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JÜRGEN KLUTE AND PETER KENWAY

STRUCTURAL CHANGE AND INDUSTRIAL POLITICS IN THE RUHR REGION

THE CONFLICT AT THE HEART OF A JUST TRANSITION

Foreword by Peter Kenway

Jürgen Klute's report *Strukturwandel und Industriepolitik im Ruhrgebiet: ein historischer Überblick* was first published by the Rosa Luxemburg Foundation in 2019. The report presents an account of how the Ruhr region in northwestern Germany went from being dominated by coal and steel in the 1950s to one dominated by services in the twenty-first century.[1] This document is an English summary of it, about a quarter the length of the original, and seeks to convey the main elements of the story it tells to a wider audience.

Amidst the many accounts of the changes that have taken place in the Ruhr, this report stands out for three reasons. First, although the decline of the coal industry is still its spine, the story is just as much about the rise (and often fall) of other industries, notably car production, as well as other initiatives, for example to improve the quality of life in the Ruhr.

Second, its author is a participant in this history. As a protestant theologian, Klute took part in a church district project in the late 1980s called "Industrial Working World and the Church". This included time underground in the Fürst Leopold mine and time with its works council. Beginning in 1989, as head of the industrial and social ministry of the nearby church parish of Herne, he was directly involved with questions of social, economic, and political change. He was also a Member of the European Parliament for the German socialist party Die Linke from 2009 to 2014.

Third, the report both describes what happened and offers insight into why, and how. The actors shaping structural change are prominent throughout. The "triangle" of the trades unions, the Social Democratic Party (SPD), and the mining industry form the core. The churches, the movements of 1968, and Die Linke also grace the stage. Municipalities and the state government of North Rhine-Westphalia (NRW) are key players.

Taken as a whole, the report is a case study, rich in detail, about an historical process marked by a series of conflicts of interest. If Klute's story could fairly be described as one account of the efforts, extending over more than 50 years, to secure a "just transition", then it is also a reminder that every such transition contains conflict at its heart.

If the academic literature on this subject agrees upon one thing, it is that structural change in the Ruhr — especially the long, gradual rundown of the coal industry — is unique. While this characterization of the Ruhr as a one-off must be correct, it risks leaving the impression that nowhere else can expect to do as well. The danger in that is that an inherently positive story ends up weakening rather than strengthening others who are facing transition themselves.

Klute's report, however, avoids this danger through the richness of its detail. Detail allows the reader to speculate on what it is was that made the Ruhr unique and to see the parts that make up the whole. Even if the whole is unique, not all its parts are. Recognizing what may already be in common or may at least feasible to strive for — this strengthens rather than weakens. Klute's report shows the value of a detailed account of past attempt to secure a just transition.

Viewed from a British perspective, whether back to the abrupt end of coal mining in Britain in the 1980s, or forward to the prospect of the retreat from the North Sea's oil and gas industries, what stands out in the Ruhr is the strength and importance of local and regional government. It is these governments, not the federal, that are the principal state actors in this account. In Britain by contrast, certainly in England, the exercise of state power remains overwhelmingly the prerogative of the government in London. Klute's account prompts the question of whether such centralization is really in the interests of a just transition.

Scope of the Summary

Any summary is a selective re-telling of a larger story, but when it is in a different language from the original, some explanation of how the two are related is needed. This summary focuses on five of the industries, firms, or projects covered in the report, and then gives as full an account of each as possible. Arranged in four sections, they are:

– The Ruhr coal industry and its decline (1957 to 2018)

1 In line with English usage, the Ruhr region — *das Ruhrgebiet* — is referred to here as "the Ruhr".

– The Opel car plants in Bochum (1963 to 2014)
– Oberhausen's retail park (1996 onwards) and Duisburg's Logistics Port (1998 onwards)
– The International Building Exhibition (IBA) in the northern Ruhr (1989 to 1999)

Within this framework, the summary picks up on most of the other industries, firms, or initiatives covered in the report, including steel, electrical engineering, solar energy, and the greening of the Emscher River, long the Ruhr's open sewer. The summary also includes a section on the role of public spending, as well as Jürgen Klute's overall conclusion.

The biggest part of the report that is not covered here is the analysis of the cost of the gradual rundown of coal. The discussion that would be needed to contextualize the estimates, running to hundreds of billions of euro over 50 years, is beyond the scope here.

