

Report on the conference about green taxes and duties  
in international perspective

# **GREEN TAXES AND DUTIES**

**a way towards a better environment  
and increased employment**

**SiD**

**The General Workers Union in Denmark  
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Erik Christensen and Klaus Lindegaard, Aalborg University 1996:

# An environmental contribution towards the environmental debt: A green taxreform

- What does the environmental debt mean for taxation, distribution policy and employment?

## 1. The environmental debt

The environmental debt is an economic objective for alleviating the negative environmental effects which have not been confronted. As a concept, the environmental debt may appear initially enticing as an image of a non-sustainable management based on nature. On the other hand, in attempting to calculate the environmental debt, we are confronted with a number of problems both regarding definition and delimitation. If we try to calculate the absolute value of environmental deterioration of the basis of nature, which baseline point in time and which state should we use? If we choose to examine the relative contributions over time from various types of activities, which concepts of damage can be used to distinguish, for example, the accumulated effects of annual contributions? Which geographical delimitation can be defended, and which delimitation of environmental effects can be utilized?

If we have used the term "environmental debt" then we have in fact also said "environmental blame", but is this term a moral entity or a practical guide for environmental politics? The method determines the applicability of calculating the environmental debt (Christensen & Lindegaard, 1993), and if we limit ourselves to confessing pragmatically to an action-oriented method of evaluation, such as the negative environmental effects and costs of prevention, aversion and mitigation with appropriate technology, calculating the environmental debt can become an objective for the requirements which feasible environmental efforts can practise. We can compare the annual environmental indebtedness with the annual environmental efforts, and then calculate the environmental balance; i.e. a surplus or a deficit regarding our payments to the environment. (Lindegaard, 1994).

During recent years in Denmark, several evaluation studies of the negative environmental effects have been proposed. The most comprehensive studies are an account of the environmental costs on a trade level (Danish Environmental Protection Agency, 1994), as well as an account of the value of the Danish energy sector's negative environmental effects (Meyer, 1994). Both studies attempt the most comprehensive damage calculations possible and base themselves on the results of several evaluation methods. In both studies, atmospheric pollution is a significant parameter, and here a German account of damage from 1988 is used, which is again based partially on another German study with a total accounting of the annual German environmental burden (Wicke, 1986). This calculation of damage and corporate willingness to pay, loss of income, mitigation costs, etc. results in an annual, total amount which is in excess of 103.5 thousand million DM per annum.

The Swedish environmental debt has been calculated in a somewhat different manner. Here the same evaluation method, "the repair effort", has been used exclusively. The result of this examination was that Sweden's environmental debt in 1990 was more than 260 thousand million

SEK, seen as a total, and the annual indebtedness amounted to 6.6 thousand million SEK in 1990 (Jernelöv, 1992).

In Denmark, the Rockwool Fund (in cooperation with "Danmarks Statistik") published a welfare indicator for Denmark 1970-1990, comprising the defensive environmental expenditures and the hypothetical, environmental costs during this period. The defensive expenditures on the environmental field are defined as the expenditures defrayed due to emissions which have been avoided. These defrayed expenditures come from either businesses, the public sector or private households. During this period, they amounted to DKK 0.5 to 1.0 thousand million around 1980, after which they have been falling slightly. The hypothetical environmental costs are the costs which should have been defrayed during the individual years in the period, in order to have avoided damaging emissions and thus indicate the expenditures which should have been defrayed in order to bring the emissions down to an acceptable level. These are calculated by working out the costs of avoiding a given quantity of pollution by using the best available methods and technology. It is estimated that the environmental costs during the 1970s amounted to DKK 12 thousand million annually, falling to DKK 8 thousand million by 1980. The hypothetical costs comprise the cost of cleaning waste water, nitrogen, lead, SO<sub>2</sub>, and NO<sub>2</sub>, while we refrain from including the emission of CO<sub>2</sub>. Similarly, the efforts to reduce soil pollution, estimated to be DKK 24 thousand million (Danish Environmental Protection Agency, 1996) were not included.

