Can academia revive Germany’s Rust Belt?

Backed by state government, an ambitious university-led initiative is aiming to restore the Ruhr Valley’s former industrial glory. John Morgan meets academics behind the experiment in driving regional renewal by building a reputation for world-class science.
The “Customs Union Mine” lies in the south of the Ruhrgebiet under the middle of the Ruhr Valley or just the Ruhr), as an industrial region, consisting of more than 5 million people who live there, and today, the Zollverein, once the largest coal mine in the world, is a UNESCO World Heritage Site. However, in February, the state government of the Ruhr region, along with the state of Berlin or Munich, signed a document to establish the Research Alliance Ruhr, a collaboration between universities and research institutions that aims to transform the region’s industrial heritage into a modern economic future in deindustrialised areas.

The Research Alliance Ruhr is one of those ‘other regions’ that have been identified as having potential for transformation, as well as their own specific needs and challenges. In the Ruhr, the focus is on developing a new economic future for the region, based on digitalisation and energy, and fund the creation of 30 new professorships, plus 500 junior and senior researcher posts. The aim, as NRW’s minister-president said at the time, is to make the Ruhr region a world-class science and innovation hub, where the whole world to work here with us on the major questions of the future.”

The alliance responds to the fact that major structural change has occurred in the region, and “knowledge is the new currency”. Universities are “an economic factor for the region”, and Martin Paul, who became Bochum rector in November 2021, after 10 years at Maastricht University president. The alliance recognises that “it’s basically impossible that one university, even a large one, can cover all fields of science these days,” says Manfred Beyer, the Dortmund rector. “You basically have to collaborate in an interdisciplinary way to cover a hot topic, he adds. “The institutions’ aim together, says Albert, who is “to bundle our strengths to be more than the sum of the three universities. It’s my personal belief that competing…makes no sense at all…There’s nothing we gain if we believe we are a little bit better than the university next door.”

The foundation of the institutions in the late 19th century was a response to the rapid industrialisation of the region, not just a defining economic factor for Western nations: they have seismic political impact, too, and have the potential to shape global trends and policies. However, the changes brought about by the Ruhr’s shift from coal to gas and the new emphasis on digitalisation and energy, have presented new challenges for the region’s universities and research institutions.

The Ruhr’s universities, with their strong network of basic research institutes, have a reputation for excellence and innovation, and have established themselves as leaders in their respective fields. However, in order to remain competitive, they need to adapt to the new challenges of digitalisation and energy, and to work together to find new solutions for the region’s economic future. The Research Alliance Ruhr is a step in the right direction, as it brings together the universities and research institutions in the region, and provides a platform for collaboration and innovation.

The project sent out a big message in June, with a half-pipe advert in Die Zeit, Germany’s most widely read weekly newspaper, announcing five new professorships. “It’s the high density of the major universities in the [Ruhr] and the good connectivity,” says Harri Hooper, chair of energy technology at UDE and a founding co-director of the new joint research centre on future energy. “That’s the big unique selling point.”

This density and connectivity means there are many “strong collaboration partners” in easy reach there, in the Ruhrgebiet. “There is a strong foundation of medical chemistry and chemical biology at Dortmund, whose work on combating drug resistance in cancer treatments uses large clinical trials at the ‘very strong university hospitals’ in Bochum, Essen and nearby Cologne.”

Options for travel around the region seem unbelievably good to a visitor from the UK. They include inter-city trains, regional trains, U-Bahn, S-Bahn and tram; all universities have their own U-Bahn or S-Bahn stops. But the cities still feel like traditionally working-class places, with plenty in common in the cities in the north of England, for example (such as a passion for football and long-distance running). Walking around it also becomes clear that the Ruhr is a place that draws huge numbers of immigrants, from Turkey and more lately from the Middle East, and is a youthful place. The Ruhr suffered heavy Allied bombing in the Second World War, and the aesthetic of the rebuilt cities consists of lots of concrete.

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But central Essen is pleasant: its reconstructed medieval cathedral is surrounded by trees, and a statue of the Kaiser in spiked helmet somehow still stands, an enthusiastic crowd enjoys, and the Ruhr is home to many world-class universities. The Ruhr is home to many world-class universities. The Ruhr is home to many world-class universities. The Ruhr is home to many world-class universities.
green space between the tower blocks, decks- chairs on the grass ready for students to enjoy a summer concert. TU Dortmund's smart campus (with 42,000 students) features a novelty: a driverless suspended monorail system opened in 1984, which runs above the wide avenues on struts (pictured below right). The line has five stops, linking the university campus with the adjoining TechnologieZentrumDortmund, billed as one of the leading technology and start-up campuses in Europe.

These universities that don't have antiquity and don't have global profile in terms of their position in world rankings – there's a feeling that they are strong presence in teacher training, part of their social mission, counts against them in rankings. But modernity might bring some advantages over more hierarchical older German universities.

“If you want to do something, this is the place to come,” says Dortmund's Bayer. “In the Ruhr, “you can talk to people and change things. The flexibility here seems to rise higher than in traditional places.”

