

Ecological Unequal Exchange

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INTRODUCTION

In these years many developing countries are engaged in establishing environmental regulation and in taking the first steps towards using economic instruments. Obviously, this endeavour is highly needed, but unfortunately, these countries' environmental problems are rooted in fundamental issues that cannot easily be corrected by the instruments normally included in environmental regulation. This does not mean that the use of, for example, economic instruments is necessarily wrong or inappropriate. But it indicates that the means often have considerable limitations, and that protection of the environment therefore also needs completely different types of changes. It is necessary to change the power relations, both between North and South and internally in the South, which will also improve the conditions for a more effective drafting of the economic measures. This article should be seen as a long argumentation for the necessity of changing the power relations both between North and South and internally in the South, so that developing countries get a chance to rectify their environmental problems.

Before I begin explanations, I should mention that they draw on the theoretical approach called ecological economics. Ecological economics is not a very well-defined school, even though the first authoritative textbooks are appearing (Costanza, 1997). It is true there is an association, the International Society for Ecological Economics, but it has a wide embrace, and the society journal publishes articles from a broad circle. There are, of course, many who can agree with the basic idea of the Society, that economic theory should take the ecological limitations seriously, and that cooperation is necessary between economists and ecologists (or more broadly: between scientists and social researchers as well as people from the humanities). However, there are great differences in the way this project is tackled, particularly because there are many types of economists. It is now reasonable to differentiate between environmental economics based on traditional neoclassical economics and environmental economics, which, if nothing else, is defined by a greater or lesser distancing from neoclassical ideas (a very clear criticism of neoclassical ecological economics can be found in Jacobs 1994). In the less radical end of ecological economics is, for example,

Herman Daly, who is probably the best known representative internationally (Daly and Cobb, 1989). Among the more radical representatives, the best known author is probably Joan Martinez-Alier, who has written the theoretical history of ecological economics (Martinez-Alier, 1990). Other radical representatives are Enrique Leff, who represents the Latin American debate (Leff, 1995), and in Europe, e.g., Martin O'Connor, Sylvie Faucheux and Clive Spash (O'Connor, 2000). To put it in a rather simplified way, the less radical protagonists are generally the most "economics-minded" (i.e. influenced by economists' traditional way of thinking), while the more radical have their background in institutional economic theories, perhaps Marxist, and are more inter-disciplinary (for different interpretations of ecological economics, see Spash, 1999 and Turner, 1999). My sources of inspiration are taken broadly from ecological economics, but are clearly weighted towards the radical end. I will not attempt to explain what that implies, but instead let it become apparent from the argumentation in the following.

IT IS IMPOSSIBLE TO COMPARE

In the short presentation of the focus of the article, the salient point is that the environmental problems in the developing countries are due to some fundamental issues that go much deeper than failure of the market. Whether one "sees" this, depends on what "logic" one thinks in, or in other words, what rationality one applies. One of the most important dividing lines is whether one chooses to count in money or in nature.

A discussion of environmental problems and environmental regulation will always in some way or another be based on some ideas about what has value. For instance, how should it be "calculated" whether agriculture should be run organically - whether the current production should be maximised or whether the costs are too high in the long term? Here economic theory faces a basic theoretical problem: there is simply no way to compare various alternatives on an objective basis (in ecological economics, this is often referred to as the basic incommensurability problem, cf. Martinez-Alier 1995). Market economies and exchange with money give rise to the illusion that the value of different

things can be compared, but there is no question of comparability on any sort of objective basis.

Economic value can be discussed from two different points of view. On the one hand what a product (or service) is worth to people, and on the other hand what it costs to provide that product. The question about what something is worth seen from a human point of view could conceivably be decided in several different ways. Members of a community could discuss it and try to reach agreement by referring to collective considerations and ethical principles. Or they could vote on it on the basis of an individual, interest-based position. Or they could leave it to market mechanisms to decide a price. It is true that the market-determined price arises in an interaction between supply and demand, so it is also affected by the costs side, but one could choose to ignore this. If the market price is understood as an expression of what a thing is worth seen from a human point of view, this implies an acceptance that value is determined by individual preferences and an acceptance of the very different weights these preferences have, as "the right to vote" on the market is based on purchasing power. In addition to this, the prices reflect how the "last sold" (the marginal) unit of a good is valued: some purchasers would have been willing to pay a higher price so that the actual price underestimates the worth the good has for them. The market price is therefore based on individual decisions on the demand side without any form of collective discussion, and on a very unequal distribution of influence, and it results in an underestimation of what the purchasers would have been willing to pay. There is no reason to consider this method of establishing value as more objective than others.