Employment in the Ruhr

By way of background, Figure 1 shows the numbers employed in the Ruhr coalfields each year from 1945 to 2018, set against two slightly different measures of total employment in the production (including coal) and service sectors in the Ruhr. This graph is not in the report, but many of its key features are discussed at various points.

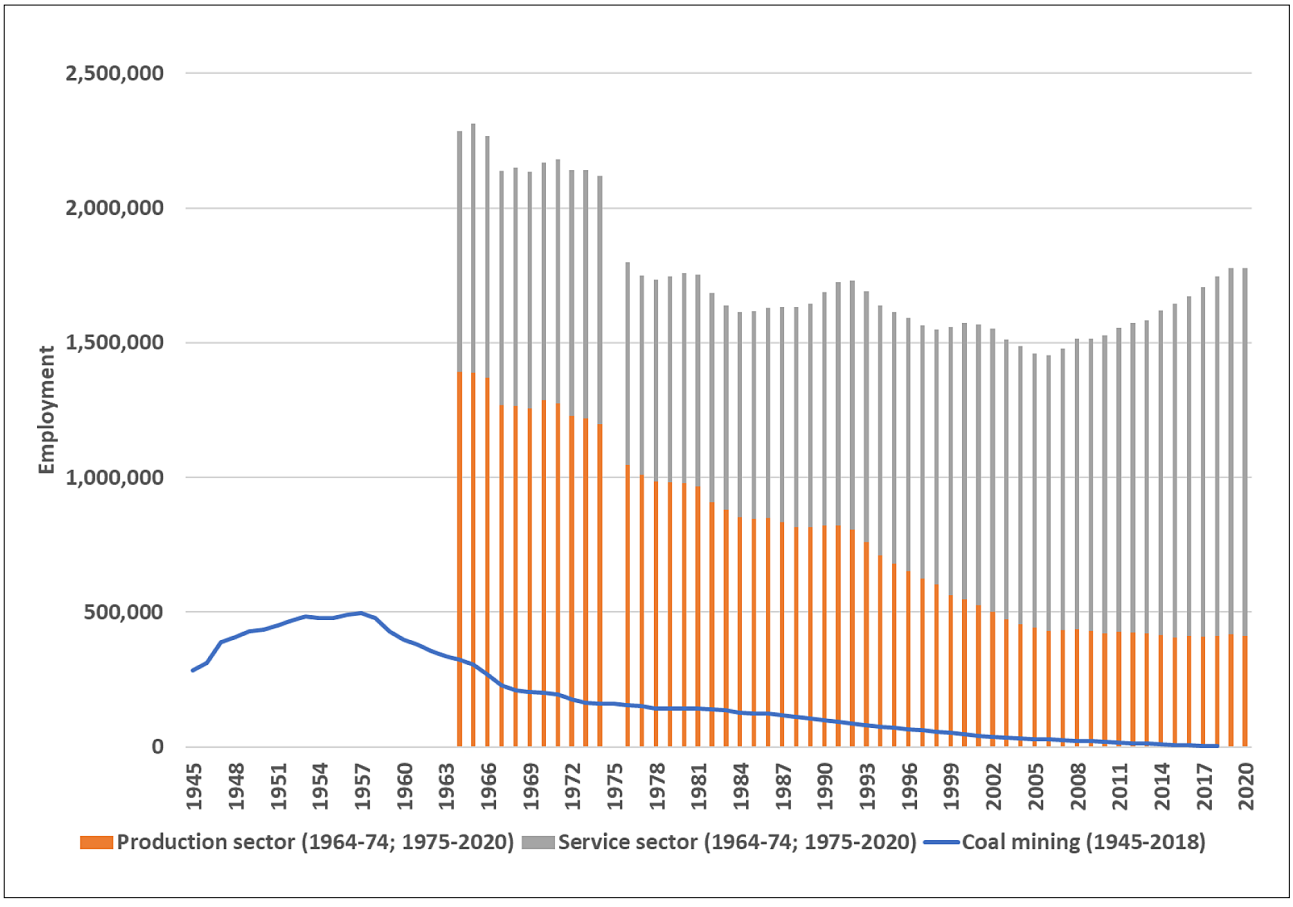
One point to note about the graph is that while employment in both the coal industry and in each sector after 1976 is a count of "employees subject to social security contributions", sector employment between 1964 and 1974 counts "all those working". This is a broader category including, for example, the self-employed. The big step down in sector employment shown between 1974 and 1976 is therefore largely due to this difference.