The calculation clearly indicates that, the funds which society uses to avert and reduce harmful environmental effects as well as to prevent environmental damage, only amount to a small part of the expenditure needed to combat the damaging effects on areas where environmental improvements were possible. Every year, a number of invisible degradations to the environment occur, which are not paid for, and which accumulate into an environmental debt. In a number of areas the natural capital is slowly being worn down and destroyed. This environmental indebtedness can be conceived as an indicator of the environmental protection, which is both necessary and possible to implement, if it can be financed. This question is thus directly related to the issue of environmental taxes and green tax reform.

## **2. Environmental taxes and charges**

No consensus exists concerning the definition of green or environmental and environmentally related taxes and charges. However it is possible to distinguish between three types of objectives for such taxes and charges:

1. Taxes are collections for general public purposes, which are subject to political negotiations and imposed on special areas to regulate behaviour, i.e. to reduce consumption within the production or consumer chain.
2. Charges denote earmarked collections which are counterbalanced by definite services and thus have as their purpose payment by users. Taxes serve a fiscal purpose in that they create a public financial base, most often in connection with distributive politics. For example, taxes serve an environmental and health-orientated purpose and seek to change behaviour and to substitute. Charges serve an earmarked purpose, which is determined on the basis of "the principle of paying your own way", regarding the financing of specifically defined services.
3. Finally, there is an in-between form, which both seeks economic and environmental objectives, namely, the so-called, "earmarked" or "objective-determined" environmental charges.

The goal here is both to raise a definite financial base and to implement a specific, often temporary and well-defined environmental effort or service. In practice, however, it can be difficult to differentiate sharply between the objective-determined taxes and charges. The other types of tax collection will also in practice have several functions and could also be viewed on the basis of several objectives.

There is an equity consideration (the "polluter-pays-principle") behind the argumentation for tax collections within the field of the environment. Environmentally related taxes can thus be justified by the fact that they are, in themselves, positive, environmentally related assets that reflect eventual external costs in their price. Furthermore, charges can be justified by the fact that an internalisation of the external costs must provide incentive to implement environmental improvement measures within areas where this is cost-efficient, i.e. optimal in comparison with the costs connected with the introduction of cleaner technology and/or substitution. As charges are also an expenditure, they can likewise act as a stimulant towards behavioural changes.

Within the field of the environment, examples can be found for all types of levies. Energy levies are normally reckoned to be among the fiscal type and are indeed often considered to be energy taxes, in as much as they have no particular importance in regulating behaviour, because energy consumption is price-inelastic in the short term (OECD, 1993). Replacement of energy sources, fuels and coal and oil products can be stimulated, however, by differentiated excise rates, and likewise, investments in energy savings can be stimulated in the long term. Within the field of energy, a distinction is made in Denmark between energy levies and more recent environmentally related energy taxes on, for example SO<sub>2</sub> and CO<sub>2</sub>.

Environmental levies are traditionally associated with behaviourally regulatory levies on harmful substances and pollutant emissions. Here, a calculation is made of the marginal damages connected with a given activity, upon which a unit levy is then imposed, such that an economic incentive is created in order to reduce the damage, ideally to the optimal level. The external costs are thus internalised in the non-government cost functions, and thus in non-government decisions. A stronger incentive can be created by imposing marginally increasing levies per unit, eventually combined with a basic allowance. However, as the average unit levy during consumption produces an increasing tax burden, a regular increase of the actual excise rate will perhaps be a simpler solution. The formation depends naturally on the appearance of the damaging function or on how far an optimal solution is intended, rather than on a regular signal effect (in the absence of the former). Furthermore, it is an open question whether marginally rising environmental taxes must be ascribed to the behaviourally regulatory type even if they are already announced in the taxation policy. On the contrary, increasing excise rates can gradually indicate that it is a case of tax collections with a fiscal objective, as the central government's revenue will remain unchanged or will increase within the given field. This is despite the argument that environmental levies must always be adjusted (upwards) in accordance with their actual effect on the environmental behaviour in situations where there is no advance knowledge about the non-government benefit and cost functions. In principle, revenue from behaviourally regulatory levies is supposed to decrease during the course of time concurrently with the introduction of environmental improvement measures and modified behaviour. A newer variation of the traditional environmental levies consists in their being combined with retransfer and compensation arrangements, by which a behavioural regulation is sought which is both neutral towards costs and hence competitiveness and employment, a goal which is pursued via actual exemption from duties for trade and industry.

In Denmark, charges within the environmental field consist mainly of payment by users to cover

the costs of surveillance, control and case administration, and more importantly, payments for treatment of waste and waste water, which are normally the domain of utility companies.