On the costs side, too, the incommensurability problem applies. What are the real costs of providing the products? Are they the pecuniary costs based on the prices, the labour time that directly or indirectly is embodied in the goods, the direct and indirect use of energy, the weight of the materials or something else entirely? Within ecological economics, there is widespread agreement that the pecuniary costs based on market prices are not a relevant measure of what it really costs to provide things. The costs are a combination of drawing on nature and human efforts, which cannot meaningfully be summed up in money. The pecuniary costs are a historical product of power relationships which, over time, have shaped technological development, payment of different types of workers and exploitation of natural resources. In addition to these is the fact that external effects are not just significant at the present point in time, but become built into the physical and

institutional structures of society in the long term. In this perspective, to say that the market provides efficient allocation of resources is basically absurd.

The costs are wear and tear on nature and humans. But how can these costs be specified? As Joan Martinez-Alier has shown in his history of ecological economic thought (Martinez-Alier, 1995), the discussion of this question has roots back in the last quarter of the last century, but these roots were largely unknown or forgotten when the current discussion was started with contributions primarily from Nicholas Georgescu-Roegen (Georgescu-Roegen, 1971). Georgescu-Roegen is very respected because he broke the ice and brought nature into economics in earnest, but later contributions have often been strongly critical of his use of thermodynamics (cf. O'Connor, 1991; Leff, 1994 and the ongoing discussion in Ecological Economics).

I will not go into more detail about the basic theoretical discussion within ecological economics, and will confine myself to an example later in the article about how one can "do calculations in nature". For the present, the point is just to show that market prices are not a particularly objective instrument to evaluate what something is worth, and what it has cost, and there are no obvious alternatives either. Incomparability is a basic condition, but we *have* to compare in order to discuss environmental policy and environmental regulation, and how then should it be done? There is no objective measure. On the other hand, there are various rationalities - different measures for what is rational or desirable, and it is important to state one's rationality clearly.

THE ECOLOGICALLY UNEQUAL EXCHANGE

The assessment of the developing countries' environmental problems differs, depending on what rationality one thinks in. There is probably widespread agreement that the foundation of the problems was laid with the expropriation by the colonial powers of the resources of the colonies and the break-down of the old cultures and their interaction with nature (though the old cultures were not always sustainable, which both Ponting, 1992 and Leff, 1995 point out). On the other hand, there is greater disagreement about what role the relationship between developed and developing countries today plays in relation to the environmental problems. The view of ecological economics is, briefly, that ecological resources are constantly being transferred from developing to developed countries, and that, furthermore, this process involves a sub-optimal utilisation of the

ecological potential of the developing countries in the long term. From a market economic point of view, the exchange between developed and developing countries is an equal exchange of something-for-something, because, of course, it is no longer a case of theft, but of trade at market prices. But from an ecological economics point of view, the equal exchange in money can perfectly well be consistent with an unequal exchange as regards ecology. The ecological exchange cannot be expressed in any single common denominator in the same way (even though an example of a way to do this is mentioned in the following) as it can concern trade in energy, protein, biomass, exhaustible resources, use of land, capacity to assimilate pollution etc. However, the lack of a single measurement unit does not change the unequal nature of the exchange.

As will be clear to readers with some knowledge of the development theories of the 1970s, the ideas are very reminiscent of the old discussions about unequal exchange (Amin, 1973; Emmanuel, 1972; Andersson, 1976). At that time, equal exchange in market prices was put in perspective by the unequal exchange measured in labour time. The question was how much labour had been embodied in the goods and whether they had now actually been exchanged equally in a labour sense. This discussion was based on the idea of labour as the source of value. Ecological economics does not have a correspondingly precise idea about what is the source of value, so the discussion is more modern by taking its starting point in the basic incommensurability problem. However, the criticism of the rationality of market economy has not become less.

A very illustrative example of how one can "do calculations in nature" is in a Canadian project on "ecological footprints" (Rees and Wackernagel, 1994; Wackernagel et al., 1993; Wackernagel and Rees, 1996). In this it is calculated how much land area Canadians appropriate - how large their footprints are. Some readers will probably be familiar with the term *carrying capacity*, which expresses how many people a given piece of land can feed. In the calculation of ecological footprints, this question is turned around, so that instead, an assessment is made of how large a land area a given population appropriates. The calculation is based on the annual consumption of different groups of goods and services: various types of food, housing, forms of transport, durable goods, education, tourism etc. An estimate is made for each group on the basis of life-cycle analyses of how much land the production needs. Some products appropriate land directly, for example food, paper, housing and transport systems. In addition, a fictive, indirect use of land through the

use of fossil energy is included for all products. The idea is to calculate how great an area would be needed to replace the use of fossil fuels by cultivation of biomass for the extraction of ethanol. Such a fictive calculation can seem strange, but it can be justified from three different angles:

- 1) A sustainable economy must not drain natural capital, but all the time must produce the energy that is used.
- 2) Or if this demand is considered too restrictive: a sustainable economy must not use exhaustible resources more quickly than the quantity of a renewable replacement resource can be increased. That is to say, that the area could possibly be used to plant trees so that the economy could later be based on biomass.
- 3) The calculated area corresponds approximately to the area that would be necessary to soak up the extra emissions of CO₂, which are the result of the use of fossil energy.

Of course, there are significant data problems associated with making such a calculation, but some estimates can be made. In the Canadian project, the emphasis was on making cautious assessments. Nevertheless, the authors arrive at quite remarkable figures: each Canadian on average appropriates 4.8 ha land, and 2.9 ha of this in the form of fossil energy consumption. If all the people in the world did the same, we would need three globes. And as the authors say, "... good planets are unfortunately hard to find" (Wackernagel et al., 1993, 28). Actually in 1990 only ca 1.7 ha ecologically productive area was available per capita (of this only 0.3 ha is arable land).

It is obvious to think that countries with a large production of food per capita do not have problems with their ecological footprints. But this is misleading, because agriculture is based on the use of fossil energy and the import of feedstuffs, for example, from other countries. For Holland, which has a large agricultural production, the country's ecological footprint has been calculated to be 14 times larger than the country itself (Rees and Wackernagel, 1994). Other countries in this group are not as densely populated as Holland, so their footprints are more moderate, but nevertheless, they can be much greater than their own area.

Part of the explanation for why some countries can appropriate the yield from a larger area than they have available is the use of fossil energy, i.e. the use of an accumulated natural capital. To convert the use of fossil energy to the use of land is of course a hypothetical idea that can be criticised. It is based on the given technologies of the moment and does not take into account possible revolutionary developments in the energy field (cf. Christopher

Flavin's contribution in Brown et al., 1995). But even if the energy problem is solved in a more efficient way in the future, the problem of area is urgent, because food production is about to make an impact as a restriction to such a great extent (Brown et al., 1995, 1999).

Another part of the explanation for our large area appropriation is that resources are constantly transferred from developing to developed countries, both in the form of the natural capital already mentioned and through the current use of area. After all, the allocation of resources is not determined by either an ecological or ethical rationality, but on the contrary by the dominance of the market mechanisms. The market implies that the consumers with purchasing power in developed countries can eat a lot of meat and many bananas, drink coffee and tea, wear cotton clothes etc., because they can pay for having the land in developing countries appropriated for this purpose instead of for production of food for these countries' own people. This use of land also depends on the unequal internal distribution in developing countries, so the large land owners can choose to concentrate on export crops in preference to food for local consumption (see a more detailed explanation in Røpke, 1994).

The different rationalities could be contrasted in an interesting way if the money-based balance of payments was supplemented with an ecological "balance of payments" or exchange accounts. In the same way as thought-provoking calculations have been made of the energy and protein balances in agriculture in developed countries, the concept of ecological footprints could be used to draw up a type of area-appropriation balances for different countries. Not because such a statement of accounts can pretend to give a complete picture, but because it puts the traditional statements of accounts in a critical perspective and puts the distribution problems in focus in a completely different way.

In the above, it is particularly emphasised that market mechanisms result in the transfer of resources from developing to developed countries. At the same time, the market contributes to the fact that the resources are used in an inappropriate way, partly because current production potential is not used and partly because production potential is lost in the long term. Thus Enrique Leff (Leff, 1995) points out that monoculture in tropical areas actually gives a lower biomass production for the use of humans than a more all-round use of the areas. In the long term, monocultures can exhaust the soil and reduce the future production potential. Added to this is the cultural destruction, as important knowledge about the use of tropical areas is gradually lost.

The market mechanisms and the power relationships between developing and developed countries as well as internally in the countries are thus the most important background for environmental problems in developing countries: the exhaustible resources are removed, the renewable resources are overused, production gives rise to pollution problems, and poor groups of people are pressed out in overuse of their resource basis. In addition to this, developing countries are affected by the global environmental problems, for which until now they have had little responsibility.

