). Numerous colliery-owned settlements grew up around the collieries where the new population could live and work.

Hard coal mining slowly moved northwards through the Ruhr area to Münsterland.⁶ In December 2018, the last hard coal mine in the Ruhr area was closed.

Figure 4: Districts and urban districts of the Ruhr area



Source: Own presentation: IAT

Table 1 shows the most important figures relating to hard coal mining in Germany since 1957. Of the 173 hard coal mines in Germany in 1957, 140 were located in the Ruhr area. Hard coal mining dropped Germany-wide from approximately 150 million tons in 1957 (of which 123 million tons in the Ruhr area) to 6.4 million tons in 2015 (2.5 million tons in the Ruhr area). Since the 1950s, hard

⁶ <https://www.ruhrgebiet-industriekultur.de/muttental.html> (20.06.2017)

coal from the Ruhr area had become increasingly less competitive due to the removal of import duties for oil, due to cheap coal imported from the USA and after the liberalisation of the coal price on the global energy market (Heinze et al., 1996, p. 14). Over time, this lack of competitiveness was accentuated by further technological advances, such as, nuclear energy consumption.

Already in the 1950s and 1960s, the majority of the hard coal was used domestically in Germany; only about 20 % of the mined coal was exported in 1957. In the following years, the export share fell to less than 10 %. Hard coal mining was an important guarantee to ensure Germany's own energy resources and thus served the security of supply or rather energy independence, in particular during oil price crises (Goch, 2001, p. 164). In the 1960s, the most important sales market was still the heating market. Approximately 50 % of sales were used for heating. From 1970, this changed and the electricity sector with approximately a quarter of the output became the largest buyer of Ruhr area hard coal. This share continues to grow today. The share of sales to the steel industry remained consistent over the years at around 25 %. Therefore, hard coal was not only mined in the Ruhr area but also the majority of it was sold to and used in other industries in the Ruhr area, in particular in the steel and electricity plants.

Table 1: Selected key figures regarding hard coal mining in Germany 1957–2015

| Indicator | Buyer | Unit | 1957 | 1960 | 1970 | 1980 | 1990 | 2000 | 2010 | 2015 |
|-----------------------------------------------------|-------------------------|--------------------------------------|--------------|-------|-------|-------|-------|-------|-------|-------|
| Hard coal mined | | in million tons (t) tce ⁷ | Ap-prox. 150 | 145.6 | 113.7 | 87.9 | 71 | 34.3 | 13.2 | 6.4 |
| Mines | | No. | 173 | 146 | 69 | 39 | 27 | 12 | 5 | 3 |
| Sales | Electricity sector | in million tons tce | 18.0 | 22.1 | 31.8 | 34.1 | 39.3 | 27.6 | 10.6 | 5.5 |
| | Domestic steel industry | in million tons tce | 30.3 | 31.3 | 27.9 | 24.9 | 19.8 | 10.0 | 3.7 | 0.5 |
| | Domestic heating market | in million tons tce | 68.1 | 61.3 | 28.5 | 9.4 | 4.1 | 0.7 | 0.3 | 0.2 |
| | Export | in million tons tce | 31.3 | 32.3 | 28.7 | 19.9 | 7.8 | 0.3 | 0.2 | 0.1 |
| Employees | | in 1,000 | 607.3 | 490.2 | 252.7 | 186.8 | 130.3 | 58.1 | 24.2 | 9.6 |
| Output per man and shift in the mine (productivity) | | kg usable mined coal | 1,599 | 2,057 | 3,755 | 3,948 | 5,008 | 6,685 | 6,092 | 7,251 |

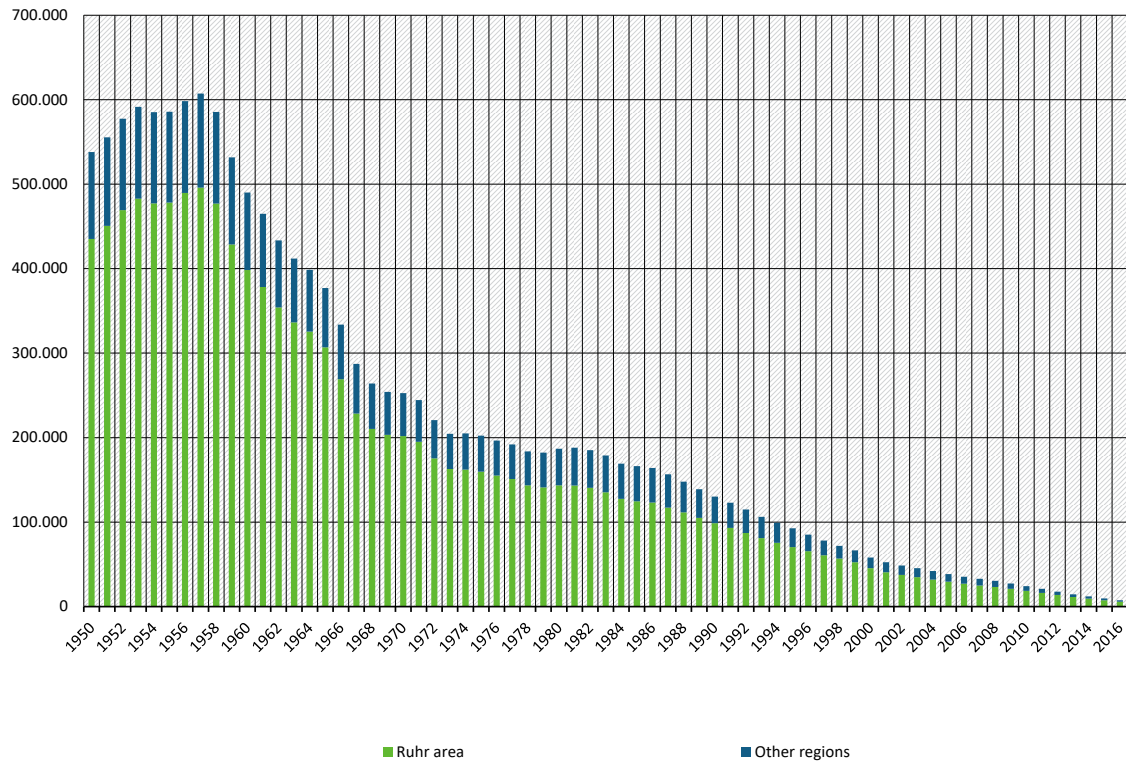
Source: Statistik der Kohlenwirtschaft e.V. (2017)

Among other things, table 1 shows the huge advances in productivity, which were achieved over time in hard coal mining: While in 1957, approximately 1,599 kg coal was mined per man and shift in the mine, in 2015 it was 7,251 kg per man and shift.

⁷ tce is a measurement of hard coal and measures the energy released by hard coal. 1 kg tce corresponds to 7,000 kcal or 29,300 kJ, the average calorific value of a kilo of hard coal (gvst.de, 2012).

The great importance of Ruhr coal for Germany as a whole is clear among other things on account of the number of employees in the German hard coal mines. 1957 was the peak in terms of employment. Across Germany, approximately 600,000 people were working in hard coal mines, of which approximately 500,000 were employed in the Ruhr area (see Figure 5). Due to the great increases in productivity, the difficult working conditions, the special position of the trade unions and the high level of trade union membership among the employees, the wage level for miners was above average.

Figure 5: Workforce development in hard coal mines 1950–2016



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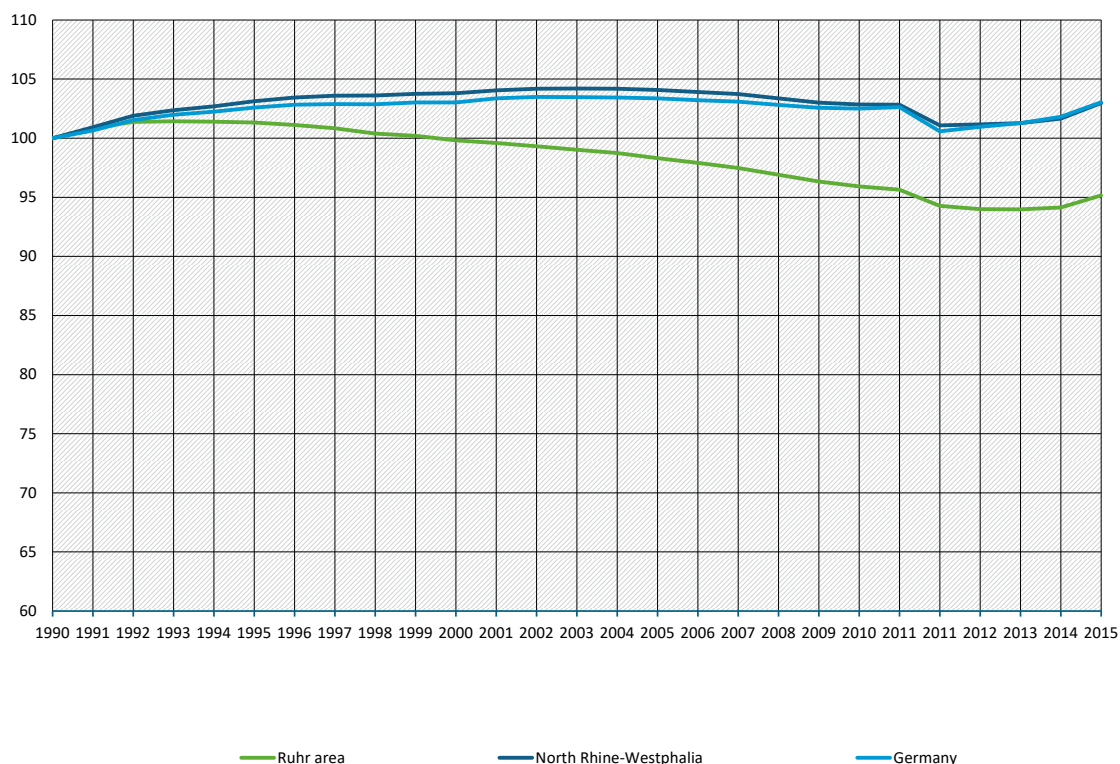
Source: Statistik der Kohlenwirtschaft e.V. (2019), presentation: IAT

2.2 Time series of selected structural data

2.2.1 Demographic development

In 1961, 5.6 million people lived in the Ruhr area. At the end of 2015, approximately 5.1 million people lived in the Ruhr area, of which approximately 51 % were women and 49 % men. The population decline did not occur steadily but in waves: By the late 1980s, the population had fallen to approximately 5.2 million. Between the German reunification and the mid-1990s, there was a population increase. Since then, the population has successively declined, while in NRW and in Germany as a whole a slight population increase of 3 % has been recorded (see Figure 6).

Figure 6: Population development in the Ruhr area, in NRW and in Germany 1990–2015, index 1990=100



© IAT

Source: Statistics from Regionalverband Ruhr [Ruhr regional association]⁸ (1999, 2017), presentation: IAT

⁸ The basis is the censuses in 1987 and 2011. Comparability is limited. The data for population statistics until 2011 is based on the forward projections by the German Federal Statistical Office based on the 1987 census. Through the 2011 census, new population data was collected that led to deviations from the projections.

In the Ruhr area, the demographic change occurred faster than average:

- ▶ Thus the share of population under 20 years of age in the Ruhr area fell from 29.6 % in 1961 to 18 % in 2015. In comparison, the corresponding share fell from 28.9 % to 18.9 % in NRW.
- ▶ At the same time, the share of population over 60 years in the Ruhr area increased from 15.9 % (1961) to 28.1 % (2015) and in NRW from 15.7 % (1961) to 26.8 % (2015).
- ▶ Since 1961, the share of people of working age (20–60) in the Ruhr area has fallen by 1.6 percentage points to 53.9 %. In NRW, there was a decline of one percentage point from 55.4 % in 1961 to 54.4 % in 2015.

Table 2: Population development in the Ruhr area and in NRW according to age group

| | | 1961 | 2015 | Absolute development | Relative development |
|------------------|----------|------------|------------|----------------------|----------------------|
| Ruhr area | Under 20 | 1,611,609 | 919,737 | -691,872 | -42.9 % |
| | 20–60 | 3,123,413 | 2,752,703 | -370,710 | -11.9 % |
| | Over 60 | 895,862 | 1,436,813 | 540,951 | 60.4 % |
| | Total | 5,630,884 | 5,109,253 | -521,631 | -9.3 % |
| NRW | Under 20 | 4,512,650 | 3,371,550 | -1,141,100 | -25.3 % |
| | 20–60 | 8,659,708 | 9,713,264 | 1,053,556 | 12.2 % |
| | Over 60 | 2,460,124 | 4,780,702 | 2,320,578 | 94.3 % |
| | Total | 15,632,482 | 17,865,516 | 2,233,034 | 14.3 % |

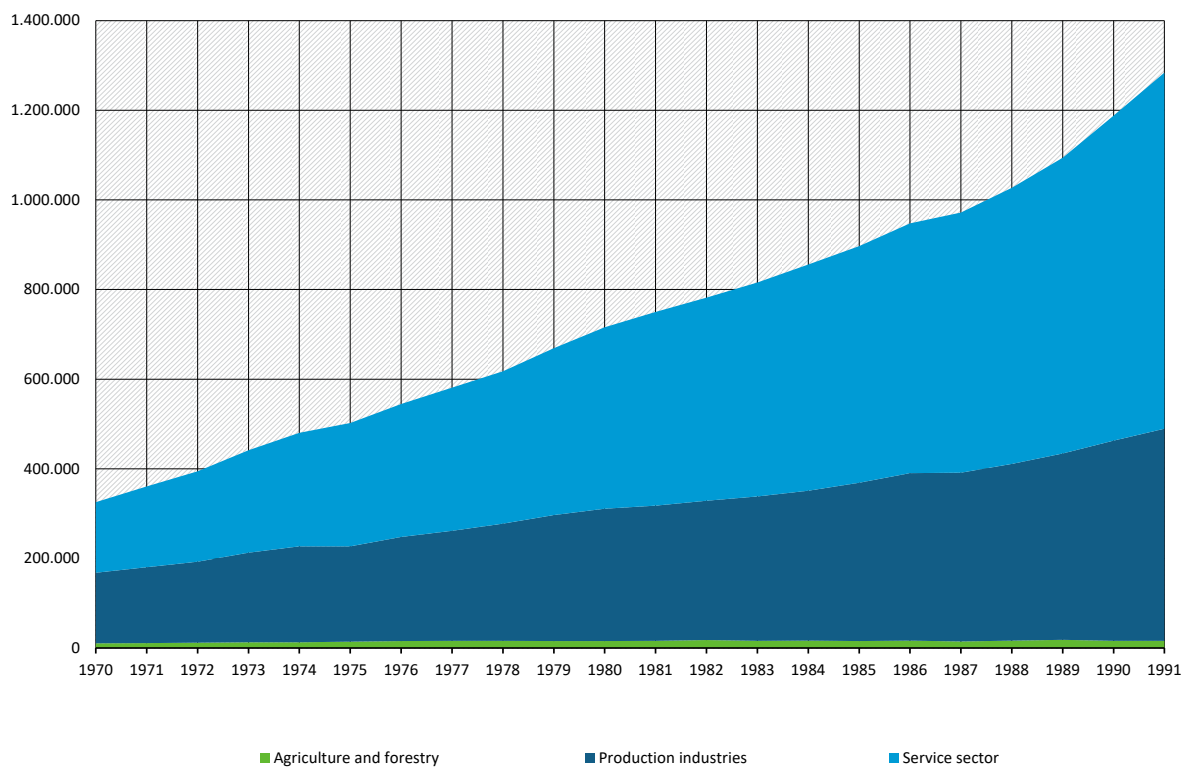
Source: Statistics from Regionalverband Ruhr [Ruhr regional association]⁹ (1999, 2017)

⁹ The basis is the censuses in 1961, 1970, 1987 and 2011. Comparability is limited (see above).

2.2.2 Labour market development

In 2014, approximately 2.26 million people worked in the Ruhr area (see Figure 7). Since 1996, the number of those in employment has fallen by 79,400, which corresponds to a decline of -3.4 %. The substantial decline in the production industry from nearly 800,000 employees to 595,000 employees in 2014 (-57.2 %) could only be partially compensated by growth in the service sector. Since 1964, this sector has grown by approximately 754,000 employees (+84.2 %) so that the figure increased to 1.65 million in 2014. The agricultural sector with an employment share of 2 % was only of marginal importance in the Ruhr area already in the 1960s. In 2014, the corresponding share was only 0.5 %.

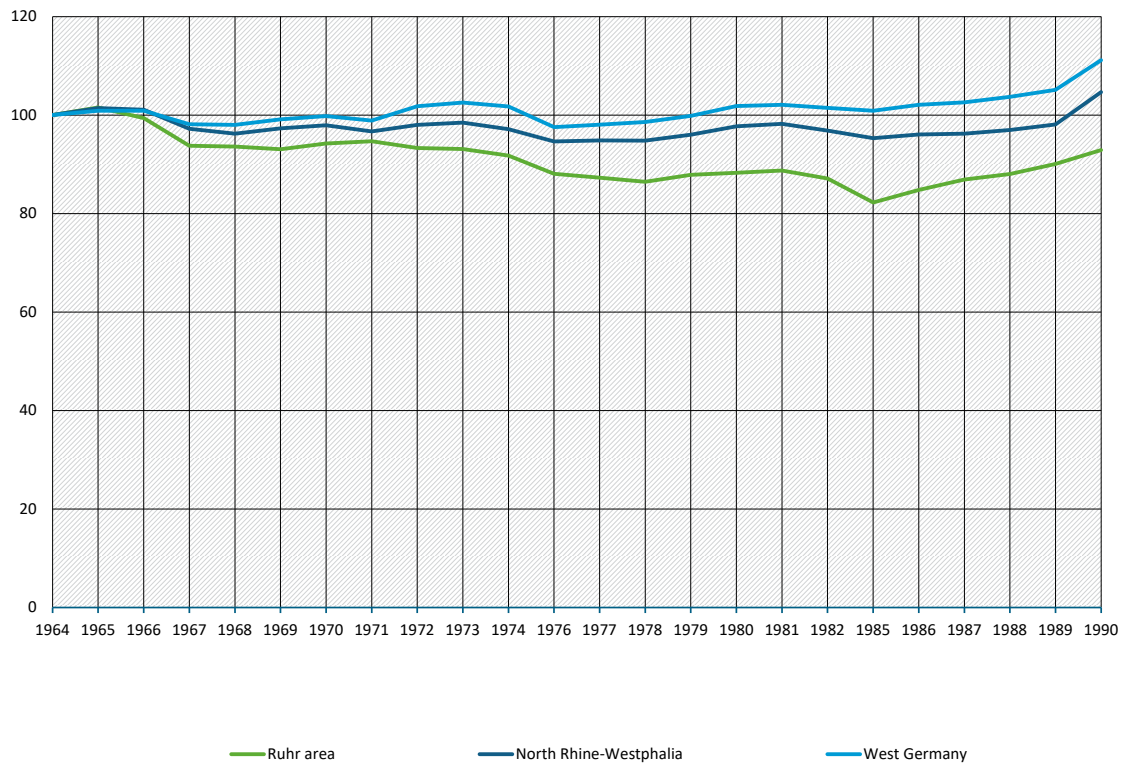
Figure 7: Development of employment according to sector in the Ruhr area 1976–2014



Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (1999, 2017), presentation: IAT

Even though cyclical upswings and downturns can be seen in NRW and in the West German states, the significantly worse decline in employment in the Ruhr area is evident (see Figure 8). In this regard, a loss of approximately -15 % before 1986 can be observed. In the second half of the 1980s, employment increased but the Ruhr area remained significantly behind the developments in NRW and the West German states. Compared to 1964, the first year of the investigation period, NRW and the West German states showed respective percentage pluses of 5 % and 11 % for 1990, while in 1990, the Ruhr area showed a decline of -7 % in comparison to 1964.

Figure 8: Employment development in the Ruhr area, in NRW and in West Germany 1964–1990, index 1964=100

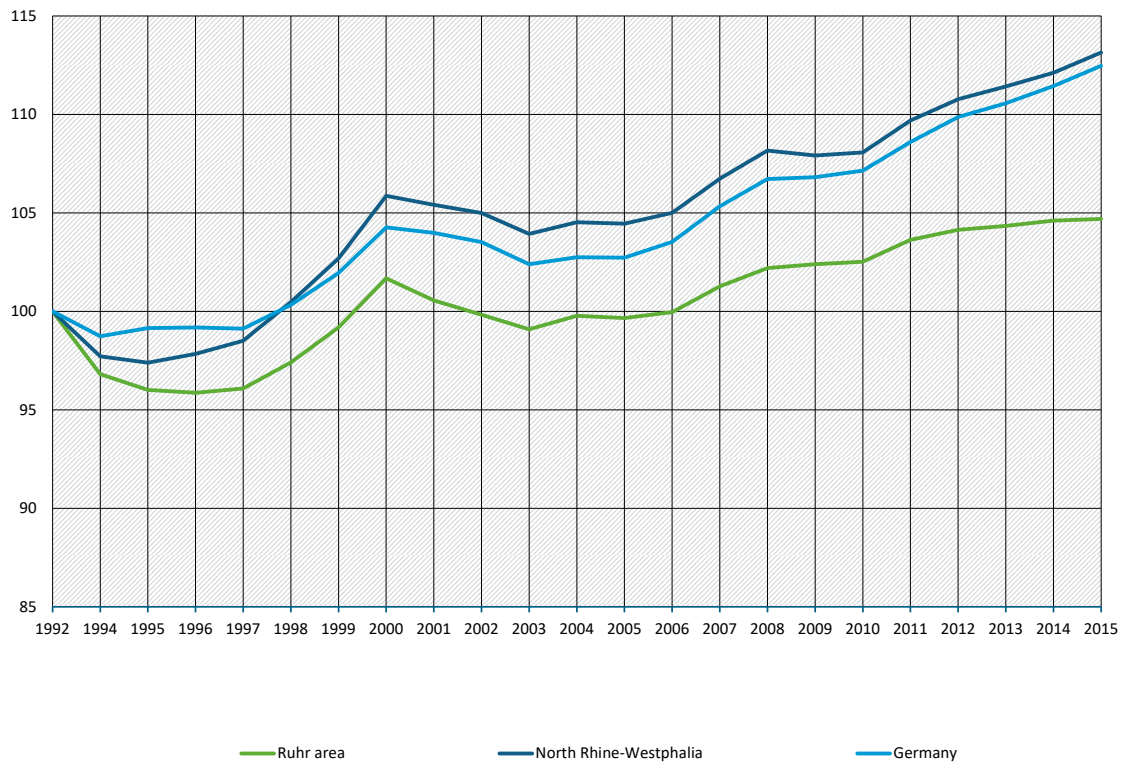


© IAT

Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (1999, 2017), calculation and presentation: IAT

Over the further course of time after the German reunification, employment was initially in decline but increased again in the late 1990s (see Figure 9). In 2015, employment was approximately 5 % higher than in the base year of 1992. Also in this regard, the development in the Ruhr area significantly lagged behind the two comparison regions. In NRW employment increased by 13.1 % and Germany-wide a plus of 12.5 % was recorded.

