



# UNITED NATIONS ENVIRONMENT PROGRAMME

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International  
Resource  
Panel

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## ***Decoupling Rate of Resource Consumption from Economic Growth Rate — Europe Presents a Mixed Picture***

### ***Imports from Abroad Further Muddy the Landscape***

**Brussels/London, 26 June 2011** — Dramatic differences exist between many countries in Europe and their consumption of natural resources such as fossil fuels, biomass and minerals, a new report by the UN Environment Programme (UNEP) shows.

While some European countries appear to show some decoupling of rates of economic growth from rates of resource consumption, others do not as a result of a variety of developmental and demographic factors.

The findings, launched today during Green Week in Brussels, underline the challenge facing the European Union under its recently adopted Thematic Strategy on the Sustainable Use of Natural Resources under the 6th Environmental Action Program.

The report shows that on average the annual per capita consumption of natural resources — known as the ‘metabolic rate’ — in Europe is around 13 tons per person.

However, for some countries such as Finland the metabolic rate is closer to 20 tons, or around six tons per person, higher than countries such as Germany or Austria with comparable incomes.

Many of the recent members to the EU also show relatively high rates of natural resource consumption, despite having far lower per capita incomes, for example Hungary and Poland.

The findings are contained in a report by the UNEP-hosted International Resource Panel entitled *Decoupling: Natural Resource Use and Environmental Impacts from Economic Growth*.

Marina Fischer-Kowalski, one of the report's lead authors based at the Alpen-Adria University in Austria, said: "The findings in many ways mirror the global situation. Industrialized countries with high population densities have on average metabolic rates of 13 tons per capita whereas those with low population density — for example Finland, the United States and Australia — can have a metabolic rate up to twice that, although income and material comfort do not substantially differ".

Low population densities, allied to factors such as living in colder climates, can increase fossil fuel use for cars and for heating homes and offices.

Some European countries, including many of the recent members, have also experienced sharp growth in construction and infrastructure expansion, which in turn has increased the use of natural resources such as construction materials and energy.

While this report does not assess consumption rates and environmental impacts linked with imports of commodities and finished goods such as clothes or cars, some European metabolic rates can be explained in terms of global trade.

The average person in the United Kingdom, for example, appears to consume only around 10 tons of natural resources annually when compared with someone from Belgium estimated to have a metabolic rate of around 16 tons.

"But a lot of this can perhaps be explained by the de-industrialization that has occurred in the UK in recent decades with a move away from domestic manufacturing to service sectors," said Dr Fischer-Kowalski.

"What the figures do not reflect is those products, such as clothes or cars that were once part of the UK's domestic industrial produce, that are now in large part imported from overseas. Meanwhile, many European countries are also big importers today of commodities such as minerals and foodstuffs with the resources used to produce them and the environmental impacts occurring on Continents such as Asia and Africa," she added.

The report notes that whereas a large slice of raw materials are imported into industrialized countries when compared with domestic extraction, the converse is the case for least developed and developing countries where raw material exports outstrip imports by a factor of almost three to one.

### **Decoupling — the Global Picture**

The report says that globally and by 2050, humanity could devour an estimated 140 billion tons of minerals, ores, fossil fuels and biomass per year – three times its current appetite – unless the economic growth rate is "decoupled" from the rate of natural resource consumption.

Developed countries citizens consume an average of 16 tons of those four key resources per capita (ranging up to 40 or more tons per person in some developed countries). By comparison, the average person in India today consumes four tons per year.

With the growth of both population and prosperity, especially in developing countries, the prospect of much higher resource consumption levels is “far beyond what is likely sustainable” if realized at all given finite world resources.

Already the world is running out of cheap and high-quality sources of some essential materials such as oil, copper and gold, the supplies of which, in turn, require ever-rising volumes of fossil fuels and freshwater to produce.

Improving the rate of resource productivity (“doing more with less”) faster than the economic growth rate is the notion behind “decoupling” to the extent of actually using less resources, the panel says. That goal, however, demands an urgent rethink of the links between resource use and economic prosperity, buttressed by a massive investment in technological, financial and social innovation, to at least freeze per capita consumption in wealthy countries and help developing nations follow a more sustainable path.

