

## Sustainable Development in North Rhine-Westphalia: a scenario analysis

Topic:

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Sustainable Development is hard to measure, but most scholars agree that it entails the achievement of goals in three dimensions: environmental, economic, and social. In the past it was often believed that there are massive trade-offs between these dimensions, especially between the environmental and economic ones. However, intelligent strategies and new technology can make it possible to overcome some of these trade-offs. To shed some light on this, we present a case study of a particularly interesting region: North-Rhine-Westphalia in Western Germany.

North Rhine-Westphalia is a region characterized by massive economic and structural change. Historically it was the industrial core of the German economy, with important industries like hard coal mining and steel production. Hard coal mining has virtually disappeared, and so have many associated jobs. Unemployment is relatively high compared to the national average. Lignite mining, however, still plays an important role, and electricity production is heavily reliant on coal-fired power plants. As a result, greenhouse gas emissions per capita are significantly higher than the national average.

Under these circumstances, there is a lot of pressure on policymakers to stimulate job creation. The trade unions' association (DGB NRW) has called for the creation of 500,000 additional jobs (covered by social insurance) between 2014 and 2020. At the same time, however, greenhouse gas emissions must be reduced. The official goal of the government is to reduce greenhouse gas emissions by 25% in 2020 (compared to the base year 1990).

The goal of our study is to determine if and how both goals can be fulfilled. To this end, we develop a scenario analysis based on a multi-regional input-output (MRIO) model. First, we develop a business as usual (BAU) scenario, assuming that past trends will persist in the future. In this scenario, some additional jobs are created and emissions are reduced, but neither of the two goals is actually achieved. We then develop a "goal" scenario which describes a possible development in which both goals are achieved. Comparing the two scenarios shows how additional effort and measures can contribute to fulfilling employment and emission reduction goals.

The goal scenario draws on information which has been gathered in semi-structured interviews with decision makers in selected firms from several branches (mining, manufacturing, energy production and distribution, waste disposal and recycling, transport infrastructure, services). The interviews consisted of a quantitative part (energy consumption, total consumption of intermediate inputs etc.) and a qualitative part to identify challenges and potential strengths. The evaluation of the interviews allowed us to construct a plausible goal scenario.

At present, the project is not yet finished, it is currently "work in progress". Final results will be available at the end of February.