Figure 9: Employment development in the Ruhr area, in NRW and in Germany 1992–2015, index 1992=100

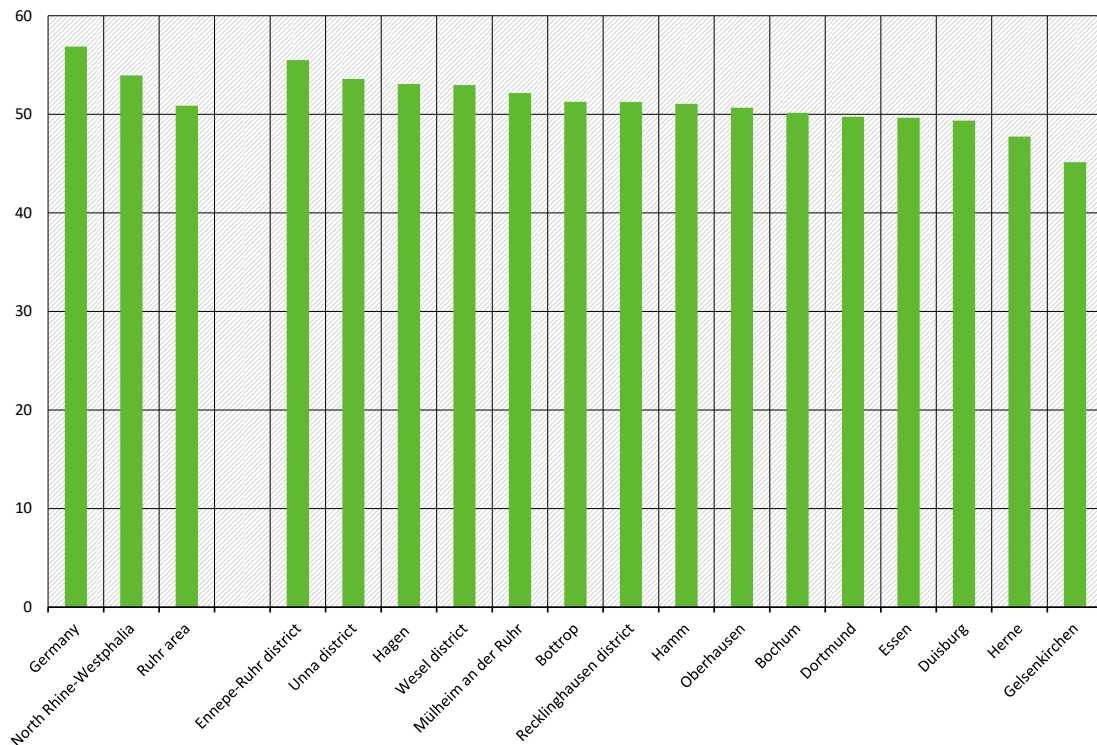


© IAT

Source: German Federal Statistical Office, statistical offices of the German states (2017), calculation and presentation: IAT

The employment rate (determined here as the share of employees subject to social security contributions at the place of residence among the population aged 15–65 at this place of residence) is an important indicator of the participation of the population in working life. In 2015, the employment rate in the Ruhr area was 50.9 % and therefore below the average for NRW and for Germany at 53.9 % and 56.9 % respectively (see Figure 10).

Figure 10: Employment rate in regional comparison 2015

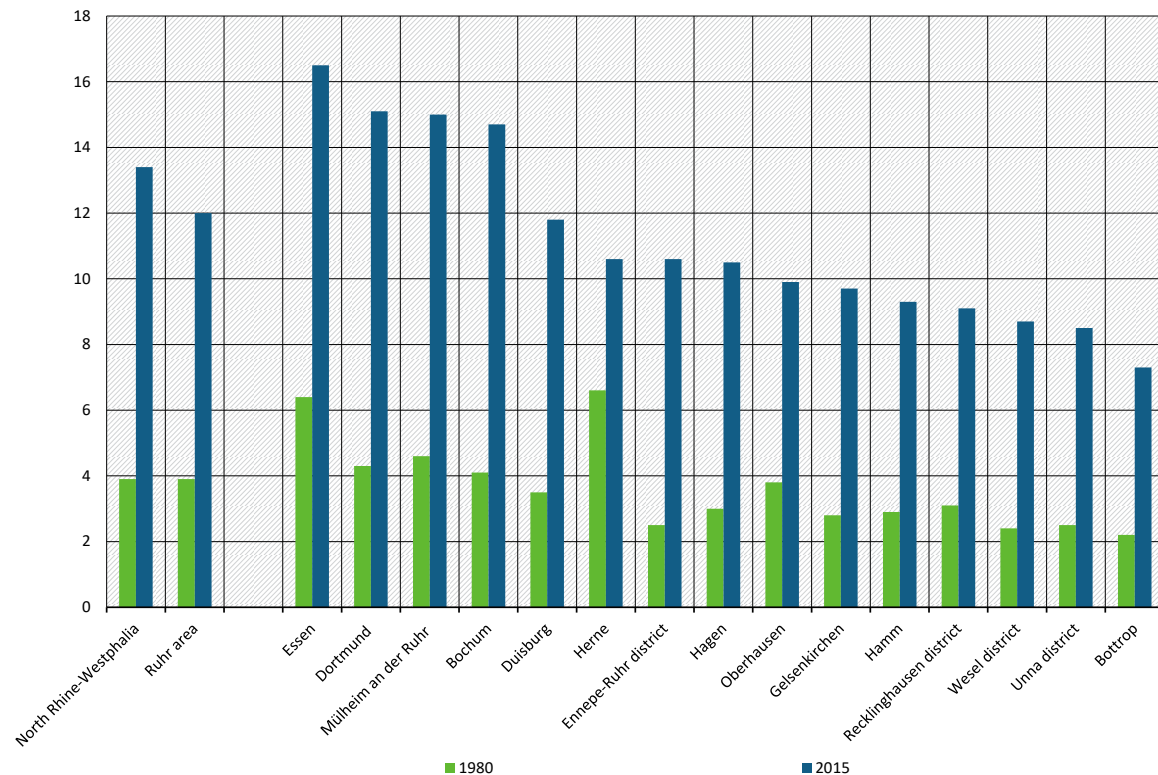


Source: German Federal Employment Agency (2016), calculation and presentation: IAT

However, there are significant differences between the 15 districts and urban districts of the Ruhr area. The highest rate of employment is in the Ennepe-Ruhr district at 55.5 % and the lowest rate is in Gelsenkirchen at 45.2 %.

Since 1980, the share of workers with an academic qualification has increased from 3.9 % to 12 % (see Figure 11). However, this figure for the Ruhr area is still below the NRW average of 13.4 %. Essen has the most academics with a share of 16.5 % while the lowest share at 7.3 % is found in Bottrop, the “last mining town in the Ruhr area”.

Figure 11: Share of employees subject to social security contributions with an academic qualification among all employees subject to social security contributions (at the place of work) 1980 and 2015, data in percent



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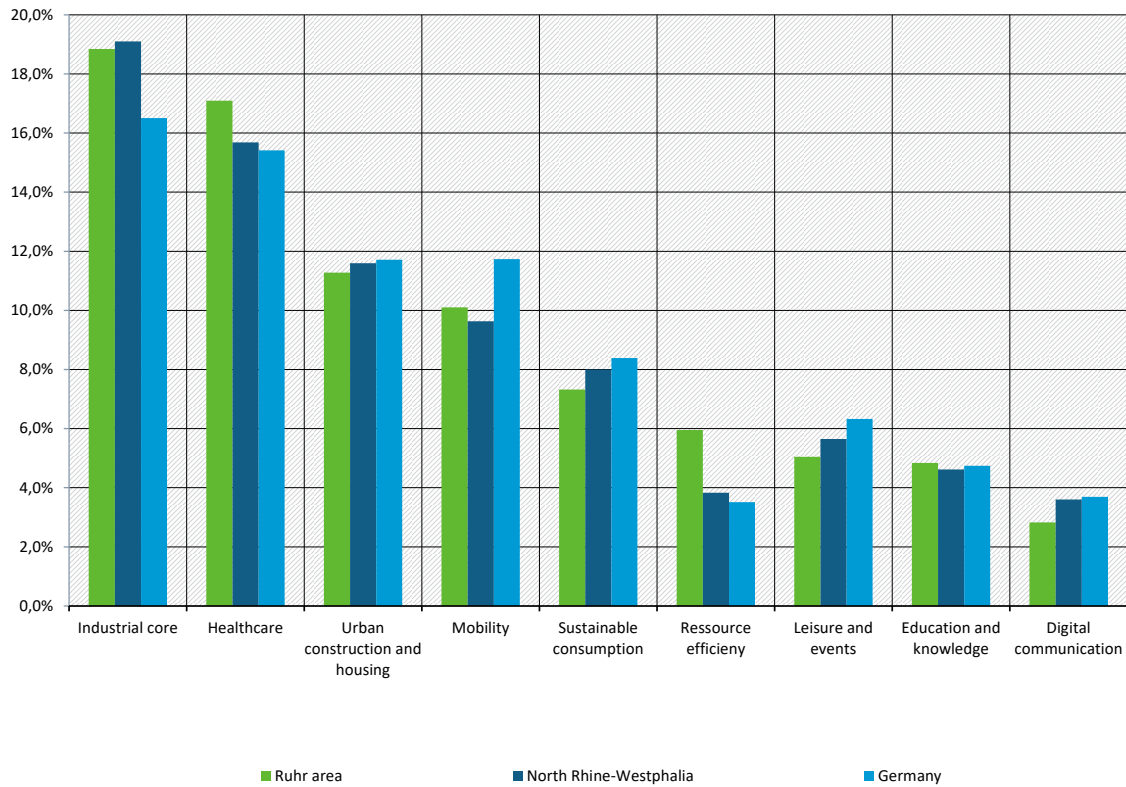
Source: Regionalverband Ruhr [Ruhr regional association] on the basis of data from the German Federal Employment Agency (1999, 2016), presentation: IAT

Since the 2000s, there has been a change of direction in the structural policy. Since then, it has followed the motto “strengthen strengths” (see Chapter 4.1.4 and Chapter 5.5). With this focus, a detailed analysis was also carried out in the Ruhr area. The “Wirtschaftsbericht Ruhr 2011 – Leitmärkte und regionale Zukunftsfelder” [The economic report - lead markets and regional future areas] names the following nine fields (Nordhause-Janz & Rehfeld, 2011):

- ▶ Education and knowledge,
- ▶ Digital communication,
- ▶ Leisure and events,
- ▶ Healthcare,
- ▶ Mobility,
- ▶ Sustainable consumption,
- ▶ Resource efficiency,
- ▶ Urban construction and housing,
- ▶ and also (as dynamic driver of innovation) the “Industrial core”.

The following figure shows the respective share of workers subject to social security contributions in the respective lead markets among all employees subject to social security contributions in the Ruhr area, in NRW and in Germany.

Figure 12: Share of workers subject to social security contributions in the lead markets among all employees subject to social security contributions in 2013



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Source: German Federal Employment Agency (2014), calculation and presentation: IAT

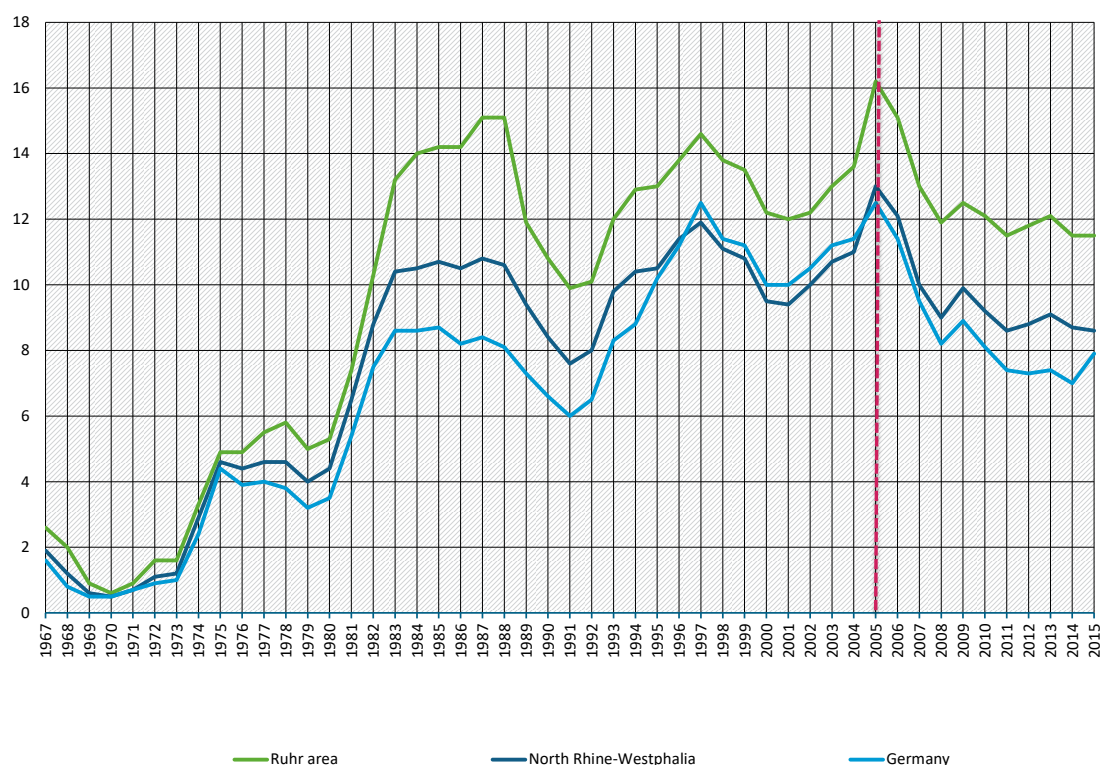
Although the “industrial core” of the Ruhr area has been in decline for years, in 2013 at 19 % it had the highest share of employees and was followed by the employee intensive “healthcare” lead market. The lowest share of employment was found in the “digital communication” lead market at 2.8 %.

Also in the comparison regions of NRW and Germany, the “industrial core” had the highest share of employment at 19.1 % for NRW and 16.5 % for Germany. These figures illustrate the great importance of the industrial sector for NRW and Germany.

Figure 13 shows the development of the unemployment rate. The unemployment rate portrays the share of unemployed persons registered at the German Federal Employment Agency (and its predecessor) among the civilian labour force¹⁰ and is an important indicator for participation or rather non-participation in working life.

After the oil price crisis in 1973, there was a massive increase in unemployment. In particular in the 1980s, a clearly greater increase was observed in the Ruhr area in comparison to NRW and the West German states due to the high level of job losses in the hard coal mining sector. In 1987/88, the unemployment rate in the Ruhr area reached 15.1 % and was clearly higher than the rate in NRW at 10.8 % and in the West German states at 8.4 %.

Figure 13: Development of the unemployment rate¹¹ in the Ruhr area¹², in NRW and in Germany¹³ 1967–2015



© IAT

Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (1999, 2016), presentation: IAT

Note regarding 2005: In 2005, with the introduction of the Arbeitslosengeld II [unemployment benefit II] (“Hartz IV legislation”; Zweites Sozialgesetzbuch [Second German Social Security Code] (SGB II)), a new legal basis was created for the entitlement to unemployment benefit for the long-term unemployed. Unemployed recipients of benefits, who were previously not recorded in the unemployment statistics, have now been recorded since 2005. The increase in 2005 is due to this change. Therefore, a comparison before and after 2005 is not possible.

¹⁰ The civilian labour force includes employees subject to social security contributions (including trainees), part-time employees, persons in employment opportunities (with expenses paid by the German Federal Employment Agency), civil servants (excluding soldiers) and cross-border commuters and unemployed persons registered at the German Federal Employment Agency (https://statistik.arbeitsagentur.de/nn_4236/Statistischer-Content/Grundlagen/Berechnung-Arbeitslosenquote/Berechnung-Arbeitslosenquote.html (08.03.2018)).

¹¹ Data for September respectively; new calculation of unemployment rate from 1989 (based on census, 1987)

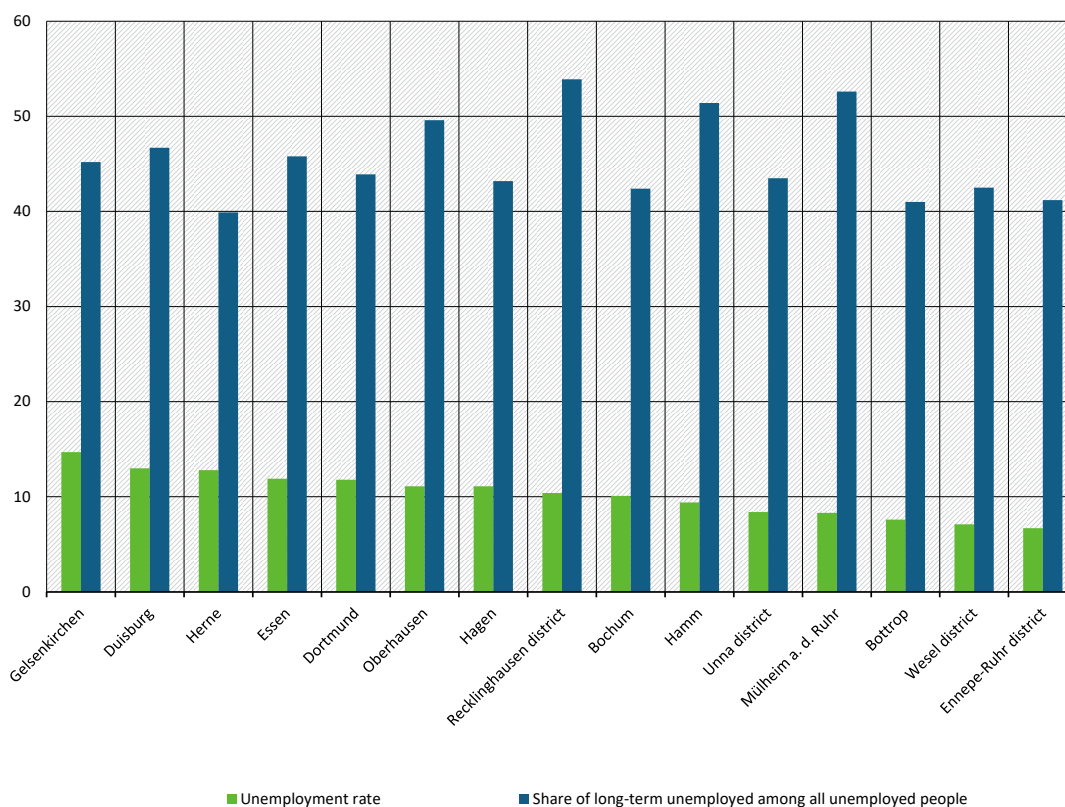
¹² The Wesel district was not included in the calculation for the years 1967–1972.

¹³ From 1995, territorial boundaries as on 03.10.1990

Since 2005, the unemployment rate has declined again. However, in the Ruhr area this decline was significantly less than in NRW and in Germany. In September 2015, the unemployment rate in the Ruhr area of 11.5 % was 2.9 percentage points above the rate of NRW and 3.1 percentage points above the all-Germany average.

Gelsenkirchen had the highest unemployment rate at 14.7 %; Ennepe-Ruhr district had the lowest rate at 6.7 %. Mülheim an der Ruhr had the high share of long-term unemployed at 52.6 %; Herne had the lowest share of long-term unemployed at 39.9 % (see Figure 14).

Figure 14: Unemployment rate and share of long-term unemployed among all unemployed people in the districts and urban districts of the Ruhr area in 2016

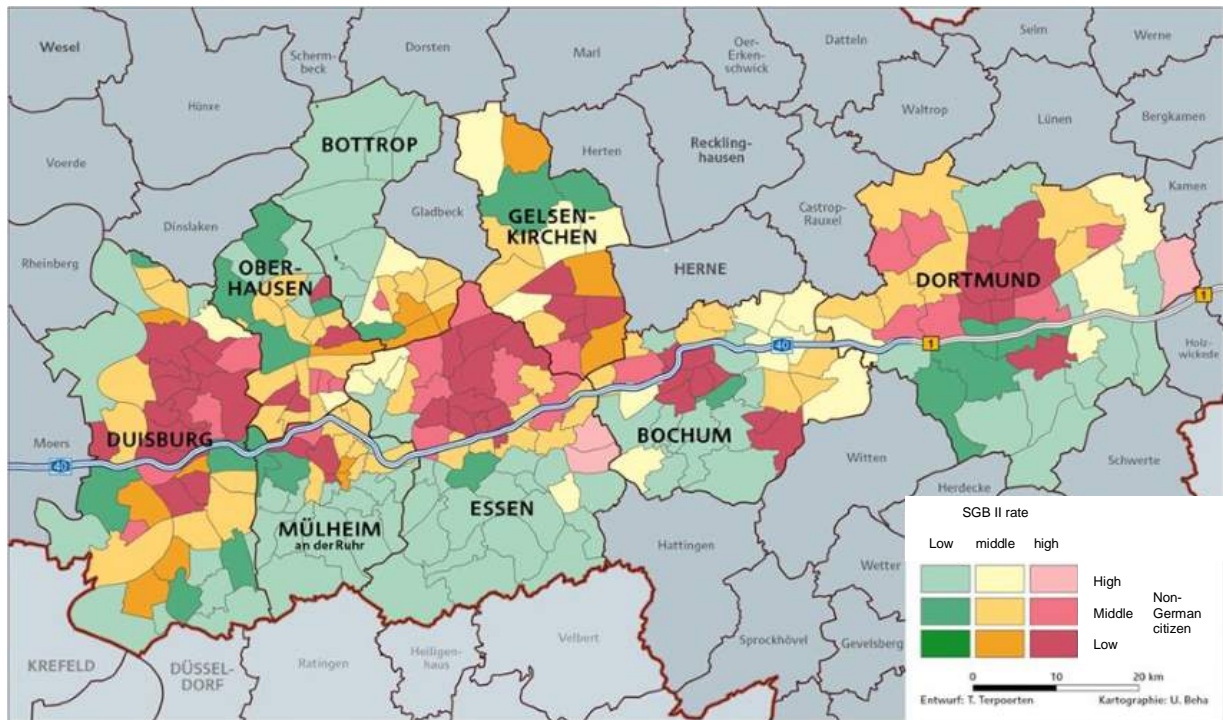


Source: Information und Technik Nordrhein-Westfalen (IT.NRW) (2017), presentation: IAT

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The SGB II rate measures the share of benefit recipients according to SGB II [Second German Social Security Code] among the population of working age and is an important indicator measuring poverty. The following figure shows the SGB II rate on a neighbourhood level for selected towns in the Ruhr area.