1 THE ORDERLY RUN-DOWN OF THE COAL INDUSTRY IN THE RUHR

The Start of the Coal Crisis and the Founding of Ruhr Coal AG

Coal production in the Ruhr rose almost four-fold between 1945 and its post-war peak in 1957, driven by technical modernisation and a near doubling of the workforce. During much of this period, imports of coal (mainly from the USA) as well as oil and natural gas were needed to cover the shortfall between

Figure 1: Employment in the Ruhr: coal mining, production, and service industries



Sources: Statistik der Kohlenwirtschaft e. V., *Zahl der Belegschaft im Steinkohlenbergbau der Bundesrepublik Deutschland;* Regionalverband Ruhr, *Sozialversicherungspflichtige Beschäftige nach Wirtschaftssektoren in der Metropole Ruhr 1976–2021* and *Erwerbstätige (am Wohnort) in der Metropole Ruhr 1964–74* (via email).

production and the demand from a growing West German economy. In the peak year of 1957, Ruhr mines produced 123 million tonnes of coal and employed 496,000 people.[2]

By the late 1950s, however, more coal was being produced than was being sold. Sales dropped sharply because Ruhr coal cost more than coal on the international market, coal stocks rose, and 16,000 jobs were lost through a hiring freeze. Only a combination of short-time working and a wage cut allowed all those who had jobs to keep them. Mine closures in 1958 due to the exhaustion of the coal seams added to fears about future job prospects.

In 1959, the miners' union IG Bergbau (IGB) organized a demonstration in the capital, Bonn, in which 60,000 mine workers (one in seven) took part. Although the government rejected IGB's call for Ruhr coal to be protected, it began to limit coal imports and impose a tariff upon them.

The key institution for managing the orderly retreat of coal mining was Ruhrkohle AG (RAG).[3] It did not come into being overnight. The first step was the formation of a mine operators' association in 1963, followed by the passage of a federal law on the rationalization of the industry in 1964. Aimed at increasing competitiveness and reducing costs, neither step served the trade union's interest in job security, which pushed for further measures. In May 1968, a law to reform and revive the German coal industry (the *"Kohlegesetz"*) created the legal basis for RAG as the consolidated undertaking for the Ruhr mines. As part of the deal, the federal government offered guarantees on the mining companies' old debt.

Agreements to Support the Demand for Ruhr Coal

The root of the problem facing Ruhr coal was its high price compared to imported coal. This unfavourable price difference, which first emerged in 1956, proved to be long-lasting. In response, three agreements that served to support the demand for Ruhr coal were put in place, alongside a very visible levy to compensate for its higher price.

The first agreement, signed in 1969, was a contract (the *"Hüttenvertrag"*) between RAG and the German steel producers under which the producers committed to buy coal from RAG. The agreement, which first ran to 1985, was later extended to 2000. A second agreement in 1976 created a national coal reserve of up to 10 million tonnes. In making the case here for state support, RAG repeatedly used the argument that the Ruhr should be supported to produce coal and ensure the security of supply in times of crisis.

A third agreement signed in 1977 was a contract between RAG and the electricity generators (the *"Jahrhundertvertrag"*). Under the agreement, which ultimately ran until 1995, the power station operators committed themselves to take at least 41 million tonnes of coal from RAG each year.[4] This was reduced to 35 million tonnes in 1991.

The *Kohlepfennig*

The *Kohlepfennig*[5] was introduced in 1974 as a uniform charge per kilowatt hour levied on all private users of electricity. The money raised was paid into an equalization fund used to compensate the electricity generators for the higher cost of Ruhr coal.

The *Kohlepfennig* always had its critics, but it embodied what was once a widely held view, that society had a duty to protect affected workers from the impact of structural change. The Evangelical church argued in a 1973 think piece entitled "Social Insurance in the Industrial Age" that as structural change was a process, all of society bore a degree of responsibility for dealing with the consequences of changes in the division of labour.

Following the refusal of an electricity customer (based in the Ruhr) to pay the levy, a court decision in 1982 began to call the legality of the *Kohlepfennig* into question. When that case finally reached the constitutional court 12 years later, the *Kohlepfennig* was ruled to be unconstitutional, and the collection thereof was to be discontinued by no later than the end of 1995.