As already mentioned, earmarked levies have both fiscal and environmental objectives in unity. A certain expense requirement is determined for environmental improvement activities, for which the necessary funds are then collected so that these activities can be achieved. The levies are usually environmentally related, but their main purpose is not to stimulate modified behaviour in the same way as the traditional environmental levies. On the contrary, they must be formed so that a fixed revenue can be ensured in order to cover the given environmental effort and the investments connected with this. However, it is intended that the yield from the levy shall decrease and cease completely concurrently with the success of the environmental measures in approaching and fulfilling the requirement. For this reason, an overlap with the behaviourally regulatory purpose need not be excluded. The question here is to what extent we shall collect the levy from the "environmental sinners" or from those who benefit from the environmental effort, and to what extent the environmental effort is directed towards environmental "sins of the past" or towards continuing, or even future problems. It is therefore possible for equitable considerations to enter into the formation of the collection side of earmarked, environmental levies.

As a Danish example of a purposeful, environmental levy arrangement, a special excise tax is collected on petrol sales (DKK 0, 025 per litre in 1994, DKK 0.04 per litre in 1996). The revenue (approx. DKK 70 million per year in 1994) goes into a special fund, the Danish Petroleum Industry's Environmental Fund, which administers the revenue and manages the efforts to clean up polluted sites at existing and closed petrol stations (estimated at 3,000-4,000). The arrangement was established as a voluntary agreement in 1992, and the petroleum industry collects the levy itself. In cooperation with the environmental authorities and interested municipal and county parties, the fund management participate in planning and controlling the de-pollution efforts via an Environmental Fund Council. As of 31st July 1995, 418 such cleaning projects had been processed, of which about 200 projects were concluded (Ministry of Finance, 1994, Ministry of the Environment and Energy, 1995, Danish Environmental Protection Agency, 1996).

As already mentioned, in practice it can be difficult to differentiate between earmarked levies and charges. One example is the 1992 arrangement regarding rechargeable NiCd batteries, where a ministerial order regarding collection of these batteries complemented a ministerial order mandating surcharges on batteries, the revenue of which was to finance collection and disposal in accordance with an agreement between the Minister for the Environment and the "Association for Collection of Rechargeable Batteries". It was planned that the arrangement would be extended in 1995 with an actual levy on the batteries, to be compensated by collection, and thus function as a deposit. However, since 1996 it has functioned at a level intended to finance the actual collection arrangement, but without much success. A voluntary collection arrangement for lead generators was also implemented after threats to introduce a similar levy. (Ministry of Finance, 1994, Ministry of the Environment and Energy, 1995, "Danmarks Statistik", 1996b).

Denmark's CO<sub>2</sub> tax, implemented for domestic households in 1992 and for business and industry in 1993, is another example of an environmental levy which comprises earmarked elements. The levy helps finance a number of subsidy schemes administered by the Danish Energy Agency, and business and industry can achieve a special refund of 2% of the levy payment, if they carry out an energy survey of their businesses. In 1992, the CO<sub>2</sub> tax generated DKK 1.5 thousand million, in 1993 almost DKK 3.3 thousand million, and it was anticipated that it would bring in DKK 3.6

thousand million in 1996. In 1993, DKK 0.55 thousand million was used on the subsidy scheme and it was anticipated in 1996 that DKK 1.75 thousand million would be used. The subsidies are used for a number of different purposes, but primarily for the production of electricity from renewable energy sources, energy-saving measures and extension of the district heating network. Despite this purposeful element, there is no link in the CO<sub>2</sub> tax arrangement between revenue and contribution. In 1995, approx. 47% of the income was used for subsidies. The tax functions as a mixture of: 1. earmarked levies and 2. behavioural regulatory levies, which differentiate between excise rates depending on energy sources and according to the businesses' utilisation of energy, with special emphasis on motors and space heating, and finally 3. as a fiscal levy (Ministry of Finance, 1994, "Danmarks Statistik", 1996b).

The CO<sub>2</sub> tax is perhaps best known for its associated system of reimbursement, through which trade and industry transfer their shares of payments according to a combination of their usage of energy, the increase in the value of the business and its energy intensity. In this way the energy "heavy weights" are exempted from any noticeable payment of their energy consumption for process purposes on the basis of international competitiveness considerations.

