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Gerhard Pfister*

Are We Living at the Expense of the Developing Countries?

The industrial nations are often accused of achieving their relative affluence by using natural resources at the expense of the developing countries. Is this accusation justified? Would it really be in the developing countries' interests if the industrial nations drastically reduced their consumption of natural resources, as is so often demanded?

Sustainability is often understood as a guiding principle for distribution. The question is one of how the means of satisfying needs are distributed between the present and future generations (inter-generational justice), as well as between the rich and the poor at any one time (intra-generational justice). In the case of intra-generational justice it is principally the relations between the industrial and the developing countries which are at the centre of the discussion. It is claimed that the industrial nations do much more damage by what they take for themselves than by what they withhold from the developing countries.¹ If we consider this in conjunction with the desire of the sustainability principle's advocates that inter- and intra-generational justice be realised simultaneously, then the most virtuous course would be for the industrial nations to largely relinquish their consumption of natural resources. This would allow the developing countries an equivalent amount of leeway, so the argument goes, to extend their own use of natural resources and thus enable them to develop autonomously.²

But is it really true that the industrial nations achieve their relative affluence by using natural resources at the expense of the developing countries? I should like to question that assumption in this article. It should be said that the empirical facts used to support the assumption are irrefutable: the Germans, for example, contribute 4.2% of the carbon dioxide

emissions which damage the earth's climate, yet they only make up 1.4% of the world's population.³ These and similar empirical facts are used in the calculation which demands that industrial nations such as Germany reduce their use of natural resources by between 80% and 90% by the year 2050.⁴ Only then, it is said, would we be acting responsibly towards future generations as well as towards the people in the developing countries.

However, value judgements come in to play between establishing the empirical facts of unequal distribution and demanding rigorous reductions in the consumption of natural resources. Value judgements may be absolutely necessary as our means of deducing the action required from empirical facts. But unlike empirical facts, value judgements are subjective, i.e. differing conclusions can be reached about their appropriateness. There are two value judgements in particular which are crucial to the demand for a reduction in the use of natural resources of between 80% and 90%:⁵

□ The principle of inter-generational justice: each generation is obliged to leave Nature intact for future

* Center of Technology Assessment in Baden-Wuerttemberg, Stuttgart, Germany. This article is based on a short lecture by the author and subsequent discussion period at a forum on 'Germany as a developing country: Our environmental burdens are carried by the poor' held at the University of Würzburg on 3rd December 1998, as part of a commemorative discussion series entitled 'Poverty and Globalisation. 40 Years of Misereor – A Symbol of Hope'. The author would like to thank all the participants at this event for the many suggestions and points they made. He is also most grateful to his colleagues Christian Leon and Wolfgang Weimer-Jehle for their critical discussion of the manuscript. The article reflects the author's personal opinions.

¹ Cf. BUND, MISEREOR (eds.): *Zukunftsfähiges Deutschland*, abridged version, p. 25.

² Cf. F. Hinterberger, F. Luks, M. Stewen: *Ökologische Wirtschaftspolitik. Zwischen Öko-Diktatur und Umweltkatastrophe*, Basle 1996, p. 121.

³ Cf. UNDP: *Human Development Report 1997*, pp. 225 and 251 (in German version); own calculations.

⁴ Cf. BUND, MISEREOR (eds.), *op. cit.*, pp. 8-10. This study assumed, for example, that to reduce the use of the atmosphere as a sink for carbon dioxide emissions it would be necessary to cut worldwide emissions to 50-60%. With a world population of 5.8 billion people, that would only permit annual CO₂ emissions of 2.3 tonnes per head. But because current emissions in Germany are 12 tonnes per head, the country would need to reduce them by 80%, and that requirement would increase to 90% if the world population reached its projected 10 billion people by the year 2050.

⁵ Cf. BUND, MISEREOR (eds.), *op. cit.*, p. 7.

generations, irrespective of how much economic welfare is generated.

□ The principle of intra-generational justice: everyone has the same right to use globally accessible natural resources as long as the environment is not over-exploited.⁶

At first glance these two value judgements may intuitively appear plausible. However, if one looks at the logical conclusions to which these judgements can lead, a quite different view may be formed. This will be substantiated below.

The first value judgement establishes to what extent today's generation may use the environment while having due regard to the needs of future generations. The requirement to leave Nature intact for future generations can be interpreted as saying that a constant stock of natural resources has to be maintained, even if it might be possible to meet the needs of future generations via man-made resources of equal value. This means that natural resources should not be replaced by artificial ones.