The trend towards urbanization may help as well, experts note, since cities allow for economies of scale and more efficient service provision.

“Decoupling makes sense on all the economic, social and environmental dials,” says UN Under Secretary-General Achim Steiner, UNEP’s Executive Director.

“People believe environmental ‘bads’ are the price we must pay for economic ‘goods.’ However, we cannot, and need not, continue to act as if this trade-off is inevitable,” he says. “Decoupling is part of a transition to a low carbon, resource efficient Green Economy needed in order to stimulate growth, generate decent kinds of employment and eradicate poverty in a way that keeps humanity’s footprint within planetary boundaries.”

“Next year’s Rio+20 meeting represents an opportunity to accelerate and scale-up these ‘green shoots’ of a Green Economy, which are emerging across the developed and developing world.”

The new report from UNEP’s International Resource Panel, the fourth in a series, was launched in New York at the annual meeting of the UN Commission on Sustainable Development, on 12 May.

Today, during Green Week, some of the Europe-findings are focused in more detail.

Both events precede the global UN Conference on Sustainable Development 2012 meeting (or “Rio+20” in Rio de Janeiro 4-6 June 2012) with its two central themes of a Green Economy in the context of sustainable development and poverty eradication, and achieving agreement on an international framework for sustainable development.

While the report doesn't offer detailed policy and technology options – that's for later reports – it says technologies that have helped humanity extract ever-greater quantities of natural resources need to be re-directed to more efficient ways of using them.

Global average annual per capita resource consumption in year 2000 was 8 to 10 tons, about double the rate of 1900. In 2000, the average rate in industrialized countries (home to one-fifth of world population) was roughly twice the global average and four or five times that of the poorest developing countries.

Global (and national) consumption rates per capita are calculated by dividing total world (and national) extractions of minerals, ores, fossil fuels and biomass by world (and national) population figures.

Rapidly expanding international trade, however, obscures responsibility for resource consumption and associated environmental impacts, the authors note.

Over the past century, pollution controls and other measures have reduced the environmental impacts of economic growth. And, thanks to innovations in manufacturing, product design and energy use – aided by the rising number of people living more efficient lifestyles in cities – the global economy has grown faster than resource consumption growth.

Still, those improvements have only been relative. In absolute terms – with population growth, continuing high levels of consumption in the industrialized countries, and increased demand for material goods, particularly in China, India, Brazil and other quickly emerging economies – total resource use grew eight-fold, from 6 billion tons in 1900 to 49 billion tons in 2000. It is now estimated at up to 59 billion tons.

Decoupling is occurring but “at a rate that is insufficient to meet the needs of an equitable and sustainable society,” the report says. Between 1980 and 2002, the resources required per \$1,000 (U.S.) of economic output fell from 2.1 to 1.6 tons.

The report details progress in four countries where government policy supports decoupling. Germany and Japan have both demonstrated the possibilities.

\* Germany has established goals for energy and resource productivity – aiming to double both by 2020. There are also ambitious 2020 targets for meeting heating, electricity and other energy needs from renewable sources, and the target of a 30 per cent cut in carbon dioxide emissions by that same year.

\* Japan is committed to becoming a “Sustainable Society” focused on low carbon, the reduction, reuse and recycling of materials, and harmony with nature. The flow of materials is carefully accounted. Japan's measures “are probably the most advanced examples (of) increasing resource productivity and minimizing negative environmental impacts in practice,” the report states

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\* South Africa's Constitution requires "ecologically sustainable development and use of natural resources." Policies explicitly call for "resource and impact decoupling" and greenhouse-gas emission cuts of 30 to 40 per cent by 2050. Progress, though, is undermined by a growing reliance on exports of coal and other minerals. Its carbon intensity is the world's highest and emissions per person are double the global average.

\* China aims to build an "ecological civilization," with resource and environmental concerns top priorities. It has created decoupling indicators and fixed mandatory targets, including a 20 per cent reduction of energy intensity and has run nationwide energy saving and pollution-reduction programs. A National Action Plan on Climate Change targets a 40 to 45 per cent reduction in carbon dioxide intensity by 2020.

China, in particular, is a global test case, "because it wants to continue its rapid economic growth but use resources more sustainably," the report says.