The earmarked energy taxes are virtually ignored in the Danish debate about green taxation reform. Neither the Danish economic advisors nor the Economic Council of the Labour Movement appear to have adopted a directly positive attitude towards this type of levy. The economic advisors say that there is no tradition in Denmark for earmarking environmental levies and they also consider that such levies will be impractical in the future, because: 1) public incomes ought to be used for "purposes which have the greatest macroeconomic return", and: 2) an imbalance is certain to occur between the environmental justification (advantages) and financial requirements. The feeling exists that there must be a connection between the source of finance and the public expenditure (Danish Economic Council, 1993). This indeed must also mean that for example, the new labour market contribution is an inefficient link in the new taxation reform (cf. below).

The Economic Council of the Labour Movement exhibit similar notions by indicating that revenue and expenditure requirements can move in different directions, such that they can be instrumental in maintaining some ineffective structures (the Economic Council of the Labour Movement and Centre for Alternative Social Analyses, 1995).

As is apparent, we have already seen several Danish examples of purposeful levies. In the environmental field we have described the Danish Petroleum Industry's Environmental Fund as a successful example together with the efforts concerning NiCd batteries and the CO<sub>2</sub> tax.

A comprehensive analysis of green levies in Germany, France, Holland and Denmark within the field of waste water concludes that earmarked levies can be used with considerable environmental effect, if they are formulated correctly and linked to an institutional structure which has as its purpose environmental preservation. Against this background a debate is occurring as to whether earmarked levies are an all too undervalued means among economists, even though the levies might create unnecessary bureaucracy, if the institutions outlive their original purpose (Andersen, 1994).

Denmark also has earmarked levies beyond domain of the environment. Under the 1996 tax reform, "the labour market contribution" was introduced as a part of the endeavours to reduce income tax. The contribution amounts to 5% of gross wages rising to 8%, and is obligatory for all earned income, the employers are also gradually being considered as contributors.

Simultaneously, three funds have been established: 1) an unemployment benefit fund, 2) an "activation" fund (to retain the unemployed), and 3) a sickness benefits fund. Here, the labour market partners have influence, and the three labour market funds will be managed by the Ministry of Finance in cooperation with the Danish Agricultural Council and the Danish Training Council, with the purpose of using the revenues to cover expenses and programs within each of the three areas.

The goal with the "labour market contribution" was to render visible the expenditures within the labour market. The arrangement was consolidated with the argument that it brought "the Danish taxation system more in line with our neighbouring countries". Furthermore, the creation of a special labour market contribution was justified by the argument that it should "ensure the completely necessary cooperation and co-responsibility by the labour market partners". The intention was to produce more involvement by businesses in financing the labour market efforts. It is still too early to evaluate how these contributions and funds have in fact functioned, but they were planned to bring in approx. DKK 50 thousand million in 1996.

Another example of earmarked levies is in agriculture. Here, a system of so-called production and "per thousand system of taxation" exists. Under this system levies are collected on agricultural products within each sector: pigs, cattle, milk, horses, rabbits, fur-bearing animals, plant breeding, seeds, sheep, potatoes, poultry as well as fruit and market gardening. Revenue from the levies goes into a fund for each field, which then uses the revenue within its own sector for sales promotion, research and production experiments, consultation, training and combatting sickness. The levies are typically collected as unit levies on animals and as sales duties within fruit and vegetables. Furthermore, the counties contribute a share of their revenue from land value taxation into two special, "per thousand levy funds" for, respectively, agriculture and market gardening and which are used mainly as subsidies to the aforementioned production levy funds, but also to a certain extent for other purposes, such as environmental improvement investments in agriculture (Ministry of Finance, 1994).

The earmarked levies are thus not completely "foreign" to the Danish taxation system. Nor is the idea completely strange to the population. It is worth noting that the relatively positive attitude among the population regarding green levies indicates relative willingness to pay for environmental improvement. The Rockwool Fund's study also analyses the population's willingness to pay for improvements in the quality of air and water in Denmark. The results of the study demonstrate that the willingness to pay lies very close to the amount calculated as the hypothetical environmental costs (Jensen, 1995). It should be noted, however, that the responses were given only under the precondition of actual improvements of the state of the environment, which most often characterises this type of survey. The willingness to pay must therefore be understood as being based on the condition that the environmental contribution is used specifically to improve environmental quality.