Figure 15: SGB II rate in selected towns in the Ruhr area, “A 40 social equator”



Source: Bogumil et al. (2012)

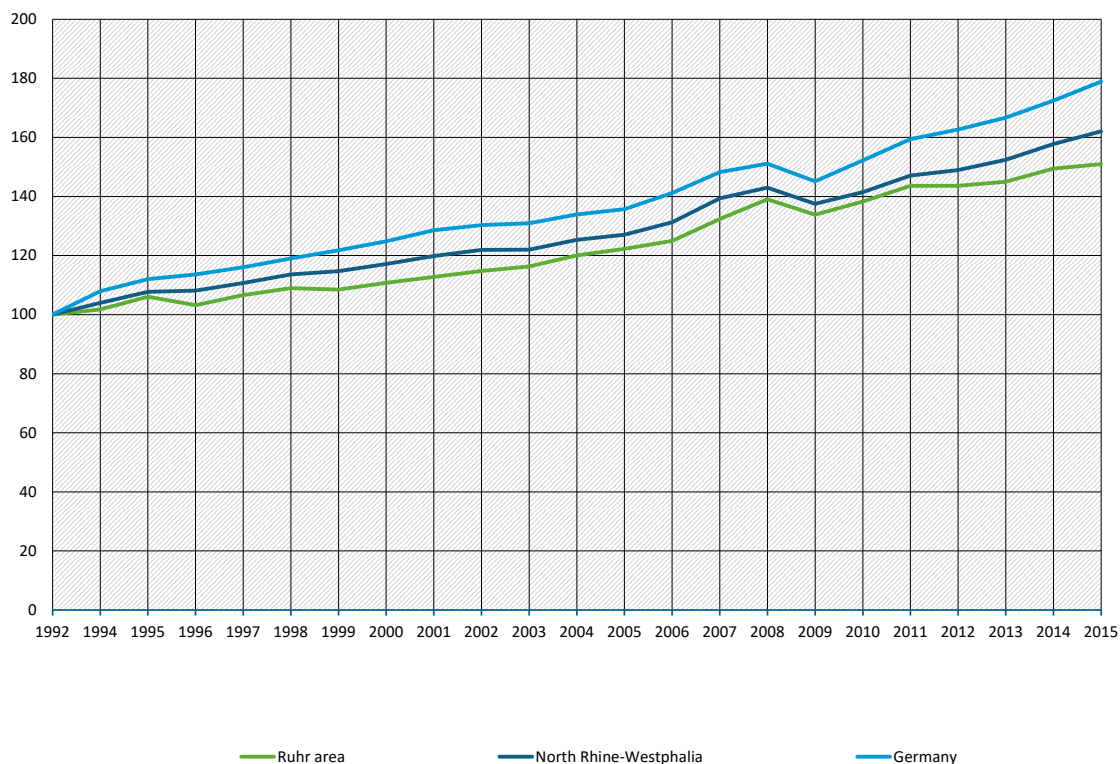
The figure clearly shows the regional distribution of long-term unemployment in the Ruhr area, which has become prominent north of the A 40 motorway (Ruhrschnellweg [Ruhr motorway]).

2.2.3 Economic situation and development

The gross domestic product (GDP)¹⁴ measures the value of all goods and services created or provided in a country or within another geographical frame of reference and is therefore an important indicator for the economic performance of a country or a region. Between 1992 and 2015, the GDP in the Ruhr area nominally increased from 104.2 billion euros¹⁵ to 157.3 billion euros: a plus of approximately 51 % (see Figure 16).

However, the development in the Ruhr area lagged behind that of the two comparison regions of NRW and Germany. Thus, in NRW the GDP increased by 62 % and Germany-wide a growth of 79 % was recorded.

Figure 16: Development of the GDP in relation to market prices 1992–2015, index 1992=100



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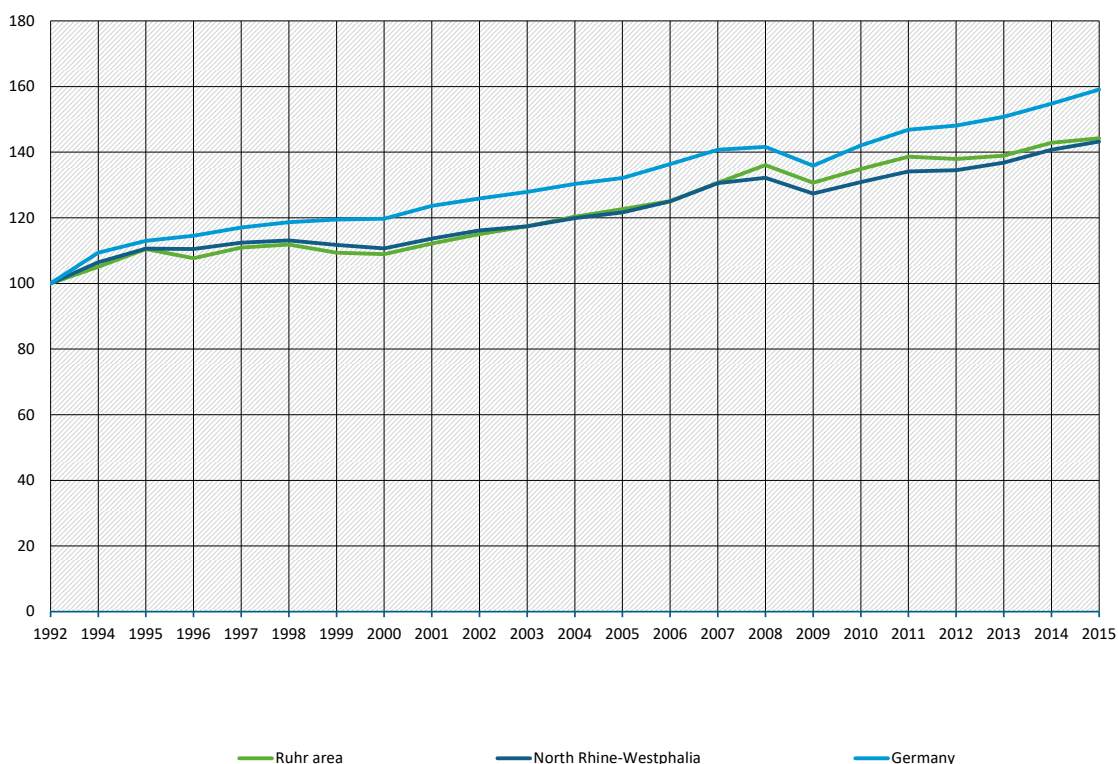
Source: GA of the German states, audit 2014 (2016), calculation and presentation: IAT

¹⁴ The GDP is a measurement of production and is calculated from the total of the gross value added (i.e., the value of all goods and services produced or provided in a country or region within a period of time minus the value of the input) by all economic sectors plus the balance of the taxes on products and product subsidies (<http://wirtschaftslexikon.gabler.de/Definition/bruttoinlandsprodukt-bip.html> (08.03.2018)).

¹⁵ The calculation from DM to euro was carried out by the German Federal Statistical Office or rather the statistical offices of the German states.

The GDP per worker indicator measures the achieved labour productivity that each worker has generated on average. In 1992, this figure was 45,783 euros in the Ruhr area. The comparison values were 49,250 euros in NRW and 44,284 euros on average in Germany. Thus, in 1992 the labour productivity in the Ruhr area was higher than the German average. However, the developments between 1992 and 2015 in the Ruhr area and in NRW lagged behind the German average (see Figure 17). While a growth of 44.2 % in the Ruhr area and a growth of 43.2 % in NRW could be ascertained, the labour productivity in Germany grew by 59.1 %. At 66,025 euros per worker in 2015, the productivity in the Ruhr area was ultimately clearly below the German average of 70,437 euros per worker. Despite low growth, labour productivity in NRW at 70,542 euros per worker remained higher than that of the comparison regions.

Figure 17: Development of the GDP per worker 1992–2015, index 1992=100

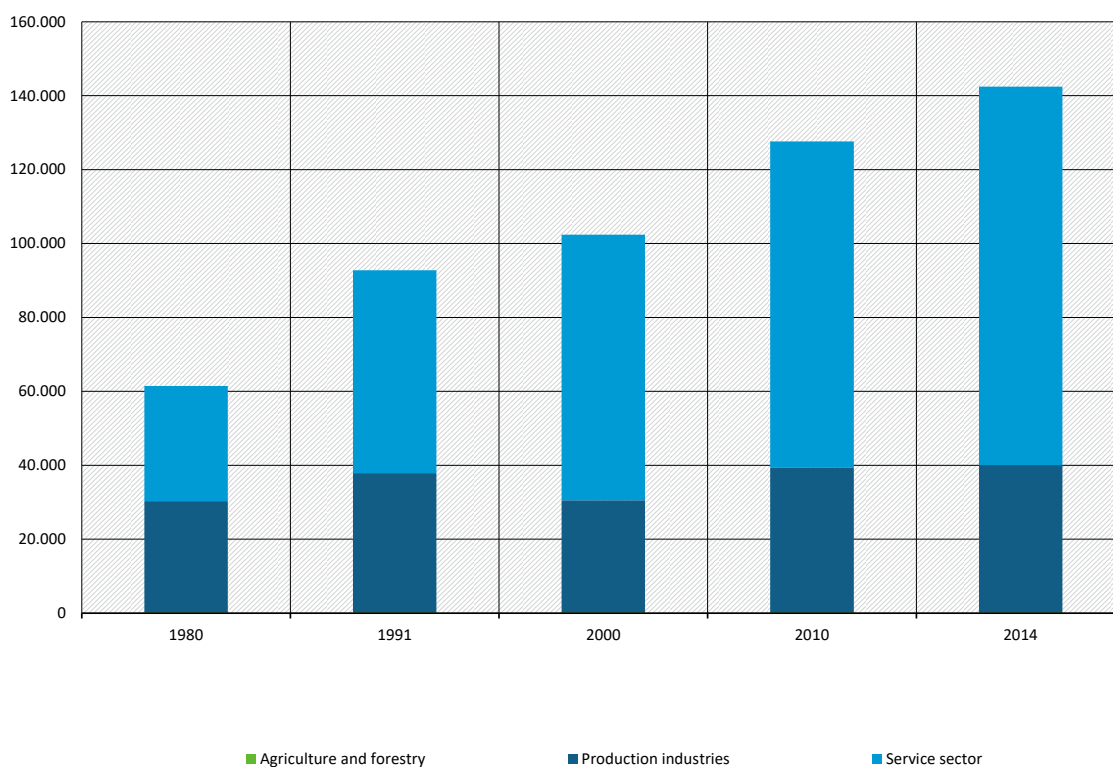


© IAT

Source: German Federal Statistical Office, statistical offices of the German states (2016), calculation and presentation: IAT

The reason for the weaker growth in the Ruhr area and in NRW is the high losses in the industrial sector, which in the Ruhr area were primarily in the mining industry. Figure 18 shows the development of the gross value added in the Ruhr area in 1980, 1991, 2000, 2010 and 2014. The gross value added measures the value of all goods produced and services provided without the value of the necessary input (e.g., the raw materials) and for this reason it is well placed to provide a comparison between different economic sectors and fields. In 1980, approximately 61.4 million euros were generated, of which 21.1 million was in the agriculture and forestry sector, 30.1 million euros in the industry sector and 31.1 million euros in the service sector. In regard to their economic performance, the industry and service sectors were approximately at the same level in 1980. In 2014, a clearly different picture was already evident: Of the generated 142.4 million euros, 71.9 % was generated in the service sector and only 28 % was generated in the industry sector.

Figure 18: Development of the gross value added in the Ruhr area per sector in million euros

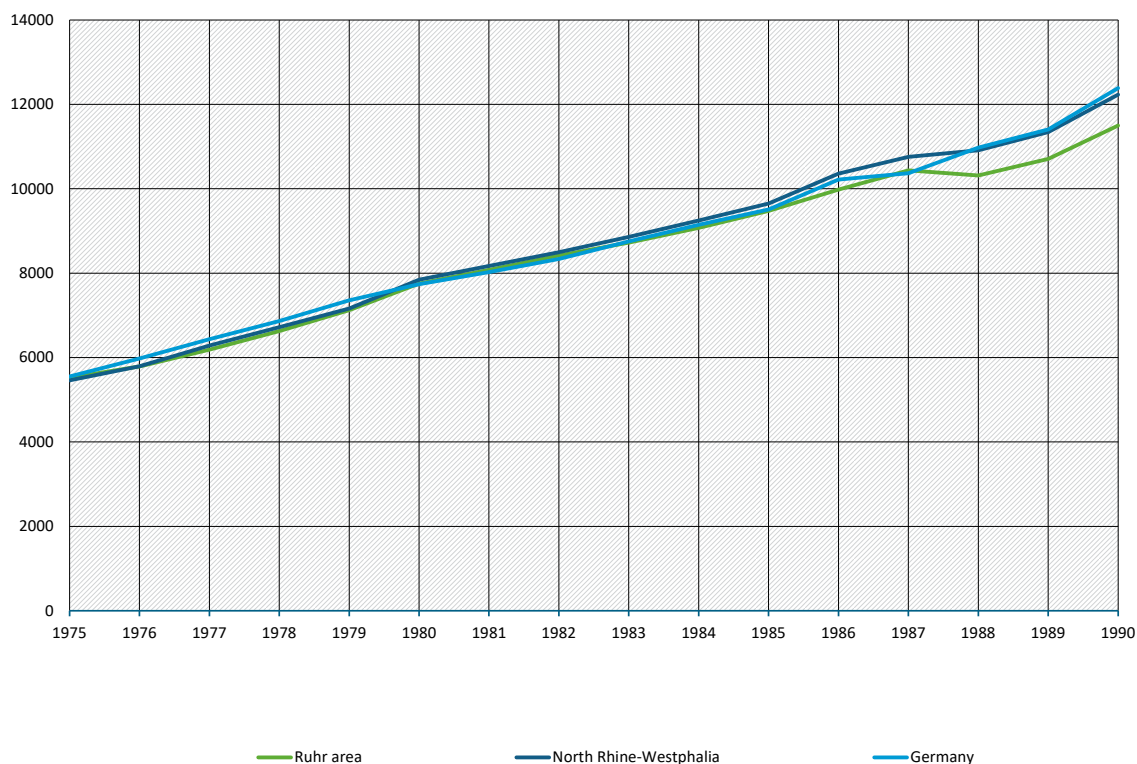


© IAT

Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (2005, 2014, 2016), presentation: IAT

The disposable income in private households in euros per inhabitant provides important information about the average income level per inhabitant within a region. Since 1975, the income level in all three comparison regions has clearly risen. However, a clear “break” between the Ruhr area and the West German states as a comparison region can also be seen since 1987 (see Figure 19). The loss of jobs in the mining industry, where wages were above average, had a direct impact on the average income level. Thus, the disposable income in the Ruhr area rose by 5,980 euros¹⁶ to 11,501 in 1990, while in NRW it rose by 6,769 euros to 12,230 euros and on average it rose in the West German states by 6,833 euros to 12,385 euros.

Figure 19: Disposable income of private households in euros per inhabitant in the Ruhr area, in NRW and in West Germany 1975–1990



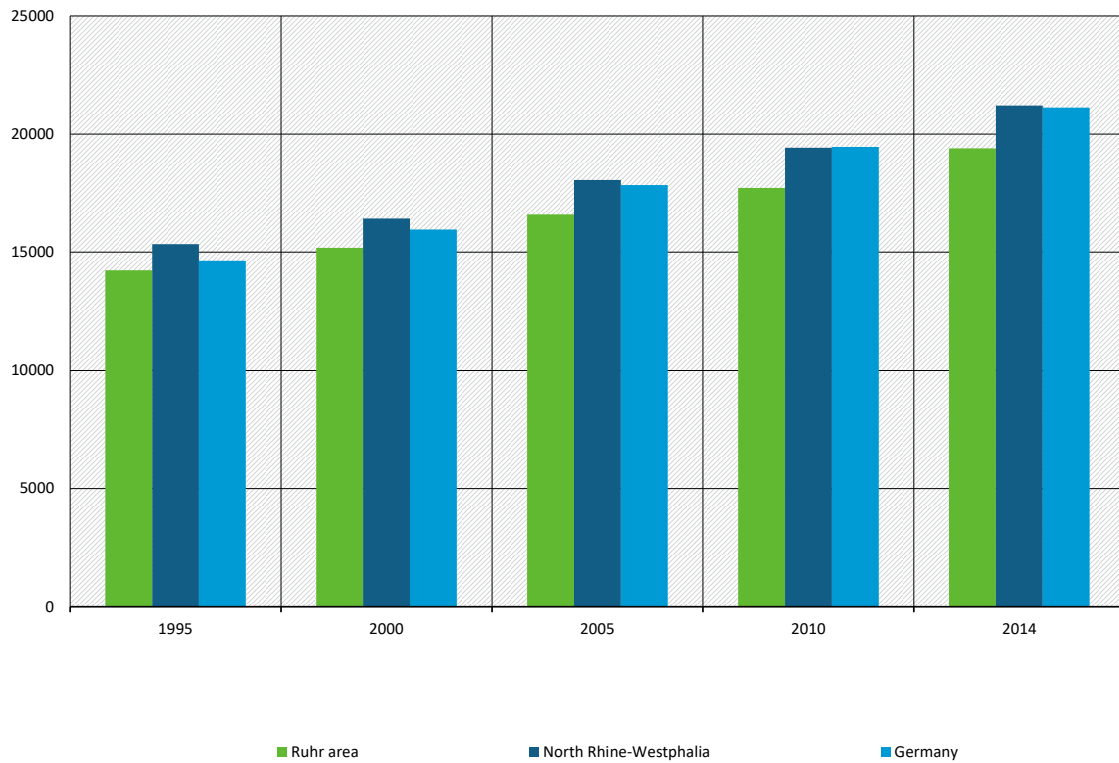
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Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (2016), presentation: IAT

¹⁶ The calculation from DM to euro was carried out by the German Federal Statistical Office or rather the statistical offices of the German states.

Also, over the further course of time, the development in the Ruhr area significantly lagged behind that of the two comparison regions. Thus, the disposable income per inhabitant in the Ruhr area increased between 1995 and 2014 from 14,242 euros to 19,395 euros (+36.2 %). In the same period, it increased in NRW by 5,870 euros to 21,207 (+38.3 %) and in Germany a growth of 6,480 euros to 21,117 euros (+44.3 %) was recorded (see Figure 20).

Figure 20: Disposable income in euros per inhabitant in the Ruhr area, in NRW and in West Germany 1995–2014



© IAT

Source: German Federal Statistical Office, statistical offices of the German states (2016), calculation and presentation: IAT

2.2.4 Universities

In 1961, the foundation of the Ruhr-University of Bochum (RUB) as the first university in the Ruhr area was decided in the NRW state parliament. In 1965, RUB began giving lectures. Between then and 2015, the Ruhr area has become the so-called “Wissensregion Ruhr” [Ruhr region of knowledge] with a total of 22 universities, places of higher education and research institutes.

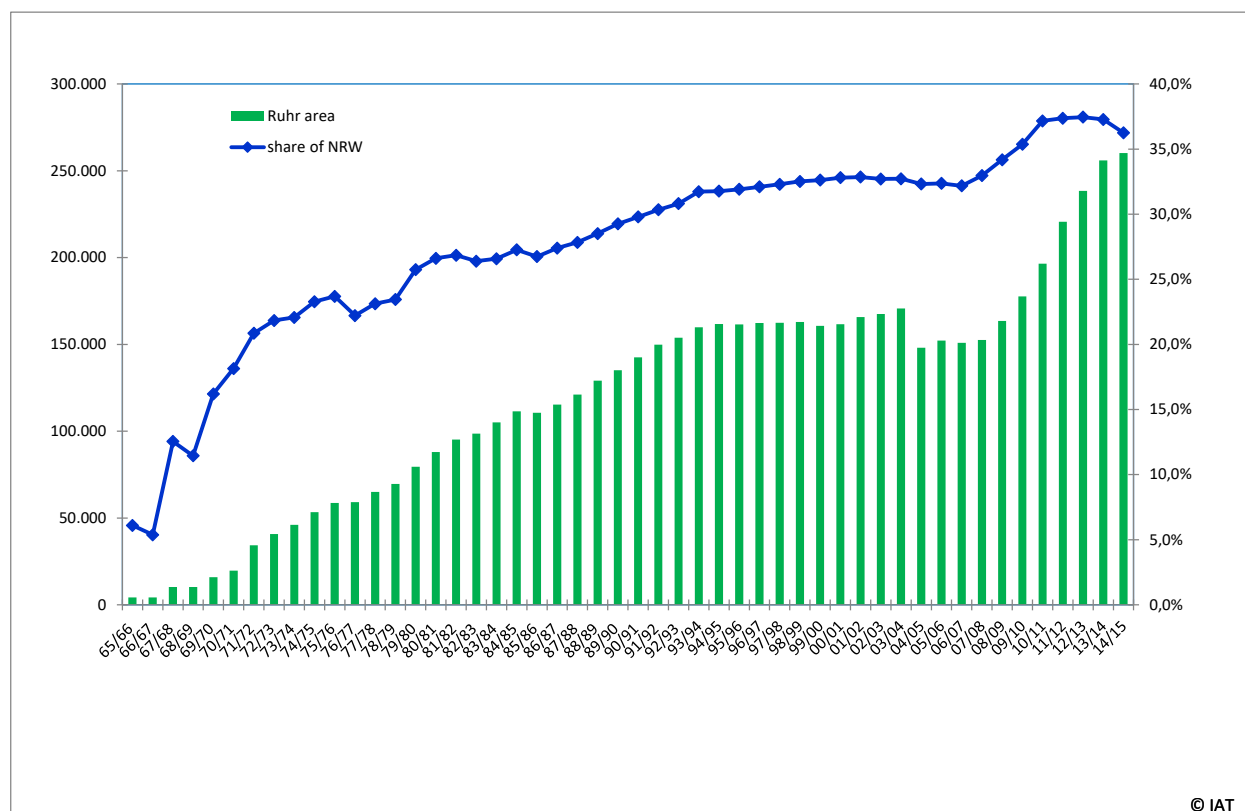
Table 3: Universities and Universities of applied sciences in the Ruhr region

| University / University of Applied Sciences | founding | Students WS 2013/14 | Professor 2013 |
|-----------------------------------------------------------------------------------------------------------|-----------|---------------------|----------------|
| TH Georg Agricola University | 1816 | 2.400 | 34 |
| Folkwang University of Arts | 1927 | 1.500 | 98 |
| Ruhr-University Bochum | 1965 | 41.200 | 460 |
| Technical University Dortmund | 1968 | 31.000 | 300 |
| University of Applied Sciences Dortmund | 1971 | 12.300 | 227 |
| University of Applied Sciences Bochum (without Heiligenhaus) | 1971 | 6.400 | 130 |
| Protestant University of Applied Sciences Rhineland-Westphalia-Lippe | 1971 | 2.200 | 57 |
| University Duisburg-Essen | 1972/2003 | 38.700 | 470 |
| Germany's State Distance-Learning University Hagen | 1974 | 75.800 | 81 |
| University of Applied Sciences for Police and Public Administration in North Rhine-Westphalia (Ruhr area) | 1976 | 3.700 | 37 |
| University Witten/Herdecke | 1980 | 1.700 | 53 |
| International School of Management ISM | 1990 | 2.300 | 45 |
| Westphalian University of Applied Sciences Gelsenkirchen (without Bocholt) | 1992 | 7.300 | 139 |
| FOM University of Applied Sciences Economics and management | 1993 | 19.800 | 235 |
| University of Applied Sciences South-Westphalia (only Hagen) | 2002 | 2.900 | 39 |
| SRH University of Applied Sciences Logistics and economics | 2005 | 600 | 15 |
| EBZ Business School | 2008 | 800 | 16 |
| University of Applied Sciences Ruhr-West | 2009 | 2.500 | 59 |
| University of Applied Sciences Hamm-Lippstadt (only Hamm) | 2009 | 1.400 | 31 |
| University of Applied Sciences Rhine-Waal (only Kleve) | 2009 | 1.300 | 25 |
| University of Applied Sciences for health | 2009 | 700 | 19 |
| University of Applied Sciences for health and sports (only Unna) | 2011 | 200 | 0 |
| Gesamt ca. | | 256.700 | 2.600 |

Source: Kriegesmann et al. (2015), p. 9

Today, more than 260,000 students are studying in the Ruhr area. Today, in terms of the number of students the largest university is the FernUniversität in Hagen (a state distance-learning university). The share of students in the Ruhr area among the students in NRW has clearly grown since the establishment of the first universities in the Ruhr area and is currently around 36 % (see Figure 21).