"The measures that China introduces to reconcile these objectives will be of crucial significance for every other developing country with similar policy intentions."

The report emphasizes that cutting the rate of resource consumption and impacts is possible, in theory, if national economic improvement is defined in terms other than physical growth.

"It is time to recognize the limits to the natural resources available to support human development and economic growth," the authors say.

Decoupling "will require significant changes in government policies, corporate behaviour, and consumption patterns by the public... Innovation, even radical innovation, will be required."

## **Notes to Editors**

**The report describes three scenarios whereby developed and developing countries consume resources equitably: 'convergence by 2050'**

### **Scenario 1: Business as usual in developed countries, convergence by others**

Per capita resource consumption in the industrialized countries remains stable, as it has for the past three decades, and the rest of the world continues the current trend to catch up. This path leads to annual total consumption of 140 billion tons of minerals, ores, fossil fuels and biomass, or 16 tons per capita for a population of 9 billion, by 2050. Says the report: this "represents an unsustainable future in terms of both resource use and emissions, probably exceeding all possible measures of available resources and assessments of limits to the capacity to absorb impacts."

### **Scenario 2: moderate contraction of consumption in developed countries, convergence by others**

Industrialized nations halve average per capita consumption to 8 tons and other countries rise to that level. The result: total world consumption of 70 billion tons in 2050. “This scenario presupposes substantial structural change amounting to a new pattern of industrial production and consumption that would be quite different from the traditional resource-intensive Western industrial model,” the report says.

This scenario results in global consumption of 70 billion tons by 2050 -- about 40% more annual resource extraction than in 2000. Average emissions of carbon dioxide per capita would rise almost 50% to 1.6 tons per capita and global CO2 emissions would more than double.

Absolute cuts in consumption – well short of the scale required in scenario two – have occurred in just a handful of countries, and in some cases only because they have lowered their per capita consumption rate by importing resources from elsewhere.

### **Scenario 3: tough contraction of consumption in developed countries, converging with others**

Industrialized nations reduce per capita consumption by two thirds and other nations remain at current rates, resulting in a global per capita consumption rate of 6 tons and total world consumption of about 50 billion tons, the same as in year 2000.

This scenario would be so restrictive, and so unappealing to politicians, that it “can hardly be addressed as a possible strategic goal,” the authors admit.

Yet, even such tough measures would maintain global consumption at levels many scientists still consider unsustainable. Average CO2 per capita emissions would be reduced by roughly 40% to 0.75 tons/capita and global emissions would remain constant at their 2000 level.

“These scenarios challenge our current thinking and assumptions about development,” says the report. “If investments in developing and developed countries are made today that lock humanity into a business-as-usual or moderately improved resource intensive growth path, the risks of running into ecological and supply constraints will worsen.”

“This finding has spurred the International Resource Panel to focus future reports on how to improve resource productivity and find viable alternatives for policy makers.”

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### **About the International Resource Panel**

The International Resource Panel for short, was officially launched in November 2007 and is expected to provide the scientific impetus for decoupling economic growth and resource use from environmental degradation. The objectives of the Resource Panel are to:

- \* Provide independent, coherent and authoritative scientific assessments of policy relevance on the sustainable use of natural resources and in particular their environmental impacts over the full life cycle; and
- \* Contribute to a better understanding of how to decouple economic growth from environmental degradation.

For more information: [www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)

### **About UNEP**

Created in 1972, UNEP represents the United Nations' environmental conscience. Based in Nairobi, Kenya, its mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. UNEP's Division of Technology, Industry and Economics - based in Paris - helps governments, local authorities and decision-makers in business and industry to develop and implement policies and practices focusing on sustainable development. The Division leads UNEP's work in the areas of climate change, resource efficiency, harmful substances and hazardous waste.

For more information: [www.unep.org](http://www.unep.org)

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Chart appended

Metabolic rate  
t/cap/yr

100

10

1

50 100 1,000 10,000 100,000

● Africa  
● Asia and Pacific  
● Europe  
● Latin America and Caribbean  
● North America  
● West Asia

$R^2 = 0.60$

GDP per capita  
Constant year 2000 US\$