### **3. Green Tax Reforms**

The concept of ecological tax reform has been propounded by two German scientists, Ernst Ulrich vom Weizsäcker and J. Jesinghaus. The purpose of such a reform is to increase resource productivity relative to labour market productivity. The idea is that over a period of 20-30 years, levies on energy, water, refuse and a number of central raw materials increase by 5% per annum, at the same time as taxation on the labour force is reduced, so that the tax burden remains unchanged as regards revenue. Green levies must therefore not mean an increased economic burden.



The overall goals of such a reform are as follows: 1) to produce an environmental control effect which is simultaneously: 2) socially just and which generates: 3) positive effects on the economy such as competitiveness and employment. Weizsäcker points out that it is not possible to suddenly carry out major modifications of taxation between resources and the labour market, such measures produce several harmful effects. It is more important to have a long-term goal to plan for a slow, even phasing-in period. Short term price-elasticity for energy and other resources is low and the environmental effect is therefore slow. Long-term price elasticity, however, is high, so that there is no reason to introduce them rapidly. It takes time for the entire production structure to adapt to higher energy prices. According to Weizsäcker, however, the long term effects are considerable. The goal is for environmental taxes to eventually constitute 10% of the total German tax revenues as against about 1% in most other countries. (In Denmark with the present, agreed development of the excise rates, environmental taxes will come to constitute almost 5% by the year 2000).

In Weizsäcker's opinion most objections to an ecological tax reform have a degree of validity, but if the reform measures are designed carefully, it is also possible to neutralize the negative side effects connected with: 1) distribution, 2) competitiveness, 3) workplaces and, 4) the environmental effect.

The conclusion is that a tax reform cannot stand alone, but must be supported by a number of other measures, although the measures are as yet unclear. Nor is it clear how Weizsäcker imagines that the remaining taxation system will adapt to environmental levies. He focuses very much on an increase of the energy levy and, for example, while failing to ascribe any importance to earmarked, environmental levies.

The notion of a comprehensive, ecological tax reform has often been questioned from other quarters, such as both the Danish Economic Council (1993) and the Economic Council of the Labour Movement (1995a). In the opinion of the economic advisors, environmental levies must be used primarily for an environmental policy purposes. The Economic Council of the Labour Movement is of the opinion that the environment and resources cannot replace income and consumption as basic sources of taxation. The environment as a tax base is not very stable, so it is difficult to ensure a fair distribution of income, as well as to ensure that the taxation system will have a stabilising influence on the economic situation.

Meanwhile, it is also possible to raise a fundamental objection: Are taxes the best means for achieving a sustainable, ecological development? This is the controversial question put by the ecological economist, Herman E. Daly. Daly does not deny that environmental levies can be used to solve special and limited environmental problems. However, the belief that taxation, which is a modification of the relative prices between different goods, is an effective means for solving an environmental problem based on the assumption that one can, through a substitution process, modify production and consumption behaviour from one product to another. Changes in the price system are well-suited for influencing the relative scarcity between goods, but in Daly's opinion, such changes are inappropriate for influencing the absolute scarcity of resources.

The environmental strain is therefore not just due to incorrect use of certain materials and goods in comparison with other materials. It is caused by an excessive, general environmental strain due to excessive, general consumption. The environmental strain increases as a result of the increase in population and in the per capita consumption. These conditions point in the direction of a general tax, but this would mean inflation, which would perhaps strengthen the wages and income race against the clock as well as the general growth process. Instead of trying to set up a

model for a general ecological tax reform, Daly proposes a physical quota scheme. Instead of calculating prices through a general, ecological tax system, which takes account of the full environmental costs, and then allows the market to decide the appropriate quantities, he suggests that we should begin with the correct quantities and then allow the market to mark out corresponding prices for these (Daly, 1977). Daly's argumentation for a physical quota scheme instead of a general ecological tax reform also reflects the fact that the externalities today are global and not marginal; hence quantitative boundaries for the economy must be set up by the political system.