In my view there are points to be made against this value judgement: the fact is that we consume more environmental resources than Nature can provide in the long term. This level of consumption, however, is not the result of human negligence or ignorance, but of simple necessity. For example, the biologist Hans Mohr of the University of Freiburg (Germany) has calculated that no more than 10% to 15% of the current population of the German state of Baden-Wuerttemberg would be able to live there if they were to use only renewable resources, and only to use them at a rate compatible with their rate of renewal in Baden-Wuerttemberg. This would be the case even if the state's inhabitants restricted their consumption to absolute subsistence level.⁷

The same, or similar, also holds true for other densely populated areas. Consequently, without extensive measures to regulate the population – which in itself can raise ethical problems – we cannot do without using natural resources. Sustainability therefore cannot mean leaving the stock of natural resources untouched: it can only mean using natural resources sensibly to build up and maintain man-made resources. Hence sustainability has to be addressed by viewing natural and artificial resources as a whole. The objective of a policy of sustainability must be to hold the means of satisfying needs at least constant over time by using both components of these aggregate resources. So if we are dependent on the use of natural resources, then in order to compensate for future generations' loss of means of

satisfying their needs, we need to steadily increase our stocks of artificial resources. Sustainability is hence only possible through growth.

Artificial resources are not just machines, buildings and roads, but also include non-material assets such as cultural orientations, organisational structures and knowledge. Without a doubt, technological knowledge can replace natural resources. For example, such knowledge can be used to increase the efficiency of fuel-burning plants so that less fossil fuels are needed to achieve a given room temperature: in this instance, knowledge acts as a perfect substitute for fossil fuels.⁸

Unlike many natural resources, knowledge has a decisive advantage: it is non-rival, i.e. in principle knowledge can have any number of users without them incurring mutual harm. For example, the knowledge of how to increase the efficiency of a fuel-burning plant can also be used to increase the efficiency of another plant. This feature of non-rivalry does not hold true for fossil fuels: once they have been used, their residues cannot be re-used in the same way.⁹ Although the conversion of rival natural resources into non-rival artificial resources cannot overcome the problem of having only limited means of satisfying needs, it can at least extend the range of those limits. The innovations inspired by technological knowledge thus help to increase the overall size of the existing 'cake' of means of satisfying needs that is available for distribution between the rich and the poor and/or the present and future generations.

The second value judgement deals with how the entitlement to use environmental resources should be distributed within the present generation. Here, the sustainability principle calls for equal per capita distribution of natural resource consumption as measured in physical units – for example, it could be allocated between the industrial nations and the developing countries according to their population size.

⁶ The implicit assumption is that these are not tradable.

⁷ Cf. H. Mohr: *Qualitatives Wachstum. Losung für die Zukunft*, Stuttgart 1995, pp. 56-57.

⁸ Obviously, artificial resources could never completely replace natural ones, since they inevitably require at least a minimal input of natural resources to be created. Even the development of knowledge calls for material resources such as schools, universities and research establishments.

⁹ Another advantage of knowledge relative to natural resources is that the production of knowledge encourages the production of further knowledge. For example, the same basic knowledge that is used to develop energy-saving space-heating systems can also be used to develop an energy-saving motor.

This demand may also appear plausible at first sight. After all, why should some people have a right to a bigger part of the stock of natural resources than others? However, starting out from precisely this question, we might consider a further idea: under what circumstances could unequal distribution of natural resources be regarded as just?

To cite one example, the principle of equal distribution of natural resources does not take into account the fact that natural environmental conditions can vary considerably from region to region and from continent to continent. Thus we could presumably acknowledge that the energy resource needs of the people living in the north of Norway in a sparsely populated area with an average annual temperature of around zero degrees are more pressing than those of people living in a warmer part of the world. In this instance most people would probably regard per capita distribution of natural resources as unjust and prefer an equal distribution of needs satisfaction using natural resources.

However, a distribution of natural resources which takes into account the differing urgency of needs, and thereby also follows the maxim of appropriateness to needs, is still not necessarily the last word in wise solutions. Distribution which follows the principle of appropriateness to needs, just like per capita equality, would in fact completely remove the users' responsibility for deciding

- what conditions are created for the consumption of resources, and
- how natural resources are used under these conditions.


On the first point, a distribution of natural resources which took human reproductive behaviour into

account could be envisaged as just. Applying this criterion, countries with a relatively high rate of reproduction would not be given priority over countries with a lower rate of reproduction. After all, a rapidly growing population can be seen as the very cause of greater overall consumption of resources, since this is precisely what makes the requirement of satisfying greater needs so urgent.