The court's decision was not just about the *Kohlepfennig* itself, but about the very idea of structural change as a societal responsibility. Its echo could be heard just a few years later, during the debates over the labour market reforms under Chancellor Gerhard Schröder that shifted responsibility for structural change onto the shoulders of those directly affected by it.[6]

The end of the *Kohlepfennig* meant that a substitute had to be found to prevent the immediate collapse of Ruhr coal. The advent of the European Single Market in 1993 meant that substitute had to abide by EU rules governing state aid. A 1994 act of the German parliament made a ten-year commitment to subsidies, with an upper limit of 7.5 billion deutschmarks. These were later extended to 2018, at which point they would cease. The subsidies, which were used to finance the mine closures, were approved by the EU Council in 2010.

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2 Sources: Employment — as Figure 1; production - Statistik der Kohlenwirtschaft e.V., Steinkohlenförderung.
3 A public limited company, loosely, "Ruhr Coal plc" or "Ruhr Coal Inc."
4 Equivalent to around 60 percent of the coal production in the years at that time. Source: see footnote 3 (production)
5 Literally "coal-penny".
6 Introduced during the two SPD-Green coalition governments from 1998 to 2002 and 2002 to 2005.

RAG's Way of Working and Its Policies

Despite the measures taken, employment declined steadily after 1968. It did so in a way, however, that meant that those whose jobs disappeared could avoid unemployment. The full range of measures used to achieve this are beyond the scope here, but a number of points stand out.

First, the workers' side exerted great influence within RAG. The trade union itself (IGB) appointed the personnel directors of both RAG and the member companies. Working together, these directors were able to ensure that when a mine closed, its employees were transferred to other mines, retaining their conditions of employment as they did so.

Second, RAG became a transnational corporation involving several hundred businesses, including a string of them in the Ruhr. It was only thanks to this structure that RAG had other jobs to offer mine workers who had been made unemployed.

Third, RAG prepared mineworkers for employment outside of mining, including through training, job-seeking assistance, income guarantees, and trial periods in companies outside mining with an option to return to RAG if desired. Since the 1990s, RAG had trained more people in professions used outside of mining (e.g. electrician) than it itself needed.

RAG was also able to introduce measures including different forms of short-time working, early retirement (from the age of 50 for those who had worked underground for 20 years), a miners' compensation benefit, and a regular pension beginning at age 60. All the measures taken by RAG were co-financed with public money from pension insurance, unemployment insurance, as well as state and EU support programmes.

The Unique Exit from Coal in the Ruhr

The politically organized exit from coal mining in Germany is unique. Nowhere else in the world has the exit from a whole branch of industry been accomplished as a shared enterprise of industry, trades unions, and politicians.

The meltdown of the Ruhr's iron and steel industry offers a striking contrast. From a position at the end of the nineteenth century when almost all the towns between the Ruhr River and what is now the A40 motorway had blast furnaces, the Ruhr now has just one surviving steelworks in Duisburg.

Unlike with coal, there was no comparable political intervention to ensure an orderly decline in steel. To the extent that there was any policy towards the industry at the federal level, it was to open up new markets. The joint German-Soviet gas pipe business, dating from 1970, is an example of this. As iron and steel-making departed the EU for Asia, the Middle East, and South America, what remained was mainly high value-added production.

With nothing comparable to RAG, coping with decline was left to individual companies. The principal instruments — early retirement and a payoff — had less favourable conditions than in coal, such as the lower qualifying age limit of 56. Even when sustained pressure from the IG Metall trade union succeeded in winning a 35-hour week in the 1980s, a shift in the industrial balance of power within reunified Germany meant that this gain proved temporary. The political answer to the loss of jobs and locations in iron and steel lay — and lies — in the efforts around new industrial sites and new economic activities.

The end of coal mining in the Ruhr in 2018 is not a sign of RAG's failure but of its success. RAG gave suppliers to the industry (who would otherwise likely have gone out of business) time to adjust and find new markets. The gradual, socially supported exit from coal helped the Ruhr retain capital and attract investment. Moreover, as mining came to an end, other undertakings were in place to stabilize the industrial situation and provide new jobs to replace those lost through the closures. RAG itself, in the guise of Evonik Industries AG since 2007, is now a global corporation based in Essen.

2 THE OPEL AUTOMOBILE WORKS IN BOCHUM

New Industrial Sites

Government policy towards new industrial sites began to take shape during the coal crisis in the second half of the 1950s. The focus was on large industrial undertakings, the most important of which was the Opel car plant in Bochum on the site of the former Dannenbaum mine. Negotiations with Opel's owner, General Motors, began in 1959 and were led by the City of Bochum, supported by the NRW state government. The new factory was announced in May 1960. The production line started to roll three years later.