MOVEMENT IN THE SOUTH

When environmental problems have such deep roots, things can look black. But there is also a dynamic in the situation. There are many different movements in the South which are concerned with the environment in one way or another, even though the environment is far from always the primary declared goal of the movements. Re-appropriation of nature is often an important element in local movements that are fighting for a basis for existence. An example is Chiapas in Mexico where a local liberation struggle is also concerned with environmental questions. Among other things, the absurd environmental consequences of NAFTA, the North American Free Trade Agreement, are highlighted. The agreement will increase oil exports from Mexico and thereby help to keep down the price of oil in the USA. The inexpensive oil is used, for example, in the energy-intensive American maize production, and the inexpensive maize can then be exported to Mexico, where the import knocks out the small farmers' more ecological production of maize and thereby, in the long term, helps to reduce the variety of maize types and the old insight into cultivation. A pattern that has been seen before in history, but which seemingly is still topical. The Mexican case illustrates several relevant points. First, it is not always the case that developed countries have the cleanest production while the developing countries have the more polluting production. This has otherwise often been assumed in the discussions on environmental clauses in GATT/World Trade Organization, but particularly in the agricultural area, the opposite will often be the case. Second, in no way does the North have a monopoly of environmental awareness and environmental movements. Third, the uncomfortable point is illustrated that the state is often part of the problem rather than part of the solution. In the Mexican case, it is thus the state that is the guarantor for NAFTA and the subsequent process, and which suppresses

local opposition.

The Chiapas conflict is one example among many. For a planned research project (unpublished), Joan Martinez-Alier has drawn up a long list of types of ecological distributional conflicts and the associated opposition movements. Some of the concepts used are the already mentioned ecological unequal exchange, ecological dumping (such as the American sale of maize to Mexico) and ecological debt, which is used as an expression for the cumulation of the rich countries' previous overuse of resources and their extensive emissions until now of, for example, CO₂. Along the same line, Agarwal and Narain (1991) used the expression environmental colonialism to characterise the international negotiations regarding the greenhouse effect. Leff (1995) and Martinez-Alier (1995) emphasise that the ecological movements in the South increase the costs for the companies or governments who want to utilise resources or the capacity of the environment to assimilate pollution. Therefore the environmental movements can be regarded as a social expression of some of the non-internalised externalities and at the same time contribute to internalisation.

There is life in the environmental movements in the South, but it is characteristic that the way many of them understand and describe the background for the environmental problems, as well as their ideas about possibilities to solve them, has much in common with the perspective of ecological economics, and is thereby on the sidelines in the dominant discussion about environmental policy and environmental regulation in developing countries.

CONCLUDING REMARKS

When an ecological economics perspective is applied, the traditional economic discussion about possible instruments and their design seems like an attempt to move some marginals, while the actual framework is left untouched. The critical angle does not, of course, imply opposition to the attempts of states and their advisers to regulate production so that it becomes less polluting and uses resources more efficiently. But it implies the radical point of view that much more is needed to ensure sustainability and justice. There is not just a need to correct a few "failures" in the way the market functions, but also to change the structural framework and power relationships, preferably by small steps. One of the small steps could be to limit the scope of the market by strengthening production aimed at the needs of the local community and by making trade agreements of the type used by the Max Haavelaar organisation as well as other grassroot organisations (in Denmark:

Ulandsimporten). If a change in the power relationships can be gradually achieved, this can be the basis for using economic instruments in a form that actually makes a difference. It is precisely the effectiveness of the tax instruments that ensures them a number of opponents (Andersen 1995). In relation to the ecological unequal exchange, this can be exemplified by the fact that a heavy tax on the damaging environmental effects of banana production for instance could reduce the appropriation of land by the North in the South. But as long as many developing countries are caught up in their unfortunate specialisation and debt trap, the power relationships will mean strong opposition to the use of economic instruments that make exports more expensive (Jespersen 1995). Economic instruments can thus well promote sustainability and justice, if the power relationships give the basis for an effective model. The question that remains is whether the use of economic instruments under the given circumstances can help the necessary change in the power relationships. As far as I can see, it is completely impossible to answer this question generally, so here the scene must be left to concrete analyses.

KEY WORDS Environmental Problems. Environmental Regulations. Developing Countries. Ecological Economics.

ABSTRACT In these years many developing countries are engaged in establishing environmental regulation, but unfortunately, their environmental problems are rooted in fundamental issues that cannot easily be corrected by the instruments normally included in environmental regulation. This paper argues that it is necessary to change the power relations, so that developing countries get a chance to rectify their environmental problems. These issues are elucidated by applying the approach of ecological economics. First, the basic theoretical problem regarding economic value is outlined, and second, it is argued that unequal exchange in ecological terms might be at the root of environmental problems in developing countries. The concept of ecological footprints is used as an illustration. Finally, it is argued that the different movements in the South offer some hope for changes.

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