Regarding the second point, responsibility for the consumption of resources can be accounted for by determining the distribution of natural resources on the basis of how they are used to develop the overall means of satisfying needs. Assuming that the size of the whole 'cake' of means of need satisfaction depends on how the individual slices of cake are distributed among the members of a generation, this distribution principle might be considered to justify an unequal distribution of resources provided that the smallest of the pieces is still bigger than each piece of a cake based on the equal-distribution principle. This idea is clarified by Figure 1.

The potential to satisfy needs shown on the left-hand side of the diagram is based on equal per capita distribution (Circle I). However, it is smaller than the potential shown on the right (Circle II) because it fails to create any economic incentives for using natural resources responsibly, whereas the right-hand 'cake' does take such responsible resource use into account. The point is that we have to accept the implication that the total means of satisfying needs will be unequally distributed so as to allow this cake to grow bigger in total by placing the emphasis on how natural resources are used.

Unequal distribution of the means of satisfying needs based on the model on the right enables even

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those who are strictly speaking the ones to suffer most from unequal distribution to approve it. They are still better off with the smallest slice that the larger cake entitles them to (shaded area in Circle II) than they would be if a smaller cake were divided into equal slices (shaded area in Circle I). A situation in which the unequal distribution was clearly not in their interests, in spite of the greater total means of satisfying needs, would not be reached until the smallest portion of that total came to be equal to, or smaller than, their share of an equally-divided distribution.

Distribution of the means of satisfying needs in accordance with the principle of responsible use of natural resources essentially goes back to the difference principle established by John Rawls in his theory of justice.¹⁰ If this principle is applied to the distribution of natural resources between industrial nations and developing countries, then an unequal distribution could be justified if the industrial nations were able to produce more artificial resources from a given quantity of natural resources than the developing countries are capable of doing. An unequal distribution of natural resources would then increase the total amount of means of satisfying needs.

For this purpose the resource productivities of some industrial nations can be compared with those of some developing countries. Resource productivities show how many units of artificial capital can be produced from a unit of natural capital. In this comparison, we shall use the consumption of primary

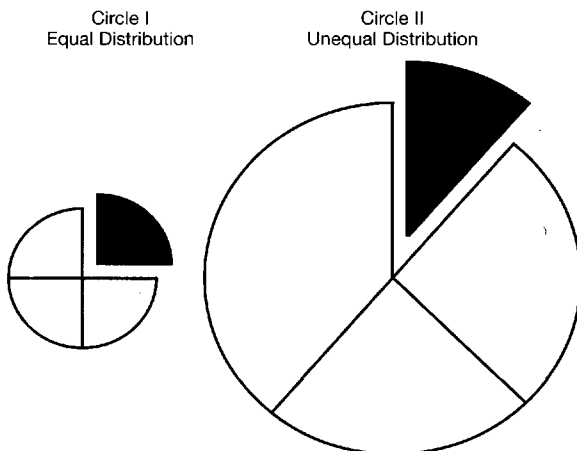
energy as an approximation to the input of natural resources. The countries' gross domestic products (GDPs) are used as approximate indicators of the level of artificial resources produced. Table 1 shows the results for 1994.

From this list relating raw material consumption to GDP we can conclude that the resource productivities of many developing countries lie below those of the industrial nations. This means that in most developing countries far fewer artificial resources can be produced from a single barrel of oil than, say, in Germany. If natural resources were allocated in accordance with the principle of equal distribution, no account at all would be taken of these differing levels of resource productivity. The result would then be a smaller overall cake of means of satisfying needs. We would all be poorer.

There is another aspect, too: an equal distribution of natural resources would also considerably reduce our chances of achieving inter-generational justice. It means that, to compensate future generations for the unavoidable consumption of natural resources, we will only be able to bequeath to them a smaller stock of artificial resources. This applies to future generations in the industrial nations as well as in the developing countries. Given the unsatisfactory living conditions in the developing countries which we can already clearly see today, this would also certainly be judged by many to be an undesirable consequence.

One objection raised against the view that distributing natural resources according to resource productivities would be just is that the countries in question produce different types of goods to suit their own particular sets of preferences. Put in simple and obvious terms, this is roughly the same as saying that it probably would not make sense to use the entire natural resources of Switzerland to make Swiss cheese and cuckoo clocks simply because the country's resource consumption is so high. Indeed we know from experience that this will not happen, not just because of capacity considerations, but for the very reason that the excess supply of Swiss cheese and cuckoo clocks would send the prices of these goods plummeting, thereby drastically reducing Switzerland's GDP and its previously high level of resource productivity. At the same time, using resources in this way would create shortages elsewhere, for example with Kenyan coffee beans.