The site of a second former mine, acquired in 1962, became home to two more factories, opened by 1965. Opel produced up to 250,000 cars a year at Bochum, employing around 20,000 people until the early 1990s, not including those working in the supply chain.

Opel's was the most significant new site, but there were many others, including in the fields of engineering and technology. Siemens had opened a factory in the City of Gladbach. The City of Herne reached an agreement with Blaupunkt, a Bosch subsidiary, for a factory that operated from 1967 to 1992. A factory in Bochum producing televisions for the firm Graetz opened in 1956, employing 1,200 people. Sold first to SEL and later Alcatel, it was acquired by Nokia in 1988, who used it to produce

mobile phones. With public financial support, employment peaked at 3,000. A year after it closed, Blackberry opened an R&D site in Bochum with 300 jobs. This was sold to VW in 2014, who used the site to develop vehicle connectivity.

Early Conflicts over the Opel Site

Despite the successes of the Ruhr municipalities and the NRW government, the new sites were controversial and faced some fundamental problems. A 1960 article in *Der Spiegel* ("What Opel needs") analysed the issue. Aware of the dangers posed by an industrial monoculture, Ruhr politicians had begun negotiations with eligible companies by the mid-1950s. The coal industry, however, saw new industrial sites as a source of competition for labour. The City of Bochum negotiated in secret with the incomers, according to *Der Spiegel*, in order to avoid disruption to mine employment.

Spiegel also reported that Bochum was ready to offer big concessions, buying the sites from their former owners, putting in infrastructure, and providing guarantees against mine-related damage. After paying 6 to 8 deutschmarks per square metre, Bochum sold it to GM for the price of 2 deutschmarks. It also met the cost of the early closure of the mines for the second and third Opel factories.

Another source of trouble was GM's receipt of an investment loan from a European fund originally intended for coal and steel companies wanting to renew their operations. An amendment made in 1960 to the conditions governing access to it opened the fund to companies operating in the region who were creating new jobs for former miners.

The Gradual Decline of Opel in Bochum

Opel Bochum eventually became one of the most important and stable employers in the region and was long held up as an example of a successful industrial policy. Only the arrival of computer-controlled production and with it "lean production" in the 1990s ushered in a long period of decline.

Besides a very well-organized workforce, 95 percent of whom belonged to a trade union, the Opel Works Council was also very strong, in part a legacy of 1968. That Bochum produced the axles for all of Opel's European factories also gave the workforce great power.

Against this backdrop, Opel management made it clear in the mid-1990s that there would be both job losses and reorganization, including the spin-off of a series of production centres. From 20,000 in 1990, employment fell to 10,800 in 2003 and 5,200 in 2011. This gradual running down of the Opel operation was accompanied by the usual supporting measures including early retirement from age 56, severance pay, and time-limited opportunities for alternative work in a special "transfer company" dedicated to re-training and finding employment for workers who would otherwise become unemployed.

The last confrontation over the future of Opel in Bochum was in 2004. Following an initially ineffective wildcat strike, a solidarity rally held in the city centre attracted 20,000 people, including the mayor and representatives of the churches who expressed solidarity with the strikers. After this, GM and IG Metall reached a site assurance agreement. Opel's operations in Bochum finally ended in 2014.

Die Linke's Framework for the Use of Public Funds

By the time of this public conflict, it was clear that what was at stake was no longer a limited loss of jobs or an internal restructuring but rather Opel's entire Bochum operation. This led to political consideration of how to respond over the following years.

The financial crisis of 2008 put renewed pressure on both Opel and GM. The federal government had responded with a competitiveness programme, which included a scrappage bonus and a grant for when consumers replaced an old car. Concern about the use of public funds also arose in the case of Nokia, which had received 88 deutschmarks million in the 1990s but still closed the site in 2008.

Engaging with the industry, especially over Bochum, Die Linke's group in the German parliament, the Bundestag, began to develop a more general framework for the use of public funds to meet an expected rundown in capacity with a future-oriented policy designed to maintain and expand employment. One key idea behind the framework was the need for an EU-wide re-think of subsidies within the limits of competition policy. Using a state equity share, both profit and loss could be divided between the two sectors, instead of the private sector ending up with all the profits and the public sector with all the losses.