Figure 21: Development of the number of students in the Ruhr area and share of students in the Ruhr area among the students in NRW, respectively for the Winter semester



Source: Statistics from Regionalverband Ruhr [Ruhr regional association] (2016), calculation and presentation: IAT

2.2.5 Summary

The analysis of the structural change in the Ruhr area shows the impact of the decline in employment in hard coal mining or rather in the coal and steel sector. Work in the hard coal mining sector was characterised by physically very demanding work on the one hand and a high level of labour productivity and high wages on the other. The large-scale loss of employment in the coal and steel sector has still not been compensated to date. On the way towards a service economy, many new jobs were created, also in the Ruhr area. However, for the large majority of the population the wages for these jobs were far below what could be earned underground.

The regional economic development in the Ruhr area as a whole remained behind the German national trend due to the lower productivity and lower value creation and income effects. In this regard, the Ruhr area does not have a uniform economic and social structure. In the south of the Ruhr area, where the structural change already began in the late 1950s and where universities were already established in the 1960s, the situation is much better than in the northern Ruhr area, which today is still characterised by high levels of (long-term) unemployment and lower economic power (Bogumil et al., 2012).

3 Framework conditions for structural policy in Germany and in the Ruhr area

3.1 Important framework conditions for structural policy in Germany

The structural policy provider is primarily the state – in the **federal system** in Germany, it is represented by the federal government, states and municipalities. Their responsibilities are primarily stipulated by the Grundgesetz [German Basic Law]: The federal government is responsible for tasks that are of importance for the whole nation, while the states and municipalities are primarily allocated tasks with a solely regional or local impact (as well as the implementation of federal government provisions). In recent decades, the level of the European Union (EU) has gained importance in structural policy. For a long period, the Ruhr area has been supported by specific programmes for the Ruhr area. The funds required to do so were initially contributed by the German federal government and the State of NRW. However, with the rising importance of the EU level increasing amounts of EU funding went to the Ruhr area.

The objective of the EU structural policy is to aid economically weaker regions to reduce regional handicaps and to keep up with the general economic development. The funding comes through the structural funds, among others from the European Regional Development Fund (ERDF) and the European Social Fund (ESF). In the current funding period, approximately one third of the EU budget is used for this purpose. These funds can be used to co-finance the funding programmes of the federal government and of the states provided that they serve the EU objectives, such as cohesion or rather convergence and social balance. In Germany, the EU structural funds are put into operation at the state level. The funds are distributed according to the states' economic and structural challenges.

The foundations for the implementation of the EU structural funding in Germany are the Operational Programmes, which the individual states develop for the respective funding periods. The current framework in this regard is provided by the Europe 2020 strategy, which was passed in 2010. The Operational Programmes are each issued for one funding period. We are currently in the 2014–2020 funding period.

There are also stakeholders outside of the state sector that are relevant for structural policy. They could be large **structure-determining companies, parties to collective wage agreement, i.e., employers' associations and trade unions**, but also **professional chambers and associations**. Furthermore, **parties and interest groups** can also shape structural policy decisions by influencing public opinion (see in this regard the results of the discourse analysis in Chapter 5).

Structural policy in Germany, in NRW and in particular in the Ruhr area can only be described and evaluated with reference to the special model of the **social market economy**. In comparison to other European countries, in Germany there is a wide network of social security systems, which are often not financed by state providers themselves but by the **social insurances**, i.e., **unemployment, pension insurance and health insurance**, and are provided by third-party providers due to the subsidiarity principle. These providers may be both non-profit and private service providers. Only when these providers cannot provide cover, tax-financed funds come into effect through state bodies.

In past decades, social distortions could be avoided, in particular as a result of allowing workers to prematurely leave the workforce and retire early “with a golden handshake” (i.e., with financial incentives). Such measures (e.g., pension from 60 without reduced payment, etc.) were financed predominately by the social insurances (unemployment and pension insurance) as well as by the companies, which compensated the loss of earnings (and the accompanying social security entitlements) with high severance payments. There are no longer any framework regulations for early retirement in Germany. Above all it is because the pension insurance cost disproportionately grows

and it therefore further increases the rising burdens connected with the demographic change. However, another reason is that professionals are in short supply and companies want to keep their ageing employees in the company for as long as possible. In addition, companies shy away from the high severance payments that accompanied this model.

Due to the extreme physical work underground in the hard coal mines, **additional specific statutory regulations**, in particular in regard to the start of retirement, apply for miners. Thus, for miners who were employed underground for many years, there is the option to take early retirement (sec. 238 of the Sixth German Social Security Code, (SGB VI)). Depending on how long they were employed underground and on the associated pension contributions and entitlements, miners can retire from the age of 50, e.g., if no other employment of equal value is possible. In order to reduce the immediate loss of income and to safeguard the level of pension, the miners receive the state financed transition allowance, which is replaced by payments from the pension insurance upon reaching the age of 55.

A further important framework-providing component is the **free wage bargaining guaranteed in the Grundgesetz [German Basic Law]** (sec. 9 para. 3 GG) and the resulting **social partnership model** in Germany. In the framework of the collective bargaining autonomy, the employers' associations and the trade unions (social partners) negotiate the structure of the collective wage agreements, thus the working conditions, such as hours per week or wage amount. In the case of a reduction in the workforce, negotiations take place on a company level (between the employer and the works council) regarding social plans. These negotiations particularly deal with achieving an agreement between the employer and the employees regarding which employees will be impacted by the reduction in the workforce and how much the company must pay in severance. In addition, the **right to strike** provides the employees with a powerful instrument.

The "Gesetz über die Mitbestimmung der Arbeitnehmer in den Aufsichtsräten und Vorständen der Unternehmen des Bergbaues und der Eisen und Stahl erzeugenden Industrie mit mehr als 1.000 Beschäftigten" [German law on the co-determination of the employees in the supervisory boards and executive boards in companies in the mining and the iron and steel producing industries with over 1,000 employees] from 1951 – better known as **Coal and steel co-determination law** – grants the employees a further right: The labour director, who is an equal member of the company executive board and is responsible for human resources and social welfare, cannot be elected or deselected from the supervisory board against the majority of votes in the worker representation (Müller-Jentsch, 2014, p. 512). As a result, the employees in hard coal mines were granted a right to a high level of co-determination, which had more than just an impact on the structuring of collective wage agreements or social plans. In addition to the employers, the trade unions on the basis of their powerful position (high level of membership) were either directly involved in the shaping of structural policy interventions or they were able to exercise pressure on the politicians and the employers through their right to strike. Thus, the stakeholders in the social partnership have not only heavily influenced the structural policy interventions of the last 55 years, but they have also been actively involved in shaping them.

We also regard the **long-term subsidies for hard coal mining** as another important framework condition for the Ruhr area. Early on, hard coal was already no longer internationally competitive (see below), but was supported by state funds. The reasons for the support were primarily to safeguard domestic energy reserves. However, as a result "time was also bought" to shape the phase-out in the context of socially compatible change and to prevent a structural break.

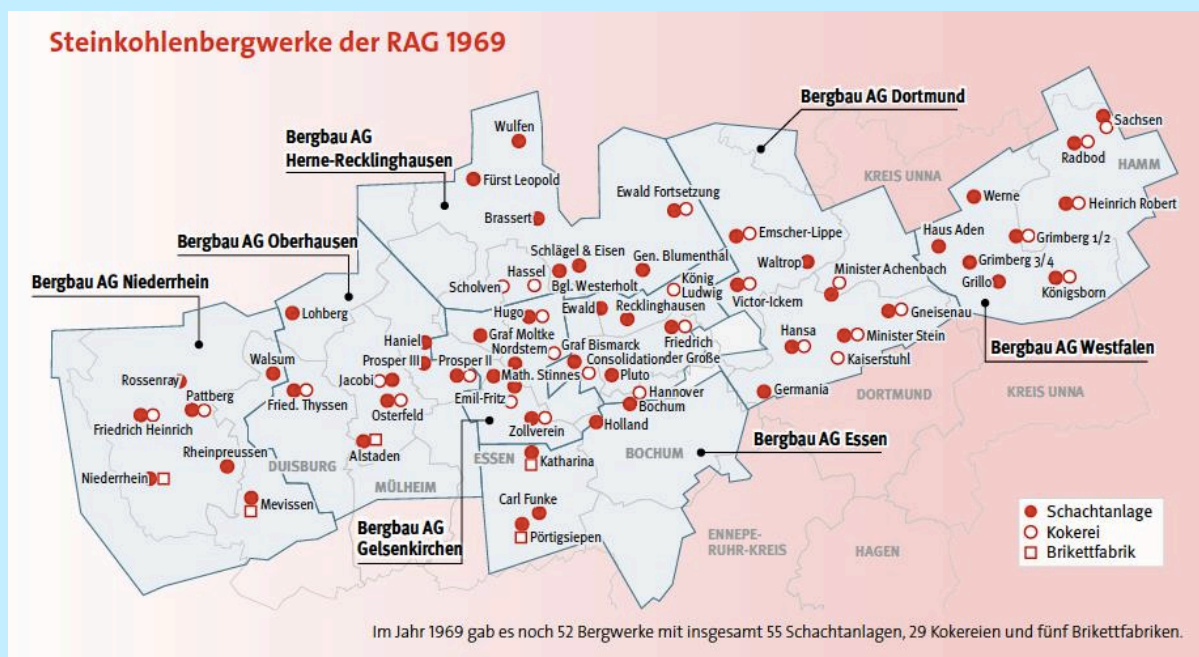
3.2 Important stakeholders in structural policy in the Ruhr area

In addition to those stakeholders listed in Chapter 3.1, central stakeholders in hard coal mining in the Ruhr area are the **Ruhrkohle Aktiengesellschaft [Ruhr coal corporation] (RAG)**¹⁷ founded in 1969, the **Gesamtverband Steinkohle e.V.** (German Hard Coal Association) as an association for employers¹⁸ as well as the **Industriegewerkschaft Bergbau, Chemie, Energie** [German mining, chemical and energy industry trade union] (IG BCE), previously known as **Industriegewerkschaft Bergbau und Energie** [German mining and energy industry trade union] (IG BE).

Excursus: Establishment of Ruhrkohle Aktiengesellschaft (RAG)

The background behind the merger of all mining companies into RAG was the 1966 “Konzertierte Aktion Kohle” [concerted action for coal] initiated by Karl Schiller, the German Federal Minister of Economy at the time, and the “Gesetz zur Anpassung und Gesundung des deutschen Steinkohlebergbaus und der deutschen Steinkohlengebiete” [law on adaptation and recovery of German hard coal mining and the German hard coalfields] from 1968. The German federal government threatened the mining companies with the “withdrawal of all benefits” (Goch, 1996, p. 387) if a collective company was not established by the mining companies (ebd., p. 386–387). In 1968, the mining companies separated from their collieries, which were incorporated into RAG in 1969. However, the land and housing companies remained under the ownership of the mining companies. A great success for the trade unions in this process was that, when collieries were closed, social plans and the creation of negotiation structures were obligatory. In 1969, the newly established company comprised a total of 52 mines with 55 shafts, 29 coking plants and five briquette factories.

Figure 22: Hard coal minings of RAG 1969 (in German only)



Source: RAG Aktiengesellschaft 2015, p. 29

With the establishment of RAG, Ruhr mining was reorganised in order to modernise it. At the same time, the subsidies, in particular to the iron and steel industry for the consumption of domestic coal, were kept in order to stabilise demand in this way (see Chapter 4.1.1). Regarding the mining

¹⁷ <https://www.rag.de/>

¹⁸ http://212.227.241.44/site/wir/wir_ueber_uns.htm

companies, it is to be stated that the “profitable” parts of the companies (Goch, 1996, p. 387) were not incorporated in the RAG. Regarding the trade unions, it is to be maintained that the merger of the mines into one large stock corporation under German law granted it more opportunities for co-determination (co-determination on equal footing in the supervisory board of RAG).

4 Description and evaluation of the structural policy interventions in the Ruhr area

In this chapter, the most important structural policy interventions that have been deployed in the Ruhr area since the end of the 1950s and that are named in the literature are presented and evaluated as far as possible with the literature available. Additional information for a better understanding of the emergence of the structural policy interventions in the socio-political context is presented in Chapter 5.

The majority of structural policy interventions can be categorised in four phases (Prognos AG & InWIS-Institut, 2015) and are described according to these phases:

1. Integrated structural policy (1966–1974),
2. Centralised structural policy (1975–1986),
3. Regionalised structural policy (1987–1999) and also
4. Sector expertise-orientated structural policy (from 2000).

They are evaluated according to the categories, which were distinguished in Chapter 1.2: preserving, reactive and forward-looking, as well as according to the impact dimensions listed in Chapter 1.3: “economy”, “social welfare”, “ecology” and “regional identity”.

Some financial subsidies operated over several phases.

4.1 Phases of structural policy

4.1.1 Integrated structural policy (1966–1974)

Structural policy interventions

As a reaction to the first coal crisis in the 1950s, the German federal government introduced **subsidies** in order to stabilise the demand for domestic coal. In 1963, the German federal government passed the **“Gesetz zur Förderung der Rationalisierung im Steinkohlebergbau” [German law to support the rationalisation in hard coal mining]**. The mining companies had to join a rationalisation association that was established in accordance with this law. The objective was to reduce the number of collieries. Upon closures, the German federal government awarded premiums and financial aid.

After the second coal crisis in 1965, the **first electricity conversion law (“Gesetz zur Förderung der Verwendung von Steinkohle in Kraftwerken” [German law to support the use of hard coal in power plants])** was passed. It granted power stations tax benefits when they used domestic hard coal instead of oil. A year later, the **second electricity conversion law (“Gesetz zur Sicherung des Steinkohleneinsatzes in der Elektrizitätswirtschaft” [law to ensure the use of hard coal in electricity sector])** was initiated. It awarded the iron and steel industry subsidies and funds to cushion social hardships arising from redundancies if they used domestic hard coal (Goch, 1996, p. 382–386). However, it was becoming increasingly clear that domestic hard coal was not competitive on the energy market in comparison to other fuels, such as oil and later nuclear power, as well as compared to hard coal from other countries (Goch, 1996, p. 380; Heinze et al., 1996, p. 1). In 1974, the **third energy conversion law (“Gesetz über die weitere Sicherung des Einsatzes von Gemeinschaftskohle in der Elektrizitätswirtschaft” [German law to further ensure the use of community coal in the electricity sector])** was passed. The law determined the amount of hard coal to be purchased by the electricity sector so that the domestic demand for hard coal stabilised and the supply of electricity was safeguarded. In return, the electricity sector was granted

benefits to compensate for potential additional costs.¹⁹ The subsidies were financed among others by the private consumers. In the framework of a compensation levy (“coal pfennig”), all energy consumers between 1974 and 1995 financed the conversion of hard coal to energy.²⁰

With the “**Entwicklungsprogramm Ruhr**” [**Ruhr development programme**] (**EPR**) in 1968, the State of NRW launched the first active and at the same time region-specific structural policy programme. The objective of the programme was to integrate and bundle the previously isolated individual measures and to supplement the previously sector-based structural policy measures with regional state-specific measures, i.e., to integrate them. The EPR was set for five years. The finance volume was around 17 billion DM (approximately 8.69 million euros²¹), whereby the funds were provided from the federal government, the state and the European Community as well as from the German Federal Employment Agency (among others from social security contributions) (Heinze et al., 1996, p. 17). Important focuses of the programme were:

- ▶ the socially compatible reduction of the workforce in hard coal mining,
- ▶ the **modernisation** of the mining companies,
- ▶ the attraction of new industrial companies by strengthening regional economic development,
- ▶ the expansion of the **infrastructure** for
 - the improvement of **mobility** (expansion of the road network and public transport),
 - the improvement in the **quality of life** (expansion of regional leisure facilities) and
 - the increase in **human resources** in the region (expansion of schools and universities) (Heinze et al., 1996, p. 17–20; Kommission Montanregionen des Landes Nordrhein-Westfalen, 1989, p. 59; Prognos AG & InWIS-Institut, 2015, p. 101–102).

The last point in particular was an important measure for the region. It was only in 1961 that the State government of NRW passed the resolution to establish a university in the Ruhr area. In 1965, the Ruhr-University of Bochum began lectures as the first university in the Ruhr area.

Already in 1970, the EPR was expanded to all of NRW through the **Nordrhein-Westfalen-Programm** [**North Rhine-Westphalia programme**]. The objectives and measure were similar, the finance volume amounted to 31 billion DM (15.84 billion euros²²), of which 1.2 billion euros (600.55 million euros) funded the modernisation of hard coal mining. In addition to attracting new companies and strengthening competitiveness, large investments continued to be made in the field of education and universities (Heinze et al., 1996, p. 19). The foundation of the universities in Duisburg and Essen and the establishment of the institute that is still Germany’s biggest university (the FernUniversität [state distance-learning university] in Hagen) also occurred in this period.

Evaluation of the structural policy interventions

With the first and second electricity conversion laws, the sales of hard coal stabilised. Therefore, they had a **preserving impact** on the existing sector structure.

The balance for the EPR and the North Rhine-Westphalia programme was different. The modernisation of the mines can be classified as **preserving**. The investments in the infrastructure are to be regarded as **reactive** structural policy interventions since in the Ruhr area these interventions occurred much later than in other regions of Germany and already after the large decline in employment in hard coal mining. Nevertheless, they influence the future viability of the region. This is especially the case for investments in education and also for investments in leisure facilities as well as

¹⁹ https://www.gesetze-im-internet.de/verstromg_3/BINR034730974.html (24.01.2021)

²⁰ <https://www.bpb.de/nachschlagen/lexika/lexikon-der-wirtschaft/19791/kohlepfennig> (24.01.2021)

²¹ Own conversion using the conversion rate: 1 DM = 0.51129 EUR

²² Own conversion using the conversion rate: 1 DM = 0.51129 EUR

in the traffic infrastructure, whereby such investments were extremely limited to private transport and the public transport network was only partially expanded. (Prognos AG & InWIS-Institut, 2015, p. 101).

The investments for attracting large industrial companies are also to be interpreted as **reactive** policy. With a few exceptions (e.g., Opel in Bochum), no large companies have settled in the Ruhr area. One reason is that the mining companies in the Ruhr area were still the owners of a considerable part of the land. Without this land being released, neither the state nor the municipalities had land to offer large companies in the Ruhr area. Even into the 1970s, local companies refused to release land to other large companies. A practice that became known as **“Bodensperre”** [**“land lock-out”**] (ruhrgebiet-regionalkunde.de, 2010).

The interventions in this phase were massively directed toward the impact dimensions of “economy” and “social welfare”.

4.1.2 Centralised structural policy (1975–1986)

Structural policy interventions

In the 1970s, the economy was heavily influenced by the “oil price shock”. Importing oil became so expensive that domestic coal momentarily appeared to be viable again. However, the further processing of hard coal was limited to electricity generation and steel production. In the following years, the link between coal and steel in the Ruhr area, which was politically initiated by way of the hard coal subsidies, led to a “cycle of crises” in the coal and steel sector (Kilper, Latniak, Rehfeld, & Simonis, 1994, p. 16) because the German steel industry was coming under increasing competitive pressure and for this reason had less demand for hard coal. Due to its concentration of coal, steel and energy, the Ruhr area was increasingly dependent on political decisions in regard to **coal subsidies** (Kilper et al., 1994, p. 17).

The focus of the structural policy measures in this phase was primarily induced by supply and in particular, they targeted an **improvement in the technological basis of the existing large companies**. Furthermore, in 1975 the **planning responsibility** was centralised and returned from the association that was then known as “Siedlungsverband Ruhrkohlenbezirk” [association of settlements in the Ruhr coalfield]²³ to the state level. From then on, the region planning councils of the three administrative regions of Arnsberg, Düsseldorf and Münster, which traverse the Ruhr area, were responsible for planning. As a result, the Ruhr area was no longer a spatial planning unit, but was divided into the three surrounding regions of Arnsberg, Düsseldorf and Münster.