Figure 1
Two Distribution Models Compared



The smallest slice of the larger cake is bigger than a piece of the evenly divided smaller cake.

¹⁰ J. Rawls: *A Theory of Justice*, Cambridge, Mass. 1971; see also the commentary by P. Ulrich: *Integrative Wirtschaftsethik. Grundlagen einer lebensdienlichen Ökonomie*, Berne 1997, pp. 247-259.

The price of the latter would rise and thereby increase Kenya's resource productivity.

Another objection to distributing natural resources according to resource productivities rests on the notion that the industrial nations can only achieve their present high levels of resource productivity by having used their natural resources less effectively in the past. The developing countries should therefore likewise be granted these historical conditions of industrialisation. However, this argument which centres on a just *initial* distribution of natural resources is in fact completely consistent with the notion of the *final* distribution of natural resources being determined according to resource productivities. In such a case, however, trade in natural resources would have to be permitted between countries with a low level of resource productivity and those with a high level. Such trade would involve countries with a high level buying the rights to use natural resources from countries with a lower level – the latter would receive artificial resources in return. Countries with a lower level of resource productivity would also benefit from this trade: for the rights they sold they would get more means of satisfying needs than they themselves could produce from an equal distribution of natural resources.

The scale of such trade could be considerable. According to an estimate by the World Bank, even just trading the right to use the atmosphere to absorb

greenhouse gas emissions (to meet the targeted world-wide reduction of such emissions by the year 2020) would generate a trade worth a total of \$60 billion.¹¹ This sum almost matches the entire official development aid provided by all the OECD countries together in 1995.¹² Whether or not such trade really will allow the developing countries to obtain more means of satisfying needs than they would from an equal distribution of natural resources will of course depend on whether the terms of trade are agreed fairly, or can be agreed fairly. Such factors as the absence of market power, externalities, public goods etc., will certainly feature as essential preconditions. The existence or non-existence of these preconditions still needs to be clarified, however, and will lead to a broader and more extensive discussion.

The answer to the question 'Are we living at the expense of the developing countries?' cannot therefore be answered conclusively. Whatever the case may be, it is misleading to take the per capita consumption of natural resources in the industrial nations compared with the per capita consumption in the developing countries as evidence to support an affirmative answer to the question. The use of natural resources in the industrial nations does not in itself restrict other countries' chances of development. Rather, improvements in living conditions in the developing countries depend on whether the relatively high level of resource productivity in the industrial nations can continue to be used and whether the resulting affluence is at least partially used for transfer payments to the developing countries. Another calculation by the World Bank substantiates this statement: if the industrial nations were to make do with just one percentage point less growth over a period of four years, the developing countries would lose \$80 billion in financial resources each year.¹³ Hence, people in the industrial nations should understand that collective action in accordance with the maxim 'do without' can, at best, be seen as a virtue from an ecological point of view, but for the people in the developing countries the consequences would be dire. This shows once again that there is still a long way to go from idealised concepts of sustainable development to a logically consistent, practicable programme.

¹¹ Cf. DIE ZEIT, 5th November 1998, p. 37.

¹² Cf. UNDP: Human Development Report 1997, p. 244 (in German version); own calculations.

¹³ Cf. World Bank: World Development Report 1992, Washington, D.C. 1992, p. 217.

Table 1

Resource Productivities in the Consumption of Primary Energy 1994

(GDP in US\$ billion per million tonnes of oil equivalent)

| | | | |
|--------------|------|-----------------|-------|
| Ukraine: | 0.53 | Bangladesh: | 3.40 |
| Russia: | 0.63 | Ghana: | 3.57 |
| China: | 0.68 | Australia: | 3.60 |
| Zimbabwe: | 1.16 | Sweden: | 3.98 |
| Egypt: | 1.25 | Ethiopia: | 4.06 |
| India: | 1.32 | Senegal: | 4.59 |
| Pakistan: | 1.61 | United Kingdom: | 4.64 |
| Nigeria: | 2.01 | Netherlands: | 4.70 |
| Vietnam: | 2.07 | Brazil: | 5.04 |
| Canada: | 2.38 | Spain: | 5.10 |
| Indonesia: | 2.33 | France: | 5.90 |
| Kenya: | 2.47 | Peru: | 6.11 |
| Bolivia: | 2.48 | Germany: | 6.13 |
| Philippines: | 2.63 | Italy: | 6.60 |
| Mexico: | 2.70 | Austria: | 7.40 |
| Ivory Coast: | 2.85 | Japan: | 9.60 |
| USA | 3.23 | Switzerland: | 10.30 |

Sources: UNDP: Human Development Report 1997; own calculations.