

Simonis, Udo E.

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Restructuring to green industries

Down to earth: science and environment fortnightly

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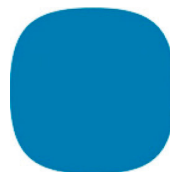
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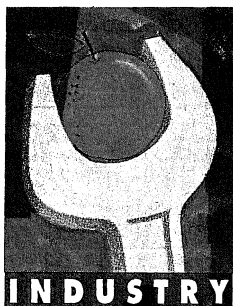
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RESTRUCTURING TO GREEN INDUSTRIES



UDO E SIMONIS

ECONOMIC restructuring to delink energy and materials inputs from economic growth, has been significant in many industrialised countries over the 1980s as compared to the 1970s. Less than half of these countries — except for the low-income countries in the West and those in Eastern Europe — clung to the traditional modes of quantitative growth in physical output *per se*. There were several cases of qualitative growth in economically advanced countries, that is, economic growth with constant or decreasing energy

and materials input.

Some Western countries like Sweden enjoyed considerable beneficial environmental effects as a result of structural change. In others, the beneficial environmental effects of restructuring were levelled off by rapid economic growth. This was especially true in the case of Japan and of Norway.

Until recently, the role of economic restructuring as a driving force for environmental change had not been widely studied, partly because of the difficulty in collecting data. "Restructuring" generally characterises the decline or increase over time of certain sectors of industry in the GNP.

Not long ago, sheer quantity of output was considered an indicator of a nation's economic success. In Eastern Europe, this led to a "tonnage ideology". In Western societies, the number of cars produced annually still plays this role.

Given the data availability, only a few indicators can be tested in a cross-national comparison whose environmental impact is indisputable. **Energy intensity** is the most central ecological dimension of a country's production pattern. **Steel consumption** is another indicator of structural environmental stress and reflects an important part of the material side of industrial society. **Cement production** is in itself a polluting process, and cement represents the physical reality of the construction industry. The **weight of freight transport** is an indicator of the volume of production. Transport requires a high materials input and results in a high volume of hazardous emissions.

Environmentally benign effects of structural change can be expected by delinking economic growth from the consumption of energy and materials. For certain types of pollution, changes in the energy structure have been proved to be more effective in protecting the environment in several OECD countries than end-of-pipe protection measures such as desulphurisation plants. In Japan, energy and water conservation was particularly successful.

The delinking of energy and weight of freight transport from GDP in the Federal Republic of Germany became apparent by the end of the 1970s. For cement and steel, this process began in the early 1970s and 1960s, respectively. Stagnating consumption of primary energy made emission reduction possible despite a comparatively sluggish clean air policy during this period; desulphurisation and denitrification of power plants came into full swing only after 1985.

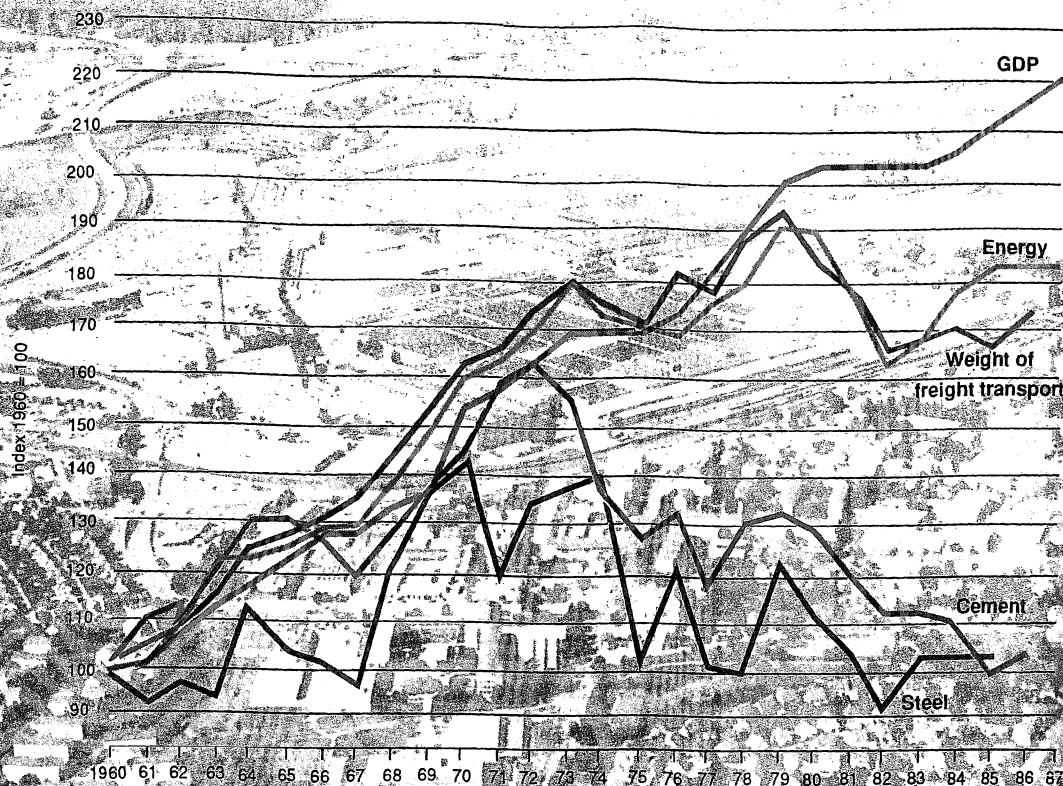
In 1970, there was a strong relationship between a country's per capita

Restructuring
can be environ-
mentally benign
only when eco-
nomic growth is
delinked from
consumption of
energy and
materials.

Western industry is
shifting its focus to
improvement of the
environment rather than
formulating environ-
ment policies that usual-
ly prove ineffectual. As a
result, 1992 saw reforms
in the ecological tax —
which penalises pollut-
ing sectors and rewards
ecologically sound
industries — showing up
on the political agenda
of several countries.



ECOLOGICAL RESTRUCTURING OF WEST GERMAN ECONOMY



Source: Udo E. Simonis

In West Germany, the gross domestic product has been rising steadily, while consumption of energy, steel and cement and weight of freight transport has been on the decline.

GDP and the impacts on its environment from the four sectors. The correlation co-efficient for the aggregated environmental impact index and the per capita GDP was 0.76 for all the Western countries considered. This means that around 1970, the GDP of the industrial countries was still strongly based on "hard" production factors. The correlation co-efficient in 1985 was only 0.31. This means that the process of restructuring reduced the importance of the "hard" factors in the economy. This was especially true of Sweden, but also of West Germany, France, UK and USA.

The shift in Norway's position, however, coincided with a high rate of economic growth and the environmentally benign effects of structural change were partly neutralised. The same was true of Japan. This shows that countries with high growth rates must strongly engage in protection measures to achieve a net relief for the environment. In UK, the four structural impact factors also decreased but these reductions were connected with high mass unemployment.

If economic restructuring is to lead to ecological improvements, it is clear that environmentally benign market forces will have to be stimulated by innovative policies. Not surprisingly, suggestions for rapidly introducing market

instruments, like resource taxes and effluent charges, which would accelerate ecologically beneficial structural change, have grown in the industrialised countries in the 1990s. ■

**In West Germany,
stagnating energy
consumption
made emission
reduction possi-
ble despite a slug-
gish clean-air
policy.**

Udo E. Simonis is a leading German economist working on environmental issues.