In 2010, Die Linke proposed to the Bundestag that the federal and state governments should offer guarantees and public money to GM, subject to a number of conditions based on this framework. Those conditions included: guarantees from GM about both sites and the workforce, a commitment to a common future for the European Opel plants agreed with unions and employee representatives, promises that the public money would only be used within Europe, and agreement to the creation of an advisory board with wide membership, including from the Bundestag, to develop a new industrial policy for the car industry, thereby converting Opel into an environmentally friendly mobility business.

Although the proposal was not taken up by the Bundestag, it nevertheless represented a step towards a future-proof industrial policy.

3 OBERHAUSEN'S RETAIL PARK AND DUISBURG'S LOGISTICS PORT

During the 1980s, political decision-makers in the Ruhr came to realize that they could no longer expect big, new industrial sites like Opel. Structural change would no longer mean a shift from mine to assembly line. By the end of the decade, efforts at municipal and state level were focused on attracting service industries. Another debate that started around this time was how to improve the image of the Ruhr, one of a number of "soft" location factors.

The first big service sector project was "Neue Mitte Oberhausen", or (as it was more often known) "CentrO". Oberhausen had been shaped by iron and steel production for more than a century. By the mid-1980s, its Gute-Hoffnungs Works, which in 1970 had employed around 95,000 people, was nearing the point of closure. After long discussions, the political authorities decided to use the site to turn Oberhausen into a shopping paradise and tourism centre.

Initial negotiations with a Canadian company proposing a mix of retail, office, leisure, and exhibition space were abandoned after the state government and neighbouring towns expressed concerns, fearing an exodus of shoppers. New negotiations began at the start of the 1990s with an English investor group whose proposal was somewhat smaller and better integrated into the urban plan. Despite fears that it too would have negative consequences for neighbouring towns and add to traffic levels on busy roads, the plan was approved.

When it opened in 1996, CentrO was the Ruhr's largest shopping centre, attracting shoppers from across the Ruhr and beyond, including the nearby Netherlands. Yet, the 5,000 jobs created by the development were but a fraction of the number that were once on the site. Both the conditions of employment and earnings were worse than in earlier times. In the years following its opening, shop owners in the old shopping centres in the Ruhr began to modernize in an effort to compete. This too did little for jobs.

Redevelopment of the Krupp Steelworks site in Duisburg served a different goal. After strong protests when first announced in 1987, closure of the steelworks was delayed until 1993. Adjacent to Duisburg's inland port (the largest in the world) and well-connected by road, rail, and river, the site was taken over by Duisburger Hafen AG, the port's owner which itself was jointly owned by the city and the NRW state. The site helped the port transform itself into a full-service logistics centre, including packaging and distribution services. Known as "Logport 1", the old steelworks site became home to some 300 new firms.

Employment levels here are also nowhere near 1960s levels, but this approach to restructuring and securing the industrial future of the Ruhr in a different form has proven more durable than efforts to turn it over to leisure. Further logistics ports (or centres) in Duisburg have followed its success. It also stimulated the development of smaller distribution centres and storage warehouses, especially along the Ruhr's northern edge.

By contrast, and despite political pressure to do so, no systematic attempt has been made to integrate the old factory railway lines into the German rail network. Since it became a public corporation in the mid-1990s, Deutsche Bahn's senior management has devoted little attention to the idea. At the federal level, demands for integration have been seen as unwarranted political interference in the economy.

4 THE INTERNATIONAL BUILDING EXHIBITION (IBA)

Preservation as Renovation

One challenge in an area like the Ruhr, where towns and cities merge into one another, is that a project of economic renewal in one place is seen as a competitive threat by its neighbours. In the International Building Exhibition (IBA), which ran from 1989 to 1999, the NRW state government adopted a different approach taking the dense nature of the Ruhr into account. Seventeen municipalities in the northern Ruhr took part.

The IBA rested on the idea that the age of heavy industry was over. New developments by firms offering more than a thousand jobs were no longer to be expected. Instead of levelling an old site, the IBA aimed instead to make its empty buildings usable once more by small and medium modern businesses. Economic renewal of the northern Ruhr would go hand in hand with ecological renewal. Under the slogan "Work in the Park", the IBA delivered a total of 19 industrial, service sector, and science parks as well as IT centres.