In the following years, the technology support was driven forward by the State of NRW. It was primarily about strengthening the productivity of the companies and therefore **increasing their competitiveness, minimising environmental pollution** and also **improving technology transfer** into practice. The following four programmes were launched for the Ruhr area (Heinze et al., 1996, p. 23–28; Prognos AG & InWIS-Institut, 2015, p. 102–103):

²³ The “Siedlungsverband Ruhrkohlenbezirk” [association of settlements in the Ruhr coalfield] was established in 1920. The association represented 17 urban and 11 rural districts in the Ruhr area. Until 1975, the core objective of the association was regional planning for the Ruhr area (Benedict, 1997, p. 113). In 1979, the “Siedlungsverband Ruhrkohlenbezirk” [association of settlements in the Ruhr coalfield] became the “Kommunalverband Ruhrgebiet” [Ruhr municipal association] (KVR), from which the “Regionalverband Ruhr” [Ruhr regional association] (RVR) arose in 2004. In 2009, the State government of NRW transferred the planning responsibility back to the RVR (metropoleruhr.de, 2019; see also Chapter 4.1.4).

- ▶ With the **Technologieprogramm Bergbau [technology programme for mining]** (1974–1984) a total of 620 million DM was provided for hard coal mining.
- ▶ In the framework of the **Technologieprogramm Energie [technology programme for energy]** (1974–1984) 697 million DM was spent on the non-nuclear section and 964 million DM on the nuclear section.
- ▶ The funds for the **Technologieprogramm Wirtschaft [technology programme for the economy]** (1978–1984) amounted to 350 million DM. The programme was aimed at increasing the innovative ability of small and medium sized enterprises in all sectors (Heinze et al., 1996, p. 23).
- ▶ The **Technologieprogramm Stahl [technology programme for steel]** (1979–1989) was funded with approximately 500 million DM.

In 1980, all programmes apart from the technology programme for steel were transferred into the **“Aktionsprogramm Ruhr (APR) – Moderne Strukturpolitik für das Revier” [Ruhr action plan (APR) – modern structural policy for the Ruhr area]** (Landesregierung NRW 1979). The APR ran for four years and encompassed a total budget of 6.9 billion DM (approximately 3.53 billion euros²⁴). It was financed by the State of NRW, which contributed approximately 5.1 billion DM (approximately 2.61 billion euros), and by the German federal government, which contributed approximately 1.5 billion (approximately 0.77 billion euros). In addition, approximately 250 million DM (approximately 127.82 million euros) were borne through revenue losses and 100 million DM (approximately 51.13 million euros) were contributed by municipalities and third parties (Landesregierung NRW 1979, p. 619). The APR continued the objectives of the technology programmes or rather integrated and further developed these objectives. There was a focus on technology transfer in order to better link the established university landscape with local companies. A further important focus was combating unemployment because in the course of the 1970s, the Ruhr area had diverged greatly from developments at the federal and the state level. The objective of the APR was to better coordinate the previously different measures from the federal government, the state and the municipalities (see Table 4). In the framework of APR, important structures were created in order to optimise the processes of structural change. Thus on the basis of the technology programmes and the APR, numerous technology centres were established in the Ruhr area, e.g., in 1985 the Technologiezentrum [technology centre] in Dortmund.

Table 4: Distribution of funds from the Aktionsprogramm Ruhr [Ruhr action plan] (APR)

| Areas | In million DM | Shares |
|------------------------------------------------|---------------|--------|
| Urban renewal, residential environment, sport | 1,676 | 24.2 % |
| Energy sector centre | 1,600 | 23.1 % |
| Environmental protection | 1,349 | 19.5 % |
| Strengthening investment potential | 971 | 12.6 % |
| Technology and innovation | 710 | 10.2 % |
| Combating unemployment, education and training | 583 | 8.4 % |
| Culture | 68 | 1 % |
| Not specified | 78 | 1.1 % |
| Total | 6,935 | 100 % |

Source: Kommunalverband Ruhrgebiet [Ruhr municipal association], taken from: (Heinze et al., 1996, p. 31)

²⁴ Own conversion using the conversion rate: 1 DM = 0.51129 EUR

The **Ruhr area conference** in 1979 in Castrop-Rauxel heralded the “**policy of dialogue**” (Goch, 1996, p. 404) with the involvement of many regional stakeholders from all areas of society. The findings from the Ruhr area conference formed an important basis for the APR (see previous section).

Through the establishment of the **Grundstücksfonds Ruhr [Ruhr property fund]** in 1979, in particular the brownfield sites of closed mines, which were not transferred to RAG, were to be reactivated and made available for the settlement of companies. Furthermore, sites, which represented ecological hazards, were to be treated. The Landesentwicklungsgesellschaft Nordrhein-Westfalen für Städtebau, Wohnungswesen und Agrarordnung [state development company of North Rhine-Westphalia for urban development, housing and agricultural planning] GmbH (LEG, now NRW.Urban) was assigned the tasks of administering the Grundstücksfonds Ruhr [Ruhr property fund]. The activities of the property fund were initially limited to the Ruhr area, but in 1984 they were transferred to the whole of NRW (Heinze et al., 1996, p. 32–33).

Evaluation of the structural policy interventions

The results of the APR were also mixed. The new dialogue-orientated policy style of the state government is to be regarded as retrospectively positive.

There were difficulties in the attempt to better coordinate the various programmes from the federal government, the state and the municipalities as well as the individual contextual topics and policy fields. They often remained individual measures (Kilper et al., 1994, p. 19). Furthermore, a considerable part of the funding went to the actual mining companies (Goch, 1996, p. 405). The results of the technology transfer between universities and businesses were also regarded as having little success. Thus Olaf Arndt et al. (2015, p. 104) classed the structural policy of this phase as an altogether “**preserving and reactive policy**” and summarised:

“Therefore, it can on the whole be established that despite positive efforts and indeed some presentable successes, the whole programme was too heavily orientated towards the old industries meaning that a large part of these structural policy approaches must be evaluated, although not exclusively but for the most part, as cushioning policies (Danielzyk, 1992, p. 90) for the mining industry.” (Prognos AG & InWIS-Institut, 2015, p. 105)

The interventions in this phase were also massively directed toward the impact dimensions of “economy” and “social welfare”. Through the objective of minimising environmental pollution, the impact dimension “ecology” was also addressed.

4.1.3 Regionalised structural policy (1987–1999)

Structural policy interventions

In the second half of the 1980s, the crisis in the coal and steel industry again intensified and there were massive job losses in hard coal mining and in the steel industry. Due to the difficult economic situation in the Ruhr area, the German federal government increased funding among others things through the Gemeinschaftsaufgabe “Verbesserung der regionalen Wirtschaftsstruktur” [community task “improvement of the regional economic structure”] (GRW). The necessity for an equality of regions in the Federal Republic of Germany was stated in several “**rounds of coal talks**”²⁵ as well as

²⁵ Coal talks are used to describe various meetings between political representatives and representatives of the parties to collective wage agreements, in which the future and the future viability of hard coal as well as possible interventions were discussed.

in the framework of the Ruhr area conference in Bonn. The majority of the funds were integrated in the interventions named below.

In answer to the crisis, in 1987 the State parliament of NRW with the approval of all parties represented in it – Sozialdemokratische Partei Deutschlands [social democratic party of Germany] (SPD), Christlich Demokratische Union Deutschlands [christian democratic union of Germany] (CDU) and Freie Demokratische Partei [free democratic party] (FDP) – passed the “**Zukunftsinitiative Montanregion**” [coal and steel region future initiative] (**ZIM**), for which funds from the federal government, the state, municipalities and the European Community were to be combined (Heinze et al., 1996, p. 37). The introduction of ZIM heralded the introduction of a regionalised structural policy in Germany. It followed the realisation that the economic structure within the Ruhr area had regional differences and that the **involvement of the regional stakeholders** was necessary for a successful structural policy. The content of ZIM was hardly any different to the content of the APR:

- ▶ Support for innovation and technology,
- ▶ Future-orientated qualification and job creation measures,
- ▶ Expansion of the infrastructure and
- ▶ Environmental measures

were important building-bricks (ibid). In order to implement the specific measures, the Ruhr area was divided into six regions:

- ▶ Eastern Ruhr area: Dortmund, Hamm, Unna district,
- ▶ Central Ruhr area: Bochum, Herne as well as Hattingen and Witten (both in Ennepe-Ruhr district),
- ▶ Märkisch regions: Hagen and the other municipalities in the Ennepe-Ruhr district (Breckerfeld, Ennepetal, Gevelsberg, Herdecke, Schwelm, Sprockhövel, Wetter),
- ▶ MEO: Mülheim an der Ruhr, Essen,
- ▶ Emscher Lippe: Bottrop, Gelsenkirchen, Recklinghausen district,
- ▶ Lower Rhine: Duisburg, Wesel district.

Regional conferences were held in each of these regions. Municipalities, businesses, academia, research and transfer institutes, trade unions and labour administrations, etc. were represented at the conferences. The objective of the regional conferences was to establish **regional development focuses** and **regional development concepts** (Heinze et al., 1996). In order to specify the measures, the “Montanregionen des Landes NRW” [coal and steel regions of the State of NRW] expert commission was set up for two years.

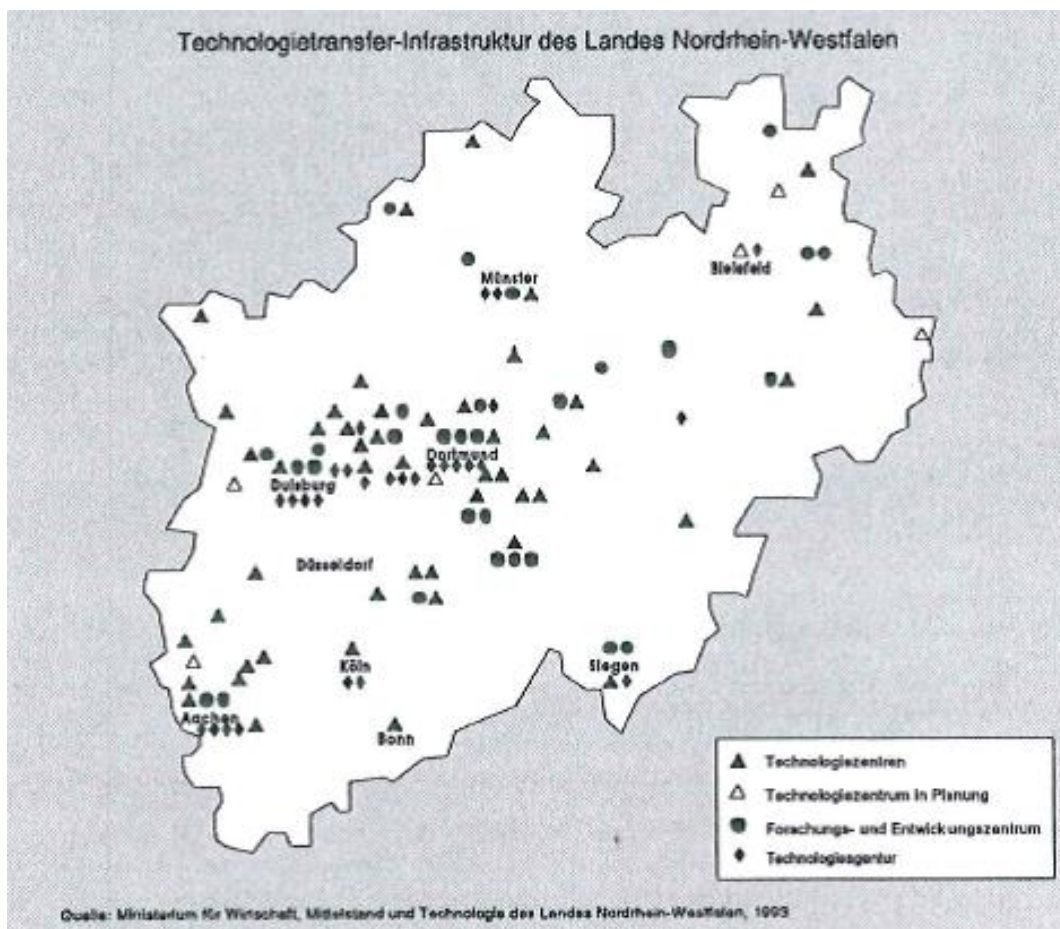
In 1989, the ZIM was expanded to all of NRW in the framework of the policy “**Zukunftsinitiative für die Regionen Nordrhein-Westfalens**” [future initiative for the regions of North Rhine-Westphalia] (**ZIN**). The reason for this expansion was the increasing awareness that the existing regional differences (strengths and challenges) had to be considered when deploying structural policy interventions.

Between 1991 and 1993, regional development policies were also created for the six regions in the Ruhr area. They were worked on by the responsible departments at the state level and were reviewed in an inter-ministry working group and in the economic committee of the state parliament with an eye towards strengths and challenges (Goch, 1996, p. 405).

In particular the **technology support**, which was already heavily focused on in the 1975–1986 phase, was further expanded so that NRW and the Ruhr area had an extraordinarily high density of **technology transfer bodies**. The objective of these technology transfer bodies was to transfer the technological expertise from research into practice and thus support start-ups. The network of technology transfer bodies included the business sector, trade unions, places of higher education,

universities as well as the “Zentrum für Innovation und Technik GmbH” [centre for innovation and technology] (ZENIT) with a total of approximately 150 centres and agencies.

Figure 23: Technology transfer infrastructure of North Rhine-Westphalia (in German only)



Source: Ministerium für Wirtschaft, Mittelstand und Technologie des Landes NRW [ministry of economy, small and medium-sized enterprises and technology of the State of NRW], taken from (Heinze et al., 1996, p. 32)

Evaluation of the structural policy interventions

With the introduction of the regionalised structural policy, the State government of NRW backed the endogenous potential of the different regions in both the Ruhr area and the state, and thus reacted to the increasingly diverging economic structures in the Ruhr area and in NRW. Whereas in previous years, the programme was initiated by the federal government and the state government in a “top-down” manner, for the first time a “bottom-up” strategy was introduced for the participation of different regional stakeholders (institutes of economic development, job centres, academia and research, trade unions, chambers, etc.). The participation of regional stakeholders promoted the corporatist dialogue and therefore established a new governance structure. The accompanying research concluded, “(...) that the fundamental idea of the regionalised structural policy can be regarded as a long-term viable approach to accelerating structural change” (Prognos AG & InWIS-Institut, 2015, p. 107).

There are different evaluations of ZIM or rather ZIN concerning the successful inclusion of regional stakeholders because it is precisely here, where difficulties arose. Thus the research accompanying ZIN criticised the importance ascribed to the chambers of commerce and industry. In contrast, it was not always possible to get the trade unions to participate. The reasons were both lacking human resources locally and lacking qualification for these new tasks. Many other stakeholders were

not included at all so that critics doubted the democratic legitimacy of the regional conferences, which were held in the framework of ZIM or rather ZIN. Since the decision-making power still resided at the state level and was not transferred to the regional stakeholders, the advocates emphasised expanding the pool of involved stakeholders as being positive (Goch, 1996, p. 415). While the State government of NRW regarded the results as positive, the accompanying research was altogether more sober and also sceptical in regard to the communication and decision-making procedures, the quality of the policies drawn up as well as the integration of the different programmes (Goch, 1996, p. 415).

Based on the ZIM or rather ZIN measures, it is to be established that they had a **preserving** and **reactive** impact.

The innovations presented here were also aimed at the impact dimensions of “social welfare” and “economy”, but they also addressed the impact dimension of “ecology” with various environmental measures.

A completely new path was taken in this phase with the International Building Exhibition (IBA) Escher Park. With it, for the first time the two dimensions “**ecology**” and “**regional identity**” were targeted as impact dimensions (see box and Chapter 5.4).

- ▶ New housing: In particular in neighbourhoods in exceptional need of renewal, old industrial buildings were redeveloped to offer new homes and types of housing.

Different to “traditional” structural policy programmes, the framework of the IBA Emscher Park was not only about “hard location factors”, but also about supporting “soft location factors”²⁷ (Goch, 2011, p. 70–71). For the selection and implementation of the projects, which were supported in the context of the IBA Emscher Park, the planning company IBA Emscher Park GmbH was established for the duration of the term under management of Karl Ganser. The State of NRW provided the IBA Emscher Park GmbH with 35 million DM (17.9 million euros²⁸) as “working capital”. Approximately 15 employees (without administrative staff) were employed by IBA Emscher Park GmbH. They worked as coordinators between the different stakeholders and developed the quality standards for the IBA projects (social–ecological–participatory). IBA Emscher Park GmbH itself did not have any funds of its own to award grants. They had to be acquired from the existing funding programmes (Goch, 2011, p. 72). An accompanying steering committee of representatives of state, municipalities, business, trade unions and further societal stakeholders decided whether the submitted project applications were eligible for funding. Over the ten-year term, a total of 129 projects were funded with approximately 4.6 billion DM (2.35 billion euros²⁹). Both the focus in terms of content on “hard” and “soft” location factors as well as the organisation form of the IBA Emscher Park were pioneering in Germany.

Evaluation of the structural policy interventions

Just like the results of the previous structural policy interventions, there were positive and negative effects observed in regard to the IBA Emscher Park.

- ▶ It was highlighted as being particularly positive that structural change in the Ruhr area became positively visible through the creation of “industrial landmarks” and therefore set an important signal both in the area and further afield. In this regard, the Gasometer Oberhausen is one of the landmarks worth mentioning. It was once the biggest gasometer in Europe and is now a “unique” exhibition venue, which opened in 1994 with the IBA “Fire and Flame” exhibition on the industrial history of the Ruhr area, and in 2004/05 alone, it attracted over 500,000 visitors (Goch, 2011, p. 76). Also other venues, such as the Jahrhunderthalle [century hall] in Bochum, the Landscape Park Duisburg Nord, the UNESCO World Heritage Site Zeche Zollverein [customs association colliery] in Essen and the Zeche Zollern [Zollern colliery] in Dortmund, are now nationally and internationally known and have made a great contribution to promoting tourism in the Ruhr area. The conversion of old industrial buildings thus strengthened regional identity and through their new use marketing was also strengthened with a knock-on effect for also tourism and the outward visibility.
- ▶ Thanks to the started Emscher conversion, the quality of life of the population in the northern Ruhr area was improved. The construction of the underground sewer opened up new habitats for nature and local people in the renaturalised “Neues Emschertal” [new Emscher valley]³⁰. The same held true for the newly created bicycle and hiking trails, e.g., on the old ore train tracks. Such trails now traverse the whole Ruhr area.
- ▶ While as a result of the conversion and rezoning of old industrial buildings and brownfield sites unique cultural “light houses” were created, the effects on employment were rather modest. The projects on “Working in the park”, which followed the “traditional” economic development orientation and were intended to attract investments, have not achieved any significant effect on employment (Goch, 2011, p. 77). Also for the providers of the converted

²⁷ It includes increasing the attractiveness of a location by raising the quality of life by expanding leisure facilities and natural experiences, etc.

²⁸ Own conversion using the conversion rate: 1 DM = 0.51129 EUR

²⁹ Own conversion using the conversion rate: 1 DM = 0.51129 EUR

³⁰ <https://www.eglv.de/emscher/gemeinsam-fuer-das-neue-emschertal/> (26.01.2021)

buildings, which are as a rule financially weak, the high maintenance costs presented a challenge.

- ▶ The desired objective of involving the population in the project development was at the time too ambitious and could barely be achieved (Prognos AG & InWIS-Institut, 2015, p. 109).

4.1.4 Sector expertise-orientated structural policy (from 2000)

On the adoption of the Lisbon Strategy by the heads of state of the EU member states in 2000, growth and employment objectives gained in importance. In the context of the political atmosphere of this period, **orientation towards areas of expertise or clusters** was introduced into the EU structural policy. The cluster concept was developed substantially by Michael E. Porter (1990) in the 1990s. According to Porter, clusters were understood as geographical concentrations of interdependent companies on the vertical relationship level along the value creation chain (suppliers and producers) and on the horizontal relationship level between research, development, qualification and technology support (Muth & Rehfeld, 2004, p. 3). Silicon Valley in the USA is known around the world as a high-tech IT cluster.

Also in NRW and in the Ruhr area, the discussion on areas of expertise and clusters entered the structural policy.

The academic discussion about areas of expertise and cluster policy influenced the structural policy stakeholders in the Ruhr area from the mid- to late 1990s. In these years, numerous studies defined different areas of expertise in the Ruhr area. Already in 1997, in the framework of the “**Ruhr Memorandum**” by the Deutscher Gewerkschaftsbund [German Trade Union Confederation] (DGB) and ISA Consult, a trade union-owned consultation agency, seven areas of expertise were listed for the Ruhr area (Kiese, 2012, p. 140 et seq.). In 2000 and 2002, the Kommunalverband Ruhr [Ruhr municipal association] (KVR) defined in its **Aktionsprogramm Ruhr 2000+ [Ruhr action plan 2000+]** six thematic focuses. Almost at the same time, a **study to identify technological future areas** was commissioned on behalf of the NRW Ministry of Economics. Also in this regard, six areas were developed (Roland Berger Strategy Consultants, 2001). As part of the **Beschäftigungspakt Ruhr [Ruhr employment pact]**, a joint initiative by state, municipalities, business and trade unions, initially eight areas were defined, which in negotiations between the regional stakeholders were expanded to 12 areas of expertise (Rehfeld, 2006, p. 249). In the **Wirtschaftsbericht Ruhr 2011 [2011 Ruhr economic report]** by Wirtschaftsförderung metropol Ruhr GmbH [metropolis Ruhr economic development company] (wmr), the Institute for Work and Technology (IAT) defined for the Ruhr area eight **lead markets** as well as the industrial core, which still apply today:

- ▶ Education and knowledge,
- ▶ Digital communication,
- ▶ Leisure and events,
- ▶ Healthcare,
- ▶ Mobility,
- ▶ Sustainable consumption,
- ▶ Resource efficiency,
- ▶ Urban construction and housing and also the
- ▶ “**Industrial core**” as the dynamic driver of innovation (Nordhause-Janz & Rehfeld, 2011).

As in earlier programmes and measures, in this fourth phase of structural policy in the Ruhr area, the findings from the Ruhr area were expanded to the whole of NRW. In 2004 for the first time at the state level, an analysis of the strategic action areas (Muth & Rehfeld, 2004) was carried out and it found that for NRW there were six focus points in terms of content. In 2007, 16 clusters, which were consolidated into five lead markets, were defined.

In 2014, these clusters were further developed into eight **lead markets** in the framework of the **Innovation strategy of the State of NRW**:

- ▶ Energy and environmental economy,
- ▶ Healthcare economy,
- ▶ Information and communication technology,
- ▶ Creative industries,
- ▶ Life sciences,
- ▶ Mobility and logistics,
- ▶ New materials, and
- ▶ **Production** (Landesregierung NRW, 2014, p. 41–98).

As a consequence, at the state level and at the Ruhr area level, there is a juxtaposition of lead markets with high levels of crossover in terms of content. Since the structural policy funding (see below) was provided on the basis of the NRW lead markets, they are of particular relevance.