The Research Alliance focuses on building critical mass in some of the universities’ existing areas of excellence. “If you want to be visible or world renowned, you have to have some peak areas where you can really show that’s where we bring top people together,” says Paul. According to the Research Centre Future Energy Materials and Systems builds on Ruhr strength in new materials and hydrogen technology – a fitting, positive evolution for a region where you can really show that’s where we have world class.[1] For example, two traditional giants of the Ruhr's drive to power its future are also making the headlines, ThyssenKrupp is one of the largest producers of steel in Europe, which are in between”, he says. “And so for solving the energy problem you need to be close to people who are actually trying to make business out of that.”

Steel firms in the Ruhr “need innovation, otherwise they will no longer be able to run businesses in Germany”, he continues. “If we don’t do anything... well we lose a lot of existing jobs. We must support this transition of the entire system here in the Ruhr area towards a future-oriented industry.”

And that innovation is unlikely to be restricted to the sectors consciously targeted. As Bayer puts it, “Just doing science, trying to be the best in science: naturally, ideas will develop which can be transferred. It cannot be restricted to the sectors consciously targeted.”

To demonstrate that, the technology park adjacent to TU Dortmund’s head- quarters of Elmos Semiconductor, founded by a Dortmund academic, which now has 1,150 employees. The start-up Park City also hosts the university’s Centre for Entrepreneurship and Technology, where 40 start-up staff aim to help angular and accelerate student and staff-founded start-ups. There is open access to kit such as robots, says the centre, and recent success stories include Motion Miners, a firm founded by Dortmund alumni using tech to improve picking processes in big warehouses.

“Beyond that, firms founded by Dortmund alumni include IT services companies Materia and adesso (with 3,200 and 6,800 employees worldwide respectively), both headquartered in the city.

This all stands in stark contrast to a nation such as the UK, where Margaret Thatcher's 1980s government favoured drastic, socially destructive deindustralisation and an abrupt pivot to services and a knowledge economy. The vision in the Ruhr is for synergy between the knowledge and industrial economies. ThysenKrupp is one of the largest producers of electrowires and wants to ramp that up – plus business. For example, two traditional giants of the Ruhr industry, steel firms Thyssen and Krupp, are still going strong after merging in 2001.

The leader of the Ruhr Conference, Stephan Holthoff-Pförtner, then NRW minister for Science and Security, “we want to go beyond metals and bring about “the large-scale rollout of hydrogen”.

The Ruhr also has the attraction of being an affordable, liveable place and a major cultural centre in a 30-minute drive to gentrified southern Essen takes you past the renowned Museum Folkwang, an opera and ballet theatre, and a philharmonic orchestra auditorium. There is a great view of the Ruhr from the top of TU Dortmund’s city campus, as well as many of their art, drama and the Museum Ostwall, a modern art gallery that includes many of the strong presence together with Nazis’ infamous exhibition of “degenerate art.”

The first impression given by the view is that the Ruhr is surprisingly green – trees now cover great swathes of it, while the few towering chimneys are outnumbered by wind turbines. “The big warehouse district of the Ruhr is a fitting, positive evolution for a region where you can really show that’s where we have world class. The Ruhr’s turn to a new future is attracting international attention. Last year, Greater Manchester's civic leaders, including Labour mayor Andy Burnham, signed an agreement with counterparts in the Ruhr to “deepen cooperation and share best practice” in areas including climate change, innovation and research, and regional devolution.

One feature of the Ruhr’s drive to power up is the backing of a devolved regional government based close enough to see the region’s challenges and potential solutions, with a leader who wants to invest and the capacity to build consensus around an economic strat- egy. Germany has been doing regional solidar- ity for many decades, well before “left behind” regions or “levelling up” suddenly came to the attention of some in US and UK politics. This is part of the reason why the Ruhr, despite losing of industry jobs, is no hotbed of political disillusionment.

The funding for the Research Alliance Ruhr isn’t mega money. But when you consider that the vast majority of a university’s existing budget is tied up with salaries and infrastruc- ture, 675 new postgraduates, a wave of new money to launch new projects, with very few strings attached, starts to look significant.

The investment reflects the fact that “the Ruhr is our area of potential,” says Jürgen Harder, director of the Research Alliance team in the NRW government, now the alli- ance’s managing director. “If we invest here, I don’t want to leave any more because I find it perfect here. But before I came here, I thought this [would be] the most horrible region you can imagine. But this is simply not justified.”

The Ruhr Conference’s 73 projects to create a better future for the region cover not just industry but an array of fields, including digitalising cities and industry, developing the Ruhrgebiet as a tourist destination, working with young people to prevent them bringing in gated culture, and making the Ruhr “a hotspot for digital arts, urban art, contemporary circus and the EDM club scene”.

Steinmann highlights the strength of the Ruhr confer- rence “multi-factorial approach” of the Ruhr Confer- ence. “Good science can only develop in a situation where the life conditions are attract- ive,” he says.