Building on foundations laid down in the 1980s, the IBA also promoted a range of initiatives to do with employment and qualifications. These were an integral part of many IBA projects.

Renewal extended to housing. Besides 2,500 new, energy-efficient homes, 5,000 older homes were renovated during the IBA's ten-year lifespan, including the introduction of energy-saving measures. Some old working-class settlements benefitted from this programme.

The restoration of the Emscher, a small river in the north of the region that had been converted into an open sewer in the 1920s, was an IBA flagship project. The improvement (not least to the smell) as a result of this restoration was an important soft location factor.

Two other flagship projects aimed to develop tourism in the Ruhr. The first was the creation of the east-

west Emscher Country Park, linking five north-south "green corridors", with cycle and walking paths alongside the Rhein-Herne canal and along the old works railway track.
The second was the preservation of old industrial sites as "industrial monuments", with their buildings adapted to serve as space for exhibitions, performing arts, recreation, or food and drink. An industrial heritage trail linking the sites was developed to raise their public profile. The best-known sites include the Duisberg-Meiderich steelworks, the Bauhaus-style Zeche Zollverein in Essen, the Art Nouveau Zeche Zollern in Dortmund, the Jahrhundert Hall in Bochum and the Schleusenpark in Waltrop. Although overnight stays spent in the Ruhr rose from 2.2 million in 1985 to 7.2 million in 2013, these figures are still far from approaching mass tourism.

Solar Energy

Solar energy was integral to several IBA projects, the aim being to make it better known and stimulate production through lowered costs. A permanent exhibition devoted to solar power opened at the Zeche Zollverein. Two of the IBA's biggest solar projects were the Mont Cenis Academy (an NRW training facility in Herne) and the Gelsenkirchen science park.
A production facility for solar cells opened in Gelsenkirchen in the 1990s. An environmental mission statement adopted by the city authorities in 1997 brought together citizens, the local Agenda 21 office,[7] training initiatives, business roundtables, and two international partners. By 2008, Gelsenkirchen's solar cluster was employing around 1,000 people within the framework of the IBA. Such a development, targeting the promotion of a more regenerative energy technology, is heavily dependent on political decisions at the federal and EU levels. This is especially so in the early phase, when resources are needed for the participation process and must be professionally organized and managed.

The IBA's Success and Operation

The IBA was involved in around 120 projects in close cooperation with municipalities and with the targeted involvement of external experts. With no funding of its own to contribute to projects, the IBA could evaluate proposals and then, with proposers and other experts, expand on those that met its quality standards. Evaluation included an assessment of a proposal's chances of securing funding from municipal, regional, federal, and/or EU-level programmes. Private project proposers would not just have to contribute financially but also engage consistently with other projects across the region. That several projects, despite an impressive opening, were soon abandoned is proof that this methodical approach worked.
It is not just a question of success, however, but rather of the very nature of what constitutes success. The comparison here is with CentrO, which exemplified an exclusive approach in which political responsibility was limited and investor interest was focused on the success of the project, not on the development of the region. There was neither an analysis of the regional situation nor was the investor challenged as to how their project might make sense for the region. What mattered was what was important for the investor, namely the return on the investment in a manageable timeframe. Jobs lost elsewhere were irrelevant. Such projects offer little to the long-term development of a region in transition.
By contrast, the IBA (and the Duisburg Logport) exemplify a very different, integrated approach to industrial and economic politics in the Ruhr, in which the state government played an active, creative, and co-ordinating role. These projects addressed the need for thorough restructuring. Especially in the IBA case, the affected areas were systematically involved in project development and realization. In its methodical approach, the IBA reflects the view of those decision-makers who have long been pushing to overcome the fragmentation of the Ruhr.
In short, the success of the IBA lay in the way it worked across several dimensions. It linked ecological and social issues with urban planning, industrial, and economic politics and the restructuring of old industries. It improved soft location factors. It combined public, civil society, and private sector action in a participative and open way, with the civil society project "IBA from below" contributing to its overall success. Its region-wide approach kept the usually counterproductive competition between municipalities to a minimum.