Funding period 2000–2006

Structural policy interventions

In the 2000-2006 funding period, the Ruhr area and the mining region of Heinsberg were classified as Objective 2 regions for **financial support from ERDF** (see Chapter 3.1). To create and retain jobs in small and medium-sized enterprises (SMEs) and to improve the competitiveness of the regions, four priorities for the implementation of measures were defined in the **North Rhine-Westphalia Objective 2 Programme** (Untiedt et al., 2010, p. 13):

- 1. Financing of businesses and start-ups,**
- 2. Innovation and development of competences,**
- 3. Development of innovation-related infrastructure and**
- 4. Target group-specific support.**

It is clearly discernible that alongside “traditional” interventions of the type implemented in the previous funding periods (e.g., technology support), selected areas of expertise were explicitly supported both in Priority 2 “Innovation and development of competences” (with media and communications, tourism, leisure and culture, budgetary and company-orientated services, future energy and development of areas of expertise for healthcare) and in Priority 3 “Innovation-related infrastructure” (with “logistics services and infrastructure”).

In this funding period, funds totalling 5.6 billion euros were invested, of which 1.6 billion euros were from ERDF, 1.2 billion euros were from the state and 1.8 billion euros were private investments (Untiedt et al., 2010, p. 13).

Evaluation of the structural policy interventions

The evaluators of this funding period on the whole arrive at a positive judgement in regard to the objectives achieved, i.e., the improvement of the competitive situation in the funded regions (Untiedt et al., 2010, p. 56 f.):

- ▶ 14,000 new jobs were created and approximately 10,000 jobs were retained. In addition, 3,000 traineeships were created and approximately 17,500 traineeships were modernised.
- ▶ Per euro of structural fund support, two further euros in investment were made possible.
- ▶ The innovation capacity and competitiveness were increased by investments in company research and development projects and for the expansion of the technological and qualification infrastructure.
- ▶ The environment and the quality of life was improved by investments in renaturation worth approximately 130 million euros.

Also in this regard, the focus of the interventions was on the impact dimensions of “economy” and “social welfare”, however, “soft location factors”, such as improving the quality of life, were also addressed and thus the impact dimension “ecology” was also addressed. Altogether the structural policy of this period is to be evaluated as reactive.

2007–2013 and 2014–2020 funding periods

Structural policy interventions

With the new funding period, the ERDF was directed away from cohesion and more strongly towards competition. As a consequence, Objective 2 was renamed “Regional competitiveness and employment”. It was accompanied by, **region-unspecific funding** that had long-term impacts on the Ruhr area (Untiedt et al., 2010, p. 59).

The Operational Programme was shaped by the newly formed CDU-FDP state government in such a way that both cohesion and the increase in competitiveness could be accommodated (ibid):

- ▶ In order to improve the competitiveness, innovation processes as well as specific strengths were funded. It was about strengthening existing strengths. The funding was target-based via defined clusters.
- ▶ In addition, competitiveness in the structurally weak regions was to be separately funded. Approximately half of the funds were to be provided for this purpose. The Ruhr area and Bergisches Land were defined as structurally weak regions.

A further innovation was the introduction of **funding competitions** in order to increase the efficiency of the funding.

Since 2000, important institutes have been established in the Ruhr area and thus the support structures for steering structural change have been further improved. In this regard **Projekt Ruhr GmbH**, which was established in 2000 for the sole purpose of funding projects in the Ruhr area and in 2007 became **Wirtschaftsförderung metropol Ruhr GmbH [metropolis ruhr economic development company] (wmr)** (since 2017, **business.metropole.ruhr, bmr**), is worth mentioning. bmr is a subsidiary of the Regionalverband Ruhr [Ruhr regional association] (RVR) and is responsible as “service provider, marketer, project manager and consultant for funding matters”³¹. Moreover, in 2009 the regional planning was returned from the State of NRW to the RVR.

Funding from the ongoing ERDF funding period 2014–2020 is also provided according to the eight defined lead markets. The State of NRW established its own **Leitmarktagentur** [lead market agency] to award the funding for the **eight NRW-wide funding competitions according to the eight lead markets** and also to provide project funding. In all lead markets, calls for competitions have been announced and projects have been funded.

³¹ <http://business.metropol Ruhr.de/unternehmen/vision-leitbild/> (17.08.2017)

Excursus:

“InnovationCity Ruhr – Model City Bottrop” and the “RUHR.2010” European Capital of Culture

In this phase, there were two interventions that are relevant for resource efficiency and for the cultural orientation of the Ruhr area: “InnovationCity Ruhr – Model City Bottrop” and the 2010 European Capital of Culture in the Ruhr area.

“**InnovationCity Ruhr – Model City Bottrop**” is a “real life lab” in the form of a public private partnership project, which was initiated by the Initiativkreis Ruhrgebiet³² [initiative circle Ruhr area]. It is financed among others with ERDF funds. The objective of this project, which has been running since 2010, is to develop and test ideas and solutions in order to actively address climate change and to actively shape structural change. In the context of the six action areas:

- ▶ “Housing”,
- ▶ “Employment”,
- ▶ “Energy”,
- ▶ “Mobility”,
- ▶ “City” and
- ▶ “Activation”,

over 200 projects have been initiated to date.

The activities of the “**RUHR.2010**” **European Capital of Culture** have reframed the perception of the Ruhr area across both Germany and Europe. Under the motto “Change through culture - culture through change”, for the first time a Ruhr-area-wide campaign was initiated by stakeholders in the Ruhr area in order to participate in this competition. Building on the lighthouses of the IBA Emscher Park, the specially established enterprise “Kulturhauptstadt Europas RUHR.2010 GmbH” carried out numerous activities, which were funded among others with EU funds (Betz, 2011, p. 325). The “Still-Leben Ruhrschnellweg” [Ruhr motorway still life], in which a 60 km section of the A 40 motorway (that traverses the Ruhr area in an east to west direction) between Duisburg and Dortmund was closed for one day and in which numerous artists, associations and citizens introduced themselves and discussed at the beer tables, was certainly the most defining cultural event of the 2010 European City of Culture both within the Ruhr area and further afield.

Evaluation of the structural policy interventions

Since the evaluation report for the 2007–2013 funding period is not yet available³³ and the current funding period has not yet concluded, no final evaluations can be carried out.

In the available literature, the following points were mentioned:

- ▶ A study by the RWI – Leibniz Institute for Economic Research on the funding for the Ruhr area highlighted the introduction of the competitive procedure as having improved the quality (Bauer et al., 2005).
- ▶ The definition of cluster, areas of expertise and lead markets were regarded critically and the lacking empirical evidence was questioned. In addition, the breadth of the areas of expertise was criticised (Prognos AG & InWIS-Institut, 2015, p. 113). Clusters were often not only defined according to relevant criteria (critical mass, vertical and horizontal network), but also according to “negotiation processes” (Kiese, 2012, p. 140 et seq.; Rehfeld, 2006). In particular in areas, where no critical mass can be recognised, the structural policy should

³² Initiativkreis Ruhrgebiet [initiative circle Ruhr area] is a coalition of 76 companies and institutes from the Ruhr area. The objective of the association established in 1989 is to further strengthen the innovative and economic power of the region (<http://i-r.de/de/> (16.10.2017)).

³³ To date, only the evaluation report for the competitive selection procedure is available for the 2007–2013 funding period (Deloitte & Touche GmbH, 2013).

not solely be limited to cluster policy and should seek also other means (Prognos AG & In-WIS-Institut, 2015, p. 114).

- ▶ In addition, the orientation of the structural policy to lead markets (strengthen strengths) was also critically regarded. Already in 2005, Rehfeld arrived at the conclusion, “[...] that cluster orientation cannot be the only strategic direction of structural policy. Cluster policy is to be integrated in a comprehensive structural policy, in which bottom-up and top-down elements, regional focuses and thematic areas of growth are to be balanced.” (Rehfeld, 2005, p. 7).

In contrast to the “InnovationCity Ruhr” project, which is still running today and is providing important impetus, the “RUHR.2010” European Capital of Culture was a time-limited project from the very beginning. However, through the Capital of Culture initiative, governance structures were further developed. In particular, the cooperation between the cultural institutes in the Ruhr area has improved since then (Betz, 2011, p. 334–335). The individual “events” strengthened the “regional identity” of the population of the Ruhr area. “InnovationCity Ruhr” is a pioneering project, which can be evaluated as a forward-looking intervention in regard to the impact dimensions of “economy”, “ecology” and also “social welfare”. Nevertheless, existing sectors or rather clusters were also funded. This cluster funding is still to be understood as both **preserving** and **reactive** in regard to the impact dimensions of “economy” and “social welfare”, which is clear from the example of the resource efficiency cluster, in which hard coal mining is also included.

4.2 Summarised evaluation of the structural policy interventions

The description of the structural policy interventions reveals that in particular the impact dimensions of “**economy**” and “**social welfare**” were the focus of the structural policy in the Ruhr area and they remain so today. In the four phases listed above, the focus was on the economic dimension and the social cushioning of the long-term phase-out of coal in the Ruhr area. Therefore, for a long time the structural policy interventions were a reaction to the coal crises and had a **preserving** impact on the existing economic structures and a **reactive** impact in regard to the mitigation of the social consequences resulting from the high number of job losses.

The social peace in the Ruhr area could be preserved through the socially compatible reduction of jobs in the hard coal mining sector. The slow phase-out of hard coal mining protected against structural breaks as occurred in East Germany after the German reunification. Despite the high number of job losses in hard coal mining in the Ruhr area, there have not been any compulsory redundancies to date. The crucial reason for this success is the social partner model in the framework of the German coal and steel co-determination law (see Chapter 3.1). Through the negotiation process between the representatives of the employers and the employees, social plans could be agreed that provided the majority of those affected with generous severance payments as well as with additional social security contributions when taking early retirement. For the mine employees, early retirement did not entail any significant financial consequences. However, it was different for many employees of the supply companies, who did not benefit from the special protection of the coal and steel co-determination and who received little or no benefits or severance payments.

Together with the social partners, the State of NRW initiated innovative structural policy interventions. That applied both in regard to the EPR, which had in particular ensured the successful infrastructure expansion in the Ruhr area (see Chapter 4.1.1), and in regard to the interventions during the regionalised structural policy phase, e.g., ZIM or the IBA Emscher Park. With these programmes and initiatives, the Ruhr area and NRW were covering new structural policy ground. Some of them were pioneering throughout Germany.

In particular, the development of effective governance structures for steering structural policy interventions is to be emphasised. Noteworthy initiatives include the establishment of the

Grundstücksfonds Ruhr [Ruhr property fund] (now part of NRW.Urban) that made the provision of old brownfield sites in the Ruhr area possible, the establishment of wmr for marketing the Ruhr economic area locally and further afield, the return of the planning responsibility to the RVR from the state level, a broad infrastructure for technology and transfer and the establishment of cluster management structures in the various clusters in NRW.

In the mid-1960s, the successful expansion of the university and research landscape began with support from the Germany-wide education campaign. Today, the Ruhr area is one of Germany's and Europe's regions with the highest density of universities and research institutes (Prognos AG & In-WIS-Institut, 2015).

At the latest since the IBA Emscher Park, there has been an image change in the Ruhr area. Thanks to renaturation and the creation of industrial landmarks, the population's quality of life has further improved and the Ruhr area has become an increasingly popular tourist destination. IBA Emscher Park explicitly and equally addressed the two dimensions "**ecology**" and "**regional identity**" as impact dimensions. These impact dimensions are still addressed today in the "InnovationCity Ruhr" and in the continuing Emscher conversion, which is ecologically important for the northern Ruhr area. Also the "RUHR.2010" European Capital of Culture is founded on the success of the IBA Emscher Park. In order to participate in this competition, the stakeholders in the Ruhr area banded together for the first time without external impulses. The success stabilised the cooperation between the Ruhr area stakeholders in the culture sector, and as a result of the individual "events" based on but also going beyond "coal and steel", the "regional identity" of the population in the Ruhr area was strengthened.

All in all, the Ruhr area can look back on some successes of its structural policy interventions since the 1960s. However, there are still many challenges to be met.

Probably the most important challenge is found in the sustained and further growing segregation between the southern and the northern Ruhr area (see Figure 15). Over the course of time, structural change has shifted from the south to the north just as coal mining in the Ruhr area did. While the first successes of the structural change are already visible in the south of the Ruhr area, the north faces particularly large challenges, in particular in the "**social welfare**" and the "**economy**" impact dimensions. Regarding the impact of structural policy interventions, it is to be noted that these interventions were heavily focussed on the employees in the coal and steel industry and tended to cover rather the geographical area of the south of the Ruhr area.

The borders of the Ruhr area are based on the shared history of hard coal mining. For a long time, the Ruhr area was shaped by the large structures of the mining industry. As mentioned above, in some towns new branches characterised by SMEs were developed. However, that did not occur throughout the area. An important challenge in this regard is the functional differentiation between the municipalities of the Ruhr area, which was to be developed into profile formation (Bogumil et al., 2012, p. 103 et seq.). For this purpose, a better network between the universities and the municipalities, and between the municipalities themselves appears very promising.

The infrastructure in the Ruhr area was greatly improved particularly in the framework of the EPR at the end of the 1960s. That did not just apply for the education and university sector, but also for the expansion of the traffic infrastructure as well as leisure and cultural institutions. In this regard, there is now (again) a great need for investment.

From the environmental point of view, it is to be recorded that due to a decline in the coal and steel industry and the accompanying reduction of emissions generated in these industries there has been a positive ecological development, even though today the Ruhr area is still characterised by contaminated sites and mining damage. However, with a few exceptions (Emscher conversion, IBA

Emscher Park) this success is a result of the structural change itself and not of structural policy interventions.

Also in the future, the Ruhr area will continue to be strongly shaped by structural change and specific structural policy interventions will be necessary in particular in the northern Ruhr area.

5 Discourse analysis for the classification of the structural policy interventions in the Ruhr area

For the evaluation of structural policy interventions, in particular for the question in how far they could be an inspiration for other processes and regions, it is important to analyse the accompanying discourse. For it is not only the real events, e.g., the change in the economic framework conditions or the German reunification, that played and still play a part in shaping the structural policy but also their interpretation in the societal debate.

In the following, based on an analysis of the secondary literature (especially Bogumil et al., 2012; Landtag NRW, 2009; Prognos AG & InWIS-Institut, 2015) as well as on interviews with experts, frames and discourse are described that had a character-giving influence on the different phases of the structural policy in the Ruhr area. It is to be noted that the discourse on the frames themselves often began much earlier (and to this effect prepared the way for structural policy interventions) and sometimes they remained dominant or controversial over several phases.

The identified frames were allocated to the four impact dimensions (“economy”, “social welfare”, “ecology” and “regional identity”) that are the basis of this study. Frames, which primarily focussed on the distribution of responsibilities and opportunities of political influence, were allocated to the “politics” meta level. All identified frames can be found alongside short descriptions of them in the appendix.

In order to be better able to evaluate the discourse of the structural policy, a brief historical introduction has been added in a prologue.

5.1 Prologue: The industrial heart of the Federal Republic of Germany

For the longest period in the 20th century, the Ruhr area was the “**industrial heart**” of the Federal Republic of Germany (Petzina, 1984). Before and during the Second World War, the coal and steel industry of the Ruhr area was of central importance for the German arms industry. After the end of the war, not only did the Ruhr area largely lie in ruins, but the Allies also initially demanded a radical deconcentration of the Ruhr industry (dismantling) and also a de-industrialisation of Germany altogether (Berghahn, 1985). However, in the face of the emerging Cold War and above all US American attempts to establish the Federal Republic of Germany as a key actor in the Western defence system, these demands were quickly dropped, at least for West Germany (ibid). It was replaced by the approach to communitise access to coal and steel on the (west) European level. The European Coal and Steel Community laid the institutional foundations for the EU. The coal and steel industry in the Ruhr area gained central importance in the context of the material reconstruction. It was perceived as the “motor” (ibid., p. 110) of the German reconstruction and the “economic miracle” that had effects beyond the Federal Republic of Germany. “In the Ruhr area [...] the Ruhr tangibly represents the focus of global interest today” (ibid, p. 67, see also Farrenkopf, 2009). Beyond the immediate economic effect, the Ruhr area became a considerable part of the **we-are-someone-again-sentiment** of the young Federal Republic of Germany, which is clear from eyewitness accounts (Potthoff, 2012). Thus, despite the destruction from the war the industry in the Ruhr area remained “the actual centre of the West German economic power, both materially and psychologically” (Berghahn, 1985, p. 110).

5.2 Integrated structural policy (1966–1974)

The Ruhr area must survive

1958 marked the beginning of the end of the economic miracle and the start of the mining crisis in the Ruhr area (Nonn, 2009, p. 96 f.). Domestic hard coal was becoming increasingly **uneconomical** compared with crude oil. On the one hand, the numerous mine closures and on the other hand, the rapid mechanisation of mining led to the number of employees in the Ruhr area mines being halved by the mid-1960s. Nevertheless, for many years the ruling CDU and FDP coalition advocated the position that “mine closures [are] not to be prevented locally. The mining industry has made many mistakes in the past and must now above all help itself” (ibid, p. 99). Furthermore, coal “must be subject to the principle of the free market and competition” (ibid, p. 101). They said it was not possible to implement special measures for a specific branch of industry, “which would create a precedent for other branches of industry - something that must be prevented” (ibid). At first, the SPD was also generally passive (ibid, p. 104 et seq.).

It was only in 1963/64 that the SPD began to shift towards an active preserving and reactive structural policy. The change came about above all under pressure from the municipal associations. Finally in 1964, the SPD initiated the so-called “coal parliamentary group” (ibid, p. 106), which consisted of all parties represented in the NRW state parliament (CDU, SPD and FDP) and was based on a joint resolution. It demanded that the German federal government restricted fuels that competed with hard coal (ibid.). With the escalation of the mining crisis, the SPD furthermore increasingly pressed for state support for hard coal, thus gaining in importance as a party and ultimately becoming the **party of the Ruhr area**, which formed the NRW state government from 1966 to 2005 (Goch, 2009; Nonn, 2009, p. 108). After winning the state election in 1966, the SPD declared that overcoming the mining crisis and **saving the hard coalfield** by way of its restructuring would be the main task of the government (Nonn, 2009, p. 110). The authors assume that the objective of saving the coal industry in the Ruhr area at the cost of massive state support not only leads back to these industries’ real economic importance in the 1960s but also to the above-described perception of the Ruhr area in the post-war years (see also Berghahn, 1985). It was reinforced by the fact that against the backdrop of the **national security of supply** (particularly during the Cold War), the maintenance of German coal mining as by far the largest domestic energy source was a political priority (Request from the SPD and CDU factions, 1983). The paradigm of the national security of supply still serves today to justify lignite mining (see, e.g., IG BCE, 2017, 2018).

In light of the jobs depending on the coal and steel industry and of the risk to social peace that would accompany their loss, the SPD argued that structural change cannot be left to its own devices. The quote that illustrated the explosive nature of structural change in the Ruhr area appeared in 1966 in “Der Spiegel” magazine, “When the Ruhr is on fire, the Rhine does not have enough water to fight the flames” (Der Spiegel, 1966). After the initial reluctance of the CDU, a consensus was achieved in the NRW state government across numerous elections and party-political constellations that structural change must be shaped in a **socially compatible** manner in order to ensure the social and political stability of the Ruhr area (Bogumil et al., 2012, p. 17 f.). To do so, a continual negotiation process between the German federal government, the state and trade unions was established. Until the end of the phase-out of mining, the adage was applied, “**no miner shall be unemployed**” (see, e.g., request from SPD faction, 1987). This was achieved by relocating younger employees from closed mines to mines that were still working, while older employees were given early retirement. Compulsory redundancies were to be avoided where possible. As a result, structural breaks of the likes that happened in other regions (see for example the abrupt collapse of the lignite industry in Lusatia after the German reunification (Ragnitz et al., 2021) or the closure of the coal mines in Great Britain in the 1980s (Bielstein, 1988)) could be avoided. However, from an individual point of view, for at least some miners the loss of the job worked by generations remained a

burden because a strong identification with their “own” mine and region was often observable. The offer to continue working at another colliery was not always perceived as socially compatible because it would mean that either a long commute or moving house would be needed.

Even though the state interventions implemented by the state government in this phase of the structural policy were given conflicting evaluations by some experts because large amounts of funds were invested in the old industries of steel and coal (Prognos AG & InWIS-Institut, 2015), fulfilling the requirement of **social security**, which shaped the state politics of NRW as an important paradigm, was praised as a considerable achievement in the interviews. It was also highlighted in the interviews that politicians and social partners had to act in a preserving manner in order to prevent social decline. This requirement to shape structural change in a socially compatible manner provided reasons for preserving and reactive forms of structural policy. Combined with the developing “esprit de corps” between the trade unions and the SPD, it led to political interventions, which rather inhibited the structural change (Prognos AG & InWIS-Institut, 2015).

Consensus culture, corporatism and parochial thinking

On the one hand, the development of a “comprehensive political and economic coalition” (Bogumil et al., 2012, p. 14) was defining for the age of coal and steel in the Ruhr area. This coalition included all important economic and political stakeholders, as well as the trade unions after the Second World War, and led to a “**culture of consensus of the elite**” (ibid.):

“This culture was characterised by a strong emphasis on unanimous decisions and strategies agreed between business and politicians, and an equally strong inclination to not allow conflicts to come about in the first place.” (ibid. p. 14 et seq.)

On the other hand, the economies of scale in the coal and steel industry also shaped the industrial-political structures of the Ruhr area: Mines, energy companies and steel works were large companies, which grew together into even larger units in the course of the nascent crisis (mergers, concentration processes). The market relationships were marked by market power and monopoly-like structures with limited competition. On the other side were (and partially still are) the trade unions as a powerful employee representation. They could rely on both high membership numbers and the value system of the miners, in which camaraderie and being able to rely on each other (against the backdrop of the dangers of working underground) were of great importance. Altogether, the work in the mines appeared to be very identity-establishing for both the miners and for the region as a whole. Therefore, for the employees affected and for the region as a whole the decline of the coal industry did not only represent the loss of a source of income and market-based value creation but it also threatened the regional identity.

The relationships between politicians, industry and employees were organised in a corporatist manner, i.e., through the formalisation of participation procedures for the representation of interests. Representatives of industry and employees tried to avoid conflicts in the framework of the coal and steel co-determination and to present both a united front with coordinated demands to politicians. A crucial milestone was the establishment of the RAG on 01.01.1969. The merger of the individual mining companies meant that due to their size the works councils and the trade unions also gained more power. Today, this form of corporatist collaboration is still influential as a principle.