The idea of a green taxation reform, which taxes energy and environmental resources while reducing taxes on wages in order to benefit employment and the environment, was introduced on a European level with the Commission's 1994 White Paper, regarding growth and employment strategy towards the 21st century. This strategy comprises tax reorganisation between energy and work as a progressive element in a "new development model for the Community". It is proposed that an energy/CO<sub>2</sub> tax of 1% of GDP would be introduced in return for a corresponding reduction of social security contributions in Europe (European Commission, 1994).

On Danish soil, the closest concrete results reflecting Weizsäcker's ideas originated from a discussion group in the Socialist People's Party which, in the spring of 1996, tabled a comprehensive proposal for an ecological tax reform (Socialist People's Party, 1996). This very ambitious proposal suggests moving DKK 50 thousand million from income tax to taxation of the environment and resources over a period of 10 years. At that point, the environment will be sustaining 20% of the tax burden and the labour force 47%. The revenue sources are energy and transport, waste and waste water, where the taxation on energy is by far the largest share of the environment taxes and levies (63%). Within the field of energy, it is calculated that within this 10 year period it will be possible to obtain a 20% reduction of total energy consumption and therefore operate with rising energy levies during this period with regard to revenue-neutrality. The proposers of this reform are aware of its distributional and competitiveness problems, and the tax reform proposal are therefore combined with proposals for modifications in the tax free basic allowance as well as rules regarding retransfers.

The official objective of the taxation system in Denmark is to create growth and workplaces, to ensure and preferably improve the international competitiveness and to adapt the tax system to the EU system, so that distortions will not take place. In a more concrete manner, there have been recent attempts to increase the flexibility of the labour market, lower the pressure of taxation and reduce marginal taxation. (cf 1992 mandate for the Personal Income Tax Committee in 1992). In addition, a new objective has emerged regarding the creation of a more sustainable growth, where increased environmental levies are used in order to reduce taxation on income.

Every taxation system reflects the society's structure of values and interests, and modifications of the taxation system therefore reflect desires for modifications in this structure of values and interests. Up to now, the environment has not been of great significance in relation to taxation conditions, but since the 1993 tax reform its importance has increased. Environmental tax revenues are rising together with the introduction of a gross income tax ("labour market contribution"), while the tax rate on net-income (marginal tax) is decreasing. During most of the 1970-1993 period, the green levies comprised between 3-4% of GDP. During the period 1994-2000 it is anticipated that the proportion of green levies will rise to approx. 4.7%, including the registration and motor vehicle tax (Finance Report, 1995).

Another way of assessing the relative significance of green levies is to view them in comparison

with other taxes and levies. In 1997, it is anticipated that Danish central government revenue will amount to a total of DKK 365.7 thousand million - of which personal taxes will amount to DKK 78.8 thousand million (21.5%), value added tax DKK 103.8 thousand million (28.3%), labour market contributions DKK 59.3 thousand million (15.2%), green levies DKK 50.9 thousand million (13.9%) and finally, remaining taxes/levies DKK 65.6 thousand million (17.9%). The high proportion of green levies among total tax revenues shows that green levies have achieved significant role, partly because the registration and motor vehicle tax is included here among the green levies, together with environmental and energy and resource levies (Ministry of Finance, 1996).

This situation, of course, is determined by what levies are included in the concept of environmental levies. Danmarks Statistik's narrow definition, which includes CO<sub>2</sub>, SO<sub>2</sub>, extraction of raw materials, waste, CFC, pesticides, disposable cutlery, glasses, porcelain, etc., packing, piped water, NiCd batteries and chlorine solutions (Danmarks Statistik, 1996a), are designated by the Ministry of Finance as "remaining environmental levies". This development can be seen in several publications during recent years, is now becoming generally accepted in the media (Politiken, 29th September 1996).

The idea of the tax reform to replace tax on income with green levies will thus become clear in the present Danish taxation system. This is also emphasised in the Finance Report of 1995. When the earmarked incomes and the revenues from environmental levies are calculated together, the public sector's environmental incomes and costs yield an excess which is "self-financing", while revenue from energy and resource levies generated a surplus of almost DKK 20 thousand million in 1996. (Danmarks Statistik, 1996a).

The dominance of fiscal, environmental levies within the environmental field is struggling against the recommendation of the economic advisors to use levies for environmental purposes. This constitutes a rejection of the whole idea of the tax reform. If we should exclusively use traditional, behaviourally regulatory environmental levies, we are entering into an uncertain exercise in balancing the lost revenue from environmental levies during the course of time with the gains from environmental and other employment revenue (tax on income, etc.)

The levies now function as a green, fiscal tax, which serves only an indirect employment target. It is indirect because the tax reorganisation is quite generally assumed to create more workplaces and, bearing this in mind, it operates beneficially for the economy.

The present Danish tax system has thus consolidated the finance side of a green tax reform, but it is difficult to make general ideas result in concrete measures and to manage a contribution which would benefit both the environment and employment. Hence there is need, not only for a green tax reform, but for a green levy reform, which to a far higher degree unites the environmentally related taxes and levies with the implementation of the environmental contribution.

#### **4. A New, Green Reform: the Environmental Contribution**

The objective of a green tax reform is to promote employment and to improve the state of the environment in a sustainable direction. The environmental debt and indebtedness provide an indication of the contribution requirement and a purposeful green levy reform.

Another way of calculating the environmental debt has been made in a new study where the point

of origin is the description of a number of public investments within the "green area", which can create a considerable number of new jobs. (The Economic Council of the Labour Movement and Centre for Alternative Social Analysis, 1995) This study attempts a quantitative measurement of what must be done to clean up after the "environmental sinners of the past", what must take place in terms of curative and preventive environmental initiatives in order to re-establish acceptable environmental quality. In practice this is an attempt to obtain a practical overview of the environmental debt and to repay it. The result is an annual need for approx. DKK 8 thousand million during next 10-15 years period. This amount would generate an annual employment effect of approx. 28,000 jobs per year. A number of possibilities for financing are proposed: Administrative adjustment of passive unemployment benefits, earmarked green property taxes, and levies on waste water and waste collection.

We will go further and derive this finance requirement in an attempt to make a general environmental contribution as a part of the tax, in the same way as has occurred in the labour market, where the 1993 tax reform created a new labour market contribution. Why not use the labour market contribution model in the environmental field?

In applying this model to the environment, we could define a special environmental contribution, create some funds and involve the relevant organisations, which could ensure that the contributions were actively used in an ecological conversion process. If such a contribution and a fund were to be established, it would reduce the sensitiveness surrounding the issue of special appropriation in the State Budget for green jobs.

The environmental debt could also be paid by creating an environmental contribution drawn from part of the revenue from the tax on investment profits or via an increase of the tax on investment returns. This tax was introduced in 1984 as a levy which was imposed on pension savings plans. The purpose of the levy was to limit the average real capital income in the pension plans to 3.5%. The background was that since the beginning of the 1970s, payments into pension contributions could be deducted from income and there was lower taxation on the yield from pension payments. This has meant that pension funds have increased quite significantly. With the tax on investment profits in 1984, the fear arose that the real rate of return on pension savings would be so big that it would distort the whole economic system.

In many ways it can be said that the whole structure of pensions has caused a distortion of the whole economic structure. In 1992, the pension funds represented an estimated value of DKK 650 thousand million, corresponding to 75% of GDP. This constituted a deferred tax corresponding to approx. 50% of the capital assets. In forming a pension system with a significant state subsidy an increase in private savings has occurred, as well as a weakness of public savings and a rise in the central government debt. When the period since 1970 is evaluated as a whole, it is evident that pension savers have benefited from the gentle taxation rules.

In 1993, the Ministry of Finance calculated that a subsidy-element of 13% of GDP had been accumulated since 1970 (Finance Report, 1993). In 1993, the central government debt was 55% of GDP. If one had taxed with an effective rate of 50% since 1970, the central government debt would have only comprised about 30% of GDP. The conclusion is that the very gentle taxation of pensions which has taken place since 1970 in Denmark is a significant reason for the large central government debt.

During the same period, an environmental debt has accumulated. It is especially those who have been given preferential treatment and contributed most to both an environmental and an economic debt. It could therefore be said that out of the present and/or future revenue from the

taxation of pensions, an environmental contribution ought to be created with some specific funds, which could ensure environmental restoration. On the labour market as well, various funds could be envisioned, each having specific purposes, e.g. a fund for agriculture, for the energy sector, for forestry, etc.