5 THE ROLE OF PUBLIC SPENDING

Traditional forms of public expenditure continued to play a major role in shaping structural change in the Ruhr. First among these is public investment in infrastructure. The NRW government made intensive use of this instrument in the 1960s and 1970s. A five-year Ruhr development programme launched in 1968 provided investment in roads, light urban rail, inner city housing, local recreation areas, and a reduction in air pollution. The government relied upon a network

7 The establishment of Agenda 21 offices at the municipal level is a widespread concept in Germany to implement the action plan adopted at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, known as "Agenda 21".

of public banks (including state, savings, and reconstruction banks) for finance. In the background, these banks were a supporting pillar of structural change.
Beginning in the 1980s, the NRW government made much less use of these sorts of public expenditures, as a result of which there has long been an enormous investment backlog, especially for transport infrastructure. This has become a real locational problem for the Ruhr.
Second, even when their foundation is not directly linked to structural change, new universities and colleges are created by public investment. Besides their educational role, they are significant local employers. The Ruhr's first university, founded in 1965 and now among the top ten in Germany, was in Bochum. Dortmund's technical university opened in 1968. Colleges that opened in Essen and Duisburg in 1972 amalgamated and became a university in 2003. Alongside a series of technical colleges and institutes usually founded in the 1960s and 1970s, the government added an NRW scientific centre on three sites at the end of the 1980s, namely Gelsenkirchen (work and technology), Essen (humanities), and Wuppertal (climate, environment and energy). This is far from a full list.
Ruhr municipalities began to open technology, start-up, and business support centres in the mid-1980s. Expanded in the 1990s within the framework of the IBA, there were 26 by 2009, the most significant of which were associated with the three universities. Most of the finance for them came from the NRW budget or EU funds. To try to contain the destructive competition between municipalities, regional offices covering several municipalities were introduced on the initiative of the EU. Supported by advisory boards on which the usual range of work-related organizations were represented, the offices helped develop projects promoting structural change and, through their boards, decided which of them should go forward to the NRW government.
Included among these were measures aimed at promoting small and medium enterprises (SMEs). The Ruhr's SME sector is underdeveloped compared to other parts of Germany. Several initiatives to address this since the mid-1990s have met with only limited success. One legacy of history is that in the Ruhr, the very idea of an SME sector independent of big industry remains an unusual one. Building an SME sector in a region marked by poverty and a lack of purchasing power is simply very difficult.

6 CONCLUSION

Of the 1.8 million people employed in jobs "subject to social security contributions" in the Ruhr in 1976, 58 percent worked in the production sector and 42 percent in the service sector. Thirty-seven years later, the percentages were 27 percent and 73 percent. This 31-point shift from production to services shows how much the structure of employment changed over nearly four decades.[8]
Some of this shift was due to a re-classification of administrative functions within industrial firms, which, if they were spun off into a separate business, were then counted as services. Yet other parts of the service sector, including health and social care, child development and education, and scientific and technical services have seen real job growth.
Some 10 percentage points above the EU average, the production sector's employment share in 2013 can indeed be seen as a sign of the success of the efforts to manage structural change. Yet that success is far from unqualified.
The measures taken to prevent workers from being pushed into long-term unemployment and their households into poverty usually only benefitted those employed in larger undertakings with strong works councils and unions.
A social cushion for job cuts is not a substitute for job replacement. Delaying job loss does not avert it, with serious consequences for a younger generation's access to jobs. At 10.4 percent, the Ruhr's unemployment rate in 2014 was fully four points above the national average.
As women were restricted to administrative roles in the coal and steel industry, their share of socially insured jobs in the Ruhr was long below average. This share grew with the shift towards services. Yet the quality of many jobs and conditions of employment in services such as trade, logistics, restaurants, tourism, and leisure are inferior to those in coal and steel.
The University of Bochum's Centre for Interdisciplinary Research has pointed to a north-south split brought about by structural change, with the southern Ruhr, where universities and several technical colleges have opened, faring better.
The Ruhr's evolution was viewed critically within the unions. Besides a shift between unions, unions as a whole lost influence because organization was lower in the service sector than it had been in coal and steel. As the industry-union-SPD triangle became obsolete, the CDU won the state presidency in NRW for the first time in 39 years in 2005.
The Ruhr's story over 60 years shows that structural change is not a one-off or time-limited project but

8 See Figure 1. The shift, although continuous throughout, picked up speed from the mid-1980s onwards.

rather an ongoing process of change that requires intelligent political support and engagement. A strong, unionized workforce that is well-represented at the parliamentary level is a pre-condition for economic and industrial policies in the interests of employees. Without it, the industry in the Ruhr could have been dismantled as quickly as it was in Great Britain in the 1980s. More rapid deindustrialization of the Ruhr would have meant deeper social division across the region.