“‘What has the Ruhr area learned?’ It has already learned the division of labour. It is in our genes here. Not in the sense that it is hereditary, but in the sense of what has been regionally learned, what is regionally expected and what is the standard of the region. That is critically described as corporatism. According to the motto, ‘Employer and employee link arms and nothing changes’. That is the critical view of this side.

*The positive side is solidarity and division of labour.”
(Schwarze-Rodrian, 2017, quote from an interview)*

The consolidation efforts were accompanied by the “parochial thinking” (Bogumil et al., 2012, p. 14) of the individual towns. The structural change in the Ruhr area was described by an interviewed expert as a “disordered process” from today’s perspective. Corporatism and parochial thinking impeded the structural change. The relationships between the industry and the local politicians in the Ruhr area were traditionally very close (and still are today). Consequently, a coalition of local politicians and regional industry prevented the structural policy interventions of the state government from having an impact, among others through blocking the property market (“land lockout”) (Nonn, 2009, p. 114). A powerful coalition of local stakeholders interested in maintaining the status quo slowed down the structural change in this phase and meant that the structural policy measures had above all a preserving and reactive orientation (Hospers, 2004, p. 151).

Modernisation and environmental protection

A further frame, which grew in importance during the first phase of the structural policy primarily as a result of a speech by Willy Brandt in 1961, is that of **end-of-pipe** (regional) **environmental protection**:

“Clean air, clean water and less noise should not remain demands on paper. Shocking study results show that in connection with pollution in the air and water, an increase of leukaemia, cancer, rickets and haemogram changes has been recorded, even in children. It is disturbing that this community task, which concerns the health of millions of people, has almost been completely neglected to date. The sky over the Ruhr area must be blue once again.” (quoted from Brüggemeier et al. 2012, p. 8)

The frame of end-of-pipe (regional) environmental protection aimed to reduce the local ecological and health effects of the coal industry, largely through end-of-pipe technologies (Schepelmann, Kemp, Klement, & Schneidewind, 2013). However, this frame only became a guide for action in the form of actual interventions in the second phase of the structural policy, when the different technology programmes of the State of NRW and ultimately also the Aktionsprogramm Ruhr [Ruhr action plan] (APR) aimed to minimise the environmental pollution from coal mining in addition to supporting competitiveness (see Chapter 4.1.2).

In addition to this guiding principle, the demand that the region must be made **competitive** again contributed to a structural policy orientation towards **technological modernisation** (Prognos AG & InWIS-Institut, 2015, p. 99 f.). In the following phases, this orientation grew in importance. Already in this first phase, the structural policy linked essentially to a modern narrative of technological advances, in which the focus was not primarily on change but on the maintenance of old industries by way of technological modernisation (Prognos AG & InWIS-Institut, 2015, p. 104 f.). The objective for the coal industry was to modernise it and to make the Ruhr area into a modern economic region.

*“There were periods in which structural policy was phrased as ‘We must invest in technologies, we have to become very modern’ [...] I would say that went on continuously until the end of the 1980s following the motto: ‘How can we find modernity?’”
(Schwarze-Rodrian, 2017, quote from an interview)*

*“Now, it was no longer about the development of totally new structures on virtually pristine territory, but about the modernisation of ageing industrial regions. [...] This policy aiming at modernisation was new land and it has remained so until today.”
(Clement, 1996, p. 7)*

The first active and at the same time region-specific structural policy programme “Entwicklungsprogramm Ruhr” [Ruhr development programme] (EPR) was also advocated by the more economic-liberal FDP in the SPD-FDP social-liberal coalition. The Minister of Economics Riemer (FDP) said at the budget consultation in the state parliament in January 1975, “In earlier periods, speaking of the time before the social-liberal coalition, economic policy had the advantage that you were already an excellent economic politician if you simply did nothing. That time really existed. But now, you have to do something and think up something” (Goch, 2009).

Education and academia as investment in the future

Already in the first phases of the structural policy, the foundations were laid for the education and university policy renewal of the region. Before then, there were no universities in the Ruhr area. An example of the education campaign in the region is the foundation of the Ruhr-University, which was built in the mid-1960s as a symbol for a new education policy. It is located in Bochum - a working class stronghold in the Ruhr area. The investments in education were highlighted by several interviewees:

“The early recognition was that it is necessary to invest in minds, then to expand them, to continually qualify them or support them. [...] It cost a couple of billion, but it was strategically correct and it also paid off in the long term. It is actually a structural policy requirement for the modernisation of the Ruhr area.”

(Schwarze-Rodrian, 2017, quote from an interview)

The development of an education and academic landscape was above all economically motivated and aimed towards regaining national and international **competitiveness** as a region (Bogumil et al., 2012, p. 42 f.). Furthermore, the development of an academic infrastructure for towns also meant location development and an upgrade in terms of urban development. A research and development landscape was and is perceived as an endogenous strength with potential for development, from which numerous towns in the Ruhr area benefit today. The development of educational and academic institutions was strengthened in all future phases. Even though investments in education essentially represent future-orientated interventions and thus have forward-looking characteristics, in the Ruhr area they must simultaneously also be evaluated as reactive interventions in the sense that they only reacted to the region’s massive need to catch up.

In summary, the most important frames in the first phase of structural policy were retaining and in part also creating **jobs** (within the sense of **social security**), the (re)gaining of **competitiveness** by way of **technological modernisation**, the development towards a **region of knowledge** as well as the (re)creation of a habitable environment (**end-of-pipe, regional environmental protection**) (whereby the latter was only actually underlaid with measures in the second phase of structural policy). Taken together, these principles served a comprehensive modernisation discourse that implied that the profitability of the coal and steel industry complex could be guaranteed through further industrial-technological development and that its negative impact on the environment could be stemmed.

In the first phase, frames that are allocated to the impact dimensions of “economy” and “social welfare” (in the sense of cushioning social hardships caused by job losses) were therefore clearly dominant. However, in addition effectiveness in the two other dimensions of “regional identity” (maintaining the identity as a mining region and developing an additional identity as a region of knowledge) and “ecology” (reducing environmental pollution caused by the coal industry) can also be described. Furthermore, the improvement of the population’s education opportunities and the reduction of health burdens from coal mining has had a positive impact on the “social welfare” dimension.

5.3 Centralised structural policy (1975–1986)

How future-orientated is hard coal?

Already long before this phase, hard coal was no longer profitable, but it surprisingly found itself again in the profitable zone as a consequence of global economic developments (“oil price shock”) and, therefore, was again considered as an attractive **future sector**. From 1973, there were hopes for a (partial) return to domestic hard coal. It appeared attractive because it meant that the dependence upon imports would be reduced (Goch, 2009, p. 130). Local stakeholders had already previously believed in the “Ruhr area myth” - that the future of the region was still coal and steel (Hospers, 2004, p. 151), and their belief was reinforced in this phase. Also in interviews, it was emphasised that in this phase the historical development options of the Ruhr area appeared differently – coal was regarded as a fuel with a promising future in the region. Also the linking of coal and nuclear power (coal hydrogenation) was mentioned as a future option in this phase (Goch, 2009, p. 130).

Developing structural policy in dialogue

In this phase, a “policy of dialogue” (Goch, 2009, p. 153) was increasingly implemented, among others reasons because citizens, groups, organisations as well as an organised civil society registered new claims to participation (ebd., p. 152).

The Ruhr area conference on 8th/9th May 1979 marked the start of **dialogue-orientated structural policy**. Representatives from politics, academia, associations and trade unions participated in the conference. They developed joint focuses in terms of content for the APR. The participants at the conference had no decision-making authority and were not democratically legitimised but they were able to articulate their interests, requirements and demands through the Ruhr area conference (Schlieper, 1980, p. 475). In the debate on the further development of the Ruhr area conference, it was discussed whether such conferences could be granted decision-making authority in the future (Schlieper, 1980, p. 478). This was not implemented, but in the following years the state government followed to the greatest possible extent the agreements that were reached at the conference (Federal Government, 1990). The approach of dialogue-orientated structural policy was strengthened in the following phase of regionalised structural policy with the instrument of the regional conferences.

Centralised structural policy

In apparent contradiction to the dialogue orientation is the **centralisation** of the planning responsibility at the state government level in this phase (see Chapter 4.1.2), which aimed at further developing the Ruhr area as a region:

“To do so, you need land. And the courage to say something that a single mayor of Gelsenkirchen may not say alone. You need inter-party cooperation. It is not something that you decide in five years. If you only do it on the flat level, you can’t start any long-term processes.” (Landsberg, 2017, quote from an interview)

A central structural policy element, the APR, was announced before the elections to the state parliament in 1980 and in light of the high unemployment figures in the area, it also served “to take the wind out of the sails” of the oppositional CDU (Goch, 2009, p. 152). In this regard, the structural policy directed by the state government is also a power maintaining instrument deployed by the SPD, which had been the governing party for many years.

Technology funding as a means of safeguarding the future

From the very beginning, the structural policy debate was heavily linked to the paradigm of **safeguarding the future through the development of technology**. Also in this phase, the structural policy interventions included terms like “technology funding, innovation funding and technology transfer funding” (Goch, 2009, p. 153). Nevertheless, both the technology programmes from 1974–1989 and also the APR still essentially aimed to maintain the coal and steel industry through technological modernisation (Goch, 2009, p. 150, 154) and therefore must be regarded as preserving structural policy interventions. However, simultaneously with the 1974 “Technologieprogramm Wirtschaft” [technology programme for the economy], which did not concern the traditional sectors of the Ruhr area but SMEs instead, a first approach towards a structural policy based on the guiding principle of economic diversification became apparent (ibid, p. 151).

With the paradigm of safeguarding the future through the development of technology, the structural policy interventions also focused on the “economy” dimension in the second phase of the structural policy.

5.4 Regionalised structural policy (1987–1999)

Post-industrial structural change and service society

From a global perspective, the developments in the Ruhr area correlated with the trend in the majority of countries that saw the tertiary sector growing in importance in the 1970s – key word: service society. From the 1980s, the increasing globalisation generally led to a relocation of industrial production to low-income countries. Against this backdrop, the developments in the Ruhr area are not to be regarded as an isolated case. The same thing was simultaneously happening in many regions around the world. However, due to its specific industrial character the Ruhr area was particularly impacted by the change. The afore-mentioned global process formed the backdrop to an economic and structural policy discourse against which the regionalised structural policy of the late 1980s and 1990s in the Ruhr area was developed. The paradigm of **diversification** of the economic structure as the basis for a robust economy became more and more prevalent in the structural policy discourse.

Regionalisation and Europeanisation of the structural policy

In the 1980s, there was a paradigm change in structural policy. Instead of the previous hope for the modernisation of the coal and steel industry or for a “big solution” (Bogumil et al., 2012, p. 17) for the Ruhr area to replace it, the insight prevailed that “the disparities between the individual regions could not be schematically approached with the same strategies and instruments” (Goch, 2009, p. 156):

“Since it is clear that in current times and in the future, it will hardly be possible for an industrial complex to exist that is capable of shaping and advancing an area the size of the Ruhr area, it was illusory to subject the whole region to a uniform structural change in a certain direction that is the same for all subregions.”

(ibid, p. 156 et seq.)

Accordingly, the new principle of structural policy was **regionalisation**. Regional and functional stakeholders had to present “regional development policies” in the framework of the regional conferences (see Chapter 4.1.3) and thus showed a regional consensus regarding development strategies.

At the same time, the State of NRW was increasingly impacted by EU activities, which it perceived as an encroachment upon its independence in the policy fields of environmental policy and regional

structural policy. Günther Einert, the NRW Minister of Economics, complained that the “legislative activity of the EC [European Community] increasingly affected the legislative activity and administration duties of the states and continued to restrict the political options of the state parliaments and the state governments” (quoted from Voelzkow, 2017, p. 182). Wolfgang Clement, at the time Head of the State Chancellery Office, concluded that the states may not only have their voices heard through the German federal government’s Europe policy but must also be present in Brussels themselves in order to, if necessary, represent their own interests: “It is one of the vital interests of the states of Germany to defend their freedom also against the European level and where possible to expand it” (ibid). The dominant frame, with which political stakeholders argued in this regard, is **subsidiarity**. Even Minister-President Johannes Rau reinforced this argument:

“The State government of North Rhine-Westphalia has [...] taken a series of initiatives with the objective of working together with other German states and where possible with other European regions to ensure that the regions play a significant role in a future European constitution. Decentralisation, federalism - they are our answers to centralism and nationalism.” (ibid).

Growing environmental awareness and ecological modernisation

A further guiding principle, which became more important in this phase, was environmental protection. Already in the 1970s, there was great environmental awareness in the German population and in the 1980s, this awareness moved from the periphery to the centre of the political discourse (UBA, 2016). Hundreds of thousands of citizens joined environment organisations and even the trade unions began to address the topics of clean air and environmental protection. As a result of ecological crises, e.g., forest decline and acid rain, as well as of a series of environmental catastrophes, e.g., Seveso, Chernobyl, the environmental awareness in the German population further increased. The “Die Grünen” [the greens] party highlighted the main points in the political landscape and exercised pressure on the other parties and governments to address the topics of climate protection and ecology.

From 1995, “Die Grünen” party was a junior partner in the SPD-Grünen state government in NRW. The policy of **ecological modernisation** became increasingly popular in the environmental policy under the government of Johannes Rau from 1978 to 1998. The policy focussed on the key role of technological innovations for an ecological conversion of the industrial society as well as on political and cultural conditions for them to come about (von Weizsäcker, Lovins and Lovins 1996). It replaced the focus on “end-of-pipe technologies” and comprised the vision of an ecological structural change of the industrial societies (Schepelmann et al., 2013). The IBA Emscher Park can be regarded as a significant milestone towards a regionalised and “ecological structural policy” (Schepelmann et al., 2013). In contrast to interventions in the previous phases, for the first time structural policy was equally directed towards the impact dimensions of “economy” on the one hand and on the other hand “ecology” and “regional identity”. In addition, in the “social welfare” impact dimension it did not place the focus on the cushioning of social hardships as had been previously done but rather the focus was on the improvement of the quality of life through “soft location factors” (e.g., the creation of spaces for social participation).

The IBA Emscher Park as a structural policy innovation

In many regards, the IBA Emscher Park stands for new paradigms in the structural policy of the Ruhr area. Therefore, using the format of the IBA Emscher Park and similar formats as examples, an overview is given below of some of the discourse that was and still is connected with the experience of this particular support approach.

An institutional driver for the approach of the IBA Emscher Park was the Ministerium für Landes- und Stadtentwicklung [ministry for rural and urban development] (from 1985 Ministerium für Stadtentwicklung, Wohnen und Verkehr [ministry for urban development, housing and transport]). It was newly established in 1980 and had Minister Christoph Zöpel at its head and Karl Ganser as the department head for urban development. These men followed a strategic agenda, which from the perspective of the previous structural policy was connected with the following new orientations:

- ▶ Endogenous development strategies (referring to the quality of life, the quality of environment and a housing stock-orientated modernisation),
- ▶ Breaking out of existing corporatist structures, new forms of participation – also the inclusion of stakeholders, which were not originally part of the problem (industry, employees) but could be part of the solution (artists, new branches and professions),
- ▶ Importance of “soft location factors” (urban development, housing, culture).

Alongside it, the “old” structural policy strategy continued to exist, which relied on strengthening the export basis, supporting new technologies, attracting large companies (e.g., Opel, Nokia), new gainful employment opportunities as well as major structures, availability of land and a modern transport infrastructure for the corresponding settlement of new companies.

In principle, this dualism of endogenous and global market approaches still remains in the structural policy support today. Approaches for a bottom-up development of neighbourhoods and the concept of a technology-based lead market orientation are still found today, generally unconnected but next to each other in separate transformation arenas.

The contention about the structural policy approach can above all be understood in regard to the conception of the IBA Emscher Park. Instead of large projects, the IBA Emscher Park was to arise from decentral individual projects that follow a joint development perspective. In project-based cooperation, a path was to be taken towards cooperation and sustainable urban development in the northern Ruhr area (Ganser 1999; Sack 1999). At the time, the guiding principles were “change without growth” and “innovation in a non-innovative environment” (Ganser 1999). The action approaches for the IBA Emscher Park were characterised by a perspective incrementalism (Ganser 1999) and diverse process innovations (Kilper 1999). Starting from a long-term vision for a renewal process in an old industry region, numerous smaller projects were started. Model-like solutions were found in independent local stakeholder initiatives, so-called “innovative islands” (Adrian 1994, p. 91), while IBA Emscher Park GmbH concentrated on shaping the process, i.e., the mobilisation of the stakeholders and resources through awarding funding priorities in the competition (Ganser et al. 1993, p. 115).

The IBA Emscher Park was based on a broadened understanding of “structural policy”: All of its sub-projects were aimed to improve the location and quality of life – through the renaturation of the Emscher river, the creation of parks, the urban redevelopment of housing as well as social and cultural renewal (working and living in the same place, industrial landmarks as new meeting places). The entire approach was a social innovation from the perspective of the political governance of regional development (Füg 2015). The cross-sectional orientation of the topics and projects was also new: Urban development, landscape planning, cultural development, housing and work were treated in an integrated fashion. It questioned the previous forms of dealing with problems in structural policy, which had been characterised by sectoral and large-area approaches.

Also the selection of the area was brave. The Emscher zone with its contaminated sites, brownfield sites, old residential areas and social problems was not exactly predestined to become a future model for successful structural change.

“We are creating an international building exhibition in Emscher Park’. That was a sensation in the political communication. And it was highly controversial. As in, ‘You must be wrong in the head!’ Nobody knows the name of this river apart from the neighbours who call it ‘the stream of droppings’”
(Schwarze-Rodrian, 2017, quote from an interview)

The IBA Emscher Park was the urban and landscape planning attempt to intervene in the structural crisis in the northern Ruhr area using artistic and aesthetic means, and thus to create new impulses for a new ecological and economic culture. As a result, the IBA Emscher Park was also ascribed a cultural and identity-creating importance.

“Working in the park’, the industrial culture, the culture of industry to be regarded here as the roots of identity and as the roots of action, the further development of housing forms, [...] a careful urban regeneration - they are all qualitative terms, which at first do not appear to have a structural-economic meaning but which represent the framework conditions for a new attractiveness.”
(Schwarze-Rodrian, 2017, quote from an interview)

In conclusion, it can be said that with the IBA Emscher Park new (quite controversial) paradigms of the structural policy discourse were implemented. As a result, the IBA Emscher Park, which was often regarded even by its advocates as no longer a part of the actual structural policy but as an approach to a comprehensive urban development, became an alternative to structural policy.

5.5 Sector expertise-orientated structural policy (from 2000)

The phase-out of coal: in consensus and socially compatible

In 2007, the German federal government and the States of NRW and Saarland agreed a step-by-step phase-out of hard coal subsidies by 2018. The guiding principles of the **culture of consensus** and **social compatibility**, which had existed since the start of the structural policy, continued to appear influential. The **phase-out decision** was taken in agreement with the IG BCE and the RAG:

“The phase-out of subsidies would have certainly been more quickly possible under the leadership of a CDU-FDP coalition. However, we wanted to do it in consensus with the trade unions. And that simply comes at a price [...] There are high societal costs but social peace was important to us.”
(Maizière 2009, quoted from Frigelj, 2009, p. 245 et seq.)

Against the resistance of the NRW Minister-President Norbert Röttgen (CDU), 2018 was set as the phase-out date using social compatibility as justification, although it meant additional costs of 12 billion euros compared to a phase-out, e.g., in 2014 (Frigelj, 2009, p. 229). At a hearing at the German Bundestag, the IG BCE declared:

“An end, a phase-out before 2018, means social and structural breaks in the regions, in which mining still occurs today because the time is not enough to adapt.”
(quoted from Frigelj, 2009, p. 228)

The conditions, which were agreed regarding social security, were unique in Germany (with the exception of the civil servant status). Employees who were at least 42 years old (working over-ground) or 37 years old (working underground) in 2007 were guaranteed their job and subsequent financial support until their early retirement at the age of 62. Employees, “who went into adaptation” received for the rest of their lives 80 % of their last net wage, plus allowance in kind (Frigelj,

2009, p. 229). Thus, even the decision to end hard coal mining had preserving and reactive structural policy traits.

The final closure of Germany's former industrial heart followed a long societal and political negotiation process, a slow reversal of public opinion and a crumbling of the decade-long consensus regarding the imperative survival of domestic hard coal.

Already in October 1994, the German Federal Constitutional Court declared that the extra charge on top of power prices of the energy providers, which was to ensure the use of hard coal in power generation ("coal pfennig") and had been applied since 1974, was against the constitution. In its grounds, it read that the general power-consuming public did not have any particular financial responsibility for this task. This break was accompanied by a general change of mood and a loss in importance of pro-coal policies at the federal level in the 1990s. An expert stated in the interview that the coal policy under Helmut Kohl was no longer as strongly preferred as the policy under Helmut Schmidt was. However, regarding the role of the state policies, it is emphasised that despite the declining federal support, a final end of hard coal mining was not possible "until a tipping point had been reached, where it was no longer assumed that 'we will not be re-elected because we are phasing out hard coal'".

Many experts believe this tipping point came in 1997. At this time, the size and power of the trade unions had already sharply fallen. It was no longer possible for them to mobilise mass demonstrations on Bonn and certainly not on Berlin. In 1997, *Industriegewerkschaft Bergbau und Energie* [German mining and energy industry trade union] (IG BE), *Industriegewerkschaft Chemie-Papier-Keramik* [German chemical, paper and ceramic industry trade union] (IG CPK) and *Gewerkschaft Leder* [German trade union of leather workers] (IG GL) merged to become *Industriegewerkschaft Bergbau, Chemie, Energie* [German mining, chemical and energy industry trade union] (IG BCE) in an attempt to compensate for their loss of influence by merging. Furthermore, in the Ruhr area there was a reduction in the feeling of solidarity between trade unions and employees. The corporatist form of political interest representation by trade union organisations and the "Rhine capitalism" visibly decayed (Leggewie, 2013). At the same time, the decades-old cross-party "coal parliamentary group" in the NRW state parliament increasingly crumbled until in 2005, the CDU and FDP explicitly spoke in favour for ending hard coal subsidies (Frigelj, 2009, p. 195).