Part of the environmental debt can be collected by establishing a special "green taxation of property". Taxation of land and real estate has many advantages. The tax base is more than three times greater than the income base. According to the Economic Council of the Labour Movement (1995b) an administrative adjustment from income tax to taxation of property has a number of advantages. Land and real estate cannot be moved across national frontiers. The distortional effects of income tax would be reduced and taxation of property would act as a progressive income tax. A proportional property tax has the same distributional effects as a progressive income tax. Finally, taxation of property based upon objective criteria is easy to collect. Here, we could set up a special fund for cleaning up polluted sites and environmental reclamation projects, the fulfilment of which would certainly increase the value of the involved properties, yielding both higher selling prices and more tax revenues.

An active, environmental contribution thus consists of two elements: 1. a revenue for financing the environmental sins of the past, i.e. the environmental debt, and 2. a revenue for financing the effort against ongoing environmental damage, i.e. the environmental indebtedness. The result would be that two environmental funds could be established, each targeted towards its own area and each financed via earmarked levies, i.e. environmental contributions.

Both funds and hence, the contribution payments will ideally have a limited lifetime. The fund dealing with the sins of the past would be phased out concurrently with successful efforts for environmental improvement. The fund dealing with the future would be phased out concurrently with the successful readjustment to sustainable forms of production and consumption. The funds could be controlled by two specially appointed councils which would ensure this development in the order of priority of the efforts, so that both property owners and wage earners would have an incentive to contribute to the fulfilment of the objectives. As far as pensioners are concerned, there may be some interest in postponing these efforts and thus the contribution. The levy in this area must therefore have a special form. Concurrently with the speed at which the various efforts are implemented, a positive development must be anticipated regarding the technologies applied, such that the expenditures connected to a given task would have a tendency to drop over a number of years. This gain could be spread out over the contribution period rather than preventing it from being implemented at all.

The "fund of the past" must deal especially with soil pollution and the re-establishment of environmental balance. This must be financed by collecting an environmental contribution based on the yield from pension scheme savings in the form of a green tax on real rates of non-wage income as well as an environmental contribution based on property values in the form of a green property tax.

The "fund for the future" must occupy itself in a goal-oriented manner with the introduction of cleaner technologies and administrative adjustments in production processes in trade and industry and in the consumption pattern in private households. This must be financed by collecting an environmental contribution based on the gross income of employees in the form of a green labour market contribution. Distributional policy considerations regarding the form of the green labour market contribution are comparable with considerations regarding the existing labour market contribution.

In addition to the evaluation of employment gains with the concrete formation of the goal-oriented environmental levies linked to the "sins of the past", more detailed examinations must be carried out regarding the consequences of the distribution of contributions and gains between the generations and of the distribution of incomes among various groups of the population. Collection over the pension and the property markets will here reflect an attempt to use a polluter-generation payer-principle, as well as a principle regarding withdrawing parts of the cash welfare gains which, for example, the cleaning of polluted land is generally anticipated to accrue to affected landowners. However, the distribution effects of the welfare gains due to an improved environmental condition are a reasonably complicated calculation.

Discussion can be instrumental in beginning the work regarding a better follow-up of the Government's examination of taxes in Denmark (Ministry of Finance, 1996). As a contribution towards the new green examination of taxes we can offer the following summary:

1. The concept of the environmental debt is a critical indicator and yard stick for the difference between the need for an environmental effort in relation to the actual environmental contribution.
2. During the 1990s, Denmark has introduced a green tax reform. More green money is being collected than the green money which is being distributed, and the tax on earned income has been lowered. The tax reform is not producing the desired environmental and employment effects. The green revenues must be used for promotion of the environment and employment. Otherwise, the present taxation policy must be revised.
3. A reform of environmental levies can ensure a new environmental contribution to renew environmental improvement efforts. The environmental contribution will consist of earmarked, environmental levies, to be earmarked both during collection and during their use.
4. Two environmental funds should be established. One would deal with the "sins of the past", and the other with future-oriented, ecological readjustment in various sectors. Two environmental councils composed of relevant interest groups would manage the funds and give priority to specific environmental improvement measures.
5. Assessment of the environmental debt is a significant factor in determining an environmental contribution. This appears via an increase in the taxes on real rate of return on investment, on land and property and in labour market contribution. The increase of the taxes on investment income and real estate can actually be used in order to finance the environmental contribution for implementing the cleaning up of polluted sites. The increase in the labour market contribution can be used to finance the environmental contribution for reducing the greenhouse effect and for protection of ground water.

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