Policy Implementation (Regulation & Control)

Climate Protection as a Sphere of Action towards a Sustainable Economy[1]

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Abstract

Although there is overall consensus on the environmental problems facing us in the 21st Century, there are still great differences of opinion on finding the right strategic solutions. Many authors embrace naïve optimism in progress and see large-scale technology as the solution to all problems; others hope for a change in people's awareness leading to self-sufficiency. This paper challenges both of these positions and presents instead, based on the example of energy, the building blocks of a sustainable economy model.

Keywords: Sustainable development, new environmental economics, ecological economics, environmental politics …

The starting point – global environmental problems

The consequences of the dramatic over-exploitation of natural resources and their functions are well known to a specialist audience and I do not need to repeat them here. I will restrict myself to the following keywords:

- *Climate change* and *the hole in the ozone layer*,
- Over-exploitation of *resources*,
- *Chemical* and *noise pollution* of the *biosphere*,
- Loss of *biological* und landscape *diversity.*

These developments could lead to a further impoverishment of large sectors of the population in the 3rd and 4th worlds, to the start of a new mass migration and create grave threats to democratic development.

[1] The lecture is based on the following publications by Rogall H. (2004): Ökonomie der Nachhaltigkeit, Handlungsfelder für Politik und Wirtschaft, Wiesbaden and Rogall H. (2002) Neue Umweltökonomie – Ökologische Ökonomie, Opladen.

The German Institute for Economic Research estimates that in the next fifty years, alone the worldwide costs of global warming, by only 1 degree Celsius, will reach 214 trillion US dollars; the costs for Germany could be to the tune of 137 billion US dollars. The global temperature will however probably rise by considerably more than 1 degree Celsius in this time scale.

In spite of these threats, the views on the correct strategy for maintaining a lasting improvement in sustainable development are poles apart. Public discussion is characterised by the paradox that while global environmental problems are dramatically increasing, public demands for further measures have simultaneously decreased and the resistance of the anti-environmental protection lobby has become even greater.

Alternative development models

Three alternative development models are presented here:

(1) Maximum economic growth through new large-scale technology

Many economists and politicians hope that all global problems can be solved by the maximum possible economic growth. Even if this were possible, such a development could only take place in a context of increasing over-exploitation of natural resources and the introduction of new large-scale technology. Examples of this are fusion technology, genetic manipulation and discovery of new raw material deposits.

The belief in this solution is still the front-runner in economic circles, but it is so naïve that I will not consider it further in this presentation. Many natural resources such as water, soil, air, the ozone layer and stable climatic conditions are basic essentials of life. Technology will never provide a substitute for them. New technologies also bring with them new dangers, some of which we are impossible to determine at present.

(2) Changing the awareness of those involved

A very much smaller group of committed people are confident of a change of awareness in the way people think which will lead to a new self-sufficiency.

Those representing this point of view overlook the fact that the aim of sustainable development cannot be achieved by a single strategic initiative. A workable model for maximising economic growth with only half of today's global resource exploitation, while at the same time the world's population continues to expand, can only be designed by applying a mix of different solutions.

(3) A sustainable economy – the search for a workable approach

At present there is no patent formula for a sustainable economic system. What is currently taking place is a search for a means of satisfying human needs by democratic means without compromising natural integrity - the limits of environmental tolerance. The aim of my presentation is to identify certain key elements of such an economy.

The facts about environmental economy

Nowadays we can accept the following characteristics as being established aspects of an environmental economy:

(1) *Consumer behaviour* (and with it the