A further reason for this turn-around can also be seen in the German reunification. It brought about a political paradigm change in Germany, which led to the Ruhr area generally being less in the public and media focus. Also, the argument of hard coal being an essential domestic fuel for the national security of supply was considerably weakened as a result of the enormous deposits of lignite in East Germany that were gained through the reunification (ibid). Furthermore, the consequences and **damage caused by mining to the environment, people and the infrastructure**, which had been repeatedly touched upon in previous years, began to enter the public focus and to weaken the dominant image of coal as the bringer of wealth (Frigelj, 2009, p. 197 et seq.). Previously only the ecological modernisation of mining with end-of-pipe technology was sought to solve this damage (see above), but at the end of the millennium, this damage called the whole of the mining sector into question. When the 2002 to 2019 general operating schedule for the Walsum mine planned to continue mining hard coal from underneath the close-by Rhine, through which new flood risks could be caused, there were such strong protests from residents and local politicians that Walsum was closed prematurely (Frigelj, 2009, p. 197 et seq.).

Strengthen strengths

At the turn of the millennium, an approach that placed the focus on the growth-intensive endogenous potential, came about in structural policy. The paradigm of “**strengthening strengths**” (Bogumil et al., 2012, p. 59) became the dominant approach in the structural policy. This policy was clearly different from the preserving and reactive approaches of the previous phases and can be described as forward-looking structural policy. In principle, the structural policy orientation followed economic areas of expertise or rather areas that were promising and generally understood as **future sectors**.

This new paradigm was heavily promoted by the then Minister-President Wolfgang Clement (SPD). The institutionalisation in the form of Projekt Ruhr GmbH in 2000 (see Chapter 4.1.4) was addressed by Clement himself as a “matter for the boss” (dpa/Inw, 2000).

The focus on the economic areas of expertise is essentially not new in structural policy. It was already developed in the 1990s with the keywords “regional innovation systems” (Asheim and Isaksen 2002; Braczyk, Cooke and Heidenreich 2004) and “cluster policy” (Gärtner & Frenzel, 2014; Heinze, Hilbert, Nordhause-Janzen, & Rehfeld, 1998) and it focussed on organically grown relationships between academic and economic stakeholders (training, research and development) as well as on the whole value creation chain. Thus, the structural policy in the Ruhr area was following the new mainstream opinion of how modern structural policy should look – whereby, as described in the section above on the IBA Emscher Park, there certainly were and still are opinions to the contrary in the discourse. A framework for shaping structural policy, which is still important today, is the fact that increasingly more funds from the EU are distributed and they are in part awarded with strict conditions of use (ZEW, 2009). Thus, the discourse and the decisions about structural policy are in part also Europeanised.

The areas of expertise and the lead markets were specified at the state level in NRW and have been presented in detail in Chapter 4.1.4. The areas of expertise were not passed down in a “top-down” manner but were identified in the dialogue between the economic development institutes, companies, universities and research institutes. Thus, the earlier guiding principle of the policy of dialogue continued. At the same time, it was and is only possible to a certain extent to determine strengths and future branches in advance. Thus, this form of structural policy was described by an expert in the interviews as a “learning process”, which builds on the previous stages of the structural policy and in which it above all deals with making decisions under uncertain and unknown conditions.

The (selection of the) structural policy funding priorities was justified with **endogenous economic potential** and was intended to **retain and create jobs** (Bogumil et al., 2012, p. 59). The higher regional resilience that could be achieved as a result of the diversification of the economy was used as an argument for the intended break-up of a mono-structural economic dependency. The resulting uneven distribution of the support can be regarded as an expression of the completed internal differentiation in the Ruhr area, where the leading sectors of coal and steel have significantly lost importance. The structural policy cluster approach, which was justified with the guiding principle of “strengthen strengths”, thus also forced a functional specialisation of the towns in the Ruhr area.

“[T]he long-term success is the diversification of this economy into different sectors, into different areas of expertise and thus also the accompanying diversification of the towns.” (Schwarze-Rodrian, 2017, quote from an interview)

The policy of functional and spatial differentiation also led to competitive relationships between local stakeholders, which is and was by all means regarded as positive. The formation of focuses in the towns was important in order to put aside egoism in the individual towns. Not every town has to do everything to equally profit from structural policy funding. At the same time, Bogumil et al. criticised that the still existing “parochial thinking” of the towns in the Ruhr area made it hard for

the towns to intensively network, which is needed for successful cluster formation (Bogumil et al., 2012, p. 136 f.). Furthermore, in the course of the orientation towards the functional and spatial differentiation, the perception of a uniform structural policy for the Ruhr area was increasingly lost. As an expert stated, “but we no longer had an overall approach. Of course, ‘the blue sky over the Ruhr’ and the ‘knowledge landscape’ existed. There is now the RVR and planning responsibility, but only bitty individual approaches.”

The perception of the “bittiness” of the structural policy accompanied the dissolving identity of the Ruhr area as a unit. The discourse regarding “regional identity” is addressed in detail below.

No. 1 energy region

A significant narrative about the Ruhr area is that it is Germany’s “No. 1 energy region”. Thus the IHK Essen [Essen chamber of industry and commerce] writes on its website, “Energy provision and energy technology - in these areas the Ruhr area is Europe’s leading location and No. 1 region of expertise” (essen.ihk24.de 2016). Even the “InnovationCity Ruhr” project builds upon this pioneering narrative and legitimises its intended climate-friendly urban redevelopment with the following vision: “An investment, with which the traditional energy region has the chance to become a global pioneer for climate protection and environmentally-friendly technologies” (icruhr.de, 2016). On the one hand that means that an economic pioneering role is established or aimed for the narrative of the Ruhr area as an energy region. On the other hand, it is used in order to establish the region having a particular responsibility, e.g., for climate protection.

Increasingly, it is broadened to NRW as a whole (embedded in the cluster policy of the State of NRW). Thus, in the self-presentation of the “energy sector” cluster there is hardly any reference to the Ruhr area any more. NRW as a whole was presented as “Europe’s most modern and most important energy region” (energieregion.nrw, 2017). Through this regional expansion, after the decline in the importance of hard coal mining, the still active lignite opencast mines of the Rhine coalfield have become part of the energy region. The focus of the “energy sector” cluster is less on coal technology and more on the topics and technologies, which are relevant today and in the future for the implementation of the energy transition.

Poor house or Ruhr metropolis?

The structural change led to the “regional identity” of the Ruhr area being mainly restricted to the shared economic past while lacking a future-orientated societal narrative. Rasmus Beck, Executive Director of wmr, was quoted in the “Immobilien-Zeitung” [real estate newspaper] under a headline referencing the traditional greeting of German miners “The coalfield stands for ‘Glückauf’ and what else?”:

“This question must be answered. In it, I see the crucial task of the Ruhr area: What does our new topic look like, beyond steel, coal and beer? Only once this question has been answered, the answer can also be confidently communicated outwardly.”

(Karl, Thorsten, 2015)

Stefan Goch gives a pointed explanation for the lack of a shared narrative, “The Ruhr area has not existed for a long time” (Goch, 2017, quote from an interview). He alludes to the fact that the Ruhr area has lost a forward-looking identity. The towns of the Ruhr area only have their industrial past in common. It may also be added that cultural similarities, such as football and the drinking hall culture as well as infrastructure, e.g., the A 40 motorway, connect the various towns with each other. However, a common economic structure, which would have a similar pulling force as the mono-industrial complex, no longer exists in the Ruhr area.

There are two perceptions of the Ruhr area: poor house and structurally weak tail light on the one hand and future-orientated “Ruhr metropolis” (Bogumil et al., 2012, p. 133) on the other.

In the book “Viel erreicht – wenig gewonnen” [much achieved, little gained], Jörg Bogumil et al. (2012) show that compared with the southern German states the Ruhr area still has large weaknesses and even an innovation gap. With regard to the education and academia policy, they certify that the guiding principle of “knowledge region” has not yet been accepted by the population. Adding that although there are many universities and students, there is no deep going change in the culture and thus no change towards a knowledge society (ibid, p. 54). Bogumil et al. further establish “tradition-based [...] collective[...] developments in the mentality of the region and perceptions, which [are] detrimental to a ‘culture of independence’ and other flexibility requirements” (ibid, p. 55).

The tail light discussion has also taken hold through reports on studies and rankings. It counteracts the regional pride in the performed achievements of the structural change process. And it is often linked with a criticism of the shaping of the structural policy.

“The poverty report from the Paritätische Wohlfahrtsverband [parity welfare association] tells a different story. According to it, together with Berlin the Ruhr area is one of the regions in Germany that is by far the most worrying. The poverty rate is at 18.9 % and the Hartz IV unemployment rate is 14.1 %. And growing. Up until the 1950s, the Ruhr area was one of the richest regions of Germany. [...] It is the region of missed chances. Instead of backing structural change at an early stage, the SPD-led state governments of Heinz Kühn through to Johannes Rau and Peer Steinbrück adhered to a traditional industrial policy for decades.” (Beucker, 2012)

As important as the paradigms of social security, social compatibility and compensation for disadvantages had been for decades as critical was the portrayal of many of the structural policy answers in the media discourse. The reactive forms of structural policy are observed in connection with a “blocked structural change”:

“The consequences of this policy, supported by subsidies worth billions for hard coal and carried by the hope that the economic change could somehow be stopped, will be felt for a long time.” (Berger, Peter, 2014; see also Frigelj, 2009, p. 248 et seq.)

A great contrast is found in the presentation of the Ruhr area as the **Ruhr metropolis**. The claim that the Ruhr area is one of the most important industrial regions of Europe is advocated by wmr, which was established in 2007. The different economic successes also contributed to a new identity:

“For me, a milestone was when Dortmund lost its steel industry and they started up this ‘Dortmund project’. Because for me, that is to date one of the best cluster projects. [...] The ‘Dortmund project’ verifiably gave the whole town a new identity in the long term. A new perspective. [...] [J]ust this u-turn from ‘we were a steel location and now it’s all over’ to ‘we have a great technology centre and are good at micro-structure technology and IT’.” (Landsberg, 2017, quote from an interview)

A further milestone in this phase is the “RUHR.2010” European Capital of Culture, with which the achieved successes of the structural change were celebrated to a certain extent.

“Insofar, the European City of Culture was held as a mass participation and celebratory event, where millions of people in the Ruhr area now celebrated this industrial culture as their identity and also the achieved structural change.” (Schwarze-Rodrian, 2017, quote from an interview)

This event was closely connected to the change of image of the coalfield to the “**Ruhr creative and cultural industry**” (Bogumil et al., 2012, p. 121) and also linked into the connecting elements of the Ruhr area towns, e.g., with “Still-Leben Ruhrschnellweg” [Ruhr motorway still life] (see Chapter 4.1.4).

In a newspaper article about the 2010 European City of Culture, a representative of wmr connected “RUHR.2010” with the growing and pragmatic cooperation between towns in the Ruhr area:

“At the latest since the huge international media echo around its events, the region has not just established itself as a cultural metropolis, but also gained respect as an exciting community of 53 municipalities with an exemplary ability to cooperate.”

(Börsen-Zeitung, 2015)

In summary, it is to be recorded that the consideration of the “ecology” and “regional identity” impact dimensions, which started in the phase of regionalised structural policy and was more pronounced in comparison to the previous structural policy, was further continued in the phase of the sector expertise-orientated structural policy, e.g., with interventions like “InnovationCity Ruhr”. The discourse on the “regional identity” and the structural policy of the Ruhr area is on the whole shaped by very heterogeneous perceptions and presentations: “Viel erreicht – wenig gewonnen” [much achieved, little gained] (Bogumil et al., 2012), between tail light and cultural metropolis, with the Ruhr area as a unit and with towns that are becoming increasingly more economically specialised. It clearly shows that the structural change in the Ruhr area and therefore the change from Germany’s largest coal and steel complex to the Ruhr metropolis is not complete and that the Ruhr area remains in search of its (new) identity (ibid).

6 Findings and lessons learnt

The structural change in the Ruhr area is not a completed process, but has been ongoing since the first crises in hard coal mining in the late 1950s until today and is still continuing. Over the course of time, it has shifted from the south to the north just like coal mining in the Ruhr area did. All in all, the number of employees fell from approximately 500,000 employees at the peak of German hard coal mining in 1957 to approximately 4,500 employees in 2016.

Compared to the current debates about the future of (lignite) coal, it is to be emphasised that the decline and ultimate end of German hard coal mining in 2018 is solely down to its poor competitiveness against imported coal and other fuels, and is not down to climate protection considerations. Climate protection considerations were neither the driver of structural change nor the primarily objective of the structural policy in the Ruhr area.

The structural change in the Ruhr area was accompanied by a multitude of structural policy interventions, which above all aimed to avoid social and economic distortions and to strengthen the region. Thus, the structural policy interventions were particularly aimed at the “economy” and “social welfare” impact dimensions. Furthermore, in particular the development of the infrastructure was initiated, inter alia, with the Entwicklungsprogramm Ruhr [Ruhr development programme] (EPR). In addition to the education infrastructure, the transport infrastructure and various leisure facilities were further developed. Today, the Ruhr area is one of the regions in Germany with the highest density of universities and research institutes.

All in all, the structural policy interventions in the Ruhr area had a very preserving and reactive orientation. For decades, the structural policy primarily pursued the objective of securing the German (hard) coal mining sector as the domestic source of energy from the Ruhr area and then later of slowing its exhaustion. For this purpose, on the one hand the mining industry was heavily subsidised and social security systems for the employees (in particular early retirement without a great reduction in income) were created. On the other hand, it was (in the end unsuccessfully) attempted to restore the market competitiveness of coal mining by way of technological innovations and economic rationalisation measures. The reason for this policy of conservation is to be seen in the special importance that hard coal mining and the Ruhr area had for West Germany: the economic importance of the mining industry, the energy policy importance of hard coal as a domestic energy reserve, the size of the Ruhr area and the large number of people who were economically linked to hard coal. These do not only include the direct employees and their families, but also the full coal and steel sector as well as its suppliers.

On the one hand, these forms of preserving and reactive structural policy achieved the large-scale avoidance of social distortions in the Ruhr area, e.g., in comparison to British mining regions. On the other hand, they caused enormous financial costs and led to the necessary diversification of the regional economy being blocked for a long time, e.g., because mining companies refused to sell their brownfield sites to other companies.

As in other regions, the realisation of including the regional strengths locally in the structural policy strategies became established over time in the Ruhr area. With the regionalised structural policy from the late 1980s and more forward-looking, sector expertise-orientated structural policy since the turn of the millennium, there has been a further diversification of the economy in the Ruhr area.

In the search for lessons for other regions and subsequent structural change processes, it is at first important to determine that an evaluation of the impact of individual measures is very difficult because the impact is extremely dependent upon the interactions with other structural policy interventions. Also, framework conditions and developments from other policy fields greatly influence the impact of individual structural policy interventions. For a possible application (transferability) in another region, their specific regional circumstances must be considered. These specific

circumstances include in particular the social security systems in the respective countries, which in Germany were largely able to cushion the potential negative consequences of structural change in the Ruhr area. However, each country may not be able to do so for each region.

Furthermore, regarding the application of the lessons of the Ruhr area to other regions, a realistic assessment of the possible success of a structural policy and an honest political communication are of central importance in order to avoid disappointments, loss of trust and political disenchantment. The socio-economic data for the Ruhr area shows that despite large financial efforts, not all mining jobs lost could be immediately replaced by a newly created, qualitatively equivalent, comparably well remunerated, industrial job.

Despite these restrictions, lessons can be gained from the analysis of the historical processes in the Ruhr area that could also be helpful for other regions and subsequent structural change processes.

Thus, the experiences from the Ruhr area show how important it is not just to allow change to happen, but to also actively accompany and shape it at an early stage. It requires a forward-looking structural policy, which in a targeted manner strengthens the endogenous potential of a region and is supplemented by reactive interventions that cushion the social hardships arising from the structural change. In the Ruhr area, the (until the late 1950s) dominant mono-industrial structure could not be substituted by attracting individual large concerns. Rather, it can be learnt from the experiences in the Ruhr area that a long-term economic diversification over a small geographical area is more promising to cushion a phase-out of coal consumption and mining.

Yet, structural policy is much more than economic development funding and policies to attract businesses. Rather, it is necessary to purposefully coordinate the different policy fields (e.g., structural policy, labour market policy and education policy). Precisely the expansion of regional infrastructure, e.g., ensuring and increasing mobility and the expansion of the education and research landscape, are approaches that actively make structural change possible in the first place. The impact of the EPR and also of the Aktionsprogramm Ruhr [Ruhr action plan] (APR) show that integrated interventions are helpful in order to shape the change. The linking of sector support, expansion of the infrastructure (mobility, education and research) and accompanying measures for social security must be understood as an integrated full package.

Furthermore, the analysis of the past structural policy for the Ruhr area shows that bottom-up approaches, i.e., the early involvement and participation of all regional stakeholders, are helpful in actively shaping structural policy. These participation processes can allow both regional knowledge and experience to contribute to shaping the change and to increasing the acceptance of the change. As stated, not only the “traditional” structural policy stakeholders (institutes of economic development, trade unions, companies, chambers, job agencies) but also further stakeholders (associations, NGOs, etc.) are to be included in these participation processes. In this regard, it is important to consider that the development of a new governance structure requires a longer timeframe and that the negotiation processes by the various interest groups become more complex.

In regard to the governance structure, there was an additional significant structural policy challenge in that the Ruhr area, like the majority of other coal mining regions, was not one administrative unit. A successful structural policy, specifically orientated towards the respective region, thus requires the creation of participatory governance structures beyond administrative boundaries.

A specific example for an innovative approach to shaping structural policy is the International Building Exhibition (IBA) Emscher Park. Whereas, until then the structural policy influenced above all the support for the economic and social dimensions (in the sense of economic growth and cushioning social hardships), the IBA Emscher Park was aimed much more towards the ecological dimensions (renaturation of the Emscher river) and the dimension of “regional identity” (maintaining the identity as a mining region by the transformation of places of industry into places of culture) as

well as towards the aspects of participation and quality of life from the “social welfare” impact dimension. It created spaces for a broad societal participation, increased the cultural, ecological and economical value of the location and thus altogether increased the quality of life for the citizens of the region. The approach of the IBA Emscher Park understands structural policy explicitly as an integrated urban and regional development policy and is therefore a prominent example of how different policy fields can be integrated.

The discourse analysis reveals that political scopes for action are not limited exclusively by the material consequences of structural change and the expected improvements from structural policy interventions, but are essentially determined by the discourse and the public perceptions that are reflected in the discourse. Consequently, the SPD was able to establish itself early as the representative of employees' interests. Conversely, this position limited its political scope for action regarding proactively shaping the change. In the framework of shaping the structural policy, it must be considered that the coal and steel industry not only decisively shaped the economic structure of the Ruhr area, but also its identity. The future-orientated shaping of this identity as a mining region (e.g., through the preservation of the Zeche Zollverein [customs association colliery] as a UNESCO World Heritage Site) helped to cushion breaks in the individual and collective regional identity.

Finally, it is observed that structural policy cannot be strictly planned. There will always be changes in the framework conditions that cannot be predicted in advance because of the long periods over which structural change processes occur. Therefore, structural policy must find a balance between objective orientation and flexibility. On one hand, the structural policy of the future will face different challenges to the structural policy of the past. On the other hand, the expectations placed upon structural policy will continue to change. The “Ruhr area case study” shows how in the past, the paradigms of structural policy itself (i.e., also the question of what should be achieved with structural policy) have changed. Also in the future, the normative objectives for structural policy will continue to change. Sustainability and climate protection are in part already recognised as further important objectives alongside the “traditional” objectives of job retention and economic development funding.

Therefore, structural policy as a whole, but in particular a proactive, forward-looking structural policy, which is expected to shape an unknown (even unrecognisable) future, is always also experimental to a certain extent. It demands courage from the political stakeholders and other decision-makers to precede from here – all the more so because the change means that for many of those affected, their personal future is uncertain and this uncertainty of the citizens (and the voters) increases the political pressure on structural policy.

However, the historical analysis of the structural change and the structural policy of the last 60 years in the Ruhr area also shows which an immense wealth of experience already exists. At the same time, the derived lessons, which are presented in this study, are only a small part of the existing knowledge, which can also be very valuable for other processes and regions. There is a lot of experience residing with the local practitioners that could be made available to other regions and/or sectors via formats such as peer-to-peer learning.

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8 Appendix: Frame overview

Frames are the interpretation schemas that societal groups use to categorise and interpret societal discourse fragments and events (Creed et al., 2002; Goffman, 1974). The frame analysis establishes “where actors see issues, policies and policy situations in conflicting ways, which embody different systems of belief and related prescriptions for action” (Schön and Rein, 1994, p. xviii).

The frames identified in this study are allocated to the four impact dimensions (“economy”, “social welfare”, “ecology” and “regional identity”) that are the basis of this study. Frames, which primarily focus on the distribution of responsibilities and opportunities of political influence, are allocated to the “politics” meta level.

Economy

| | |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <i>Endogenous economic potential</i> | Reference to the Ruhr area’s own economic potential or that of the businesses based in the region |
| <i>Planning security</i> | Emphasis of the importance of predictable framework conditions for the economy |
| <i>Regional importance of existing industries (coal, chemicals, glass, paper, etc.)</i> | Positive reference to the structural importance of industrial sectors based in the region |
| <i>Security of supply</i> | Reference to the secure supply of energy |
| <i>Distortion of competition</i> | Negative frame often used to reject political and economic interventions |
| <i>Competitiveness</i> | Positive emphasis on market forces and supporting structural policy interventions, in particular in matters of allocation |
| <i>Future sectors</i> | Positive reference to economic diversification towards future-orientated sectors |

Social welfare

| | |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <i>Safeguarding/creating jobs</i> | Reference to creating jobs or safeguarding against unemployment |
| <i>Quality of jobs</i> | Emphasis on the appeal of jobs in regard to pay, working conditions, social status, etc. |
| <i>Affordability of energy</i> | Emphasis on the social side of the security of supply in terms of avoiding fuel poverty |
| <i>Reducing negative disparities (East-West, regional)</i> | Call for the equity or alignment of living standards between different geographical regions |
| <i>Social security</i> | Reference to diverse social problems and their solutions |

Ecology

| | |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <i>Climate protection</i> | Reference to climate change and political approaches to mitigate its consequences |
| <i>End-of-pipe environmental protection (regional)</i> | Reference to the local environment in terms of landscape as well as of air, water and soil quality |

Regional identity

| | |
|------------------------------------|------------------------------------------------------------------------------------------------|
| <i>Preserving regional culture</i> | Positive reference to local traditions and defending them against external forces |
| <i>Regional appeal</i> | Reference to the appeal and image of a region, often connected with demands for improving them |

Politics (meta level)

| | |
|----------------------------------|------------------------------------------------------------------------------------------------|
| <i>Reduction of bureaucracy</i> | Negative reference to bureaucracy as a barrier to investment or as a cost factor |
| <i>Subsidiarity</i> | Call for political decisions to be made at the most suitable political level |
| <i>Responsible budget policy</i> | Call for the responsible use of tax payers' money, often in the sense of "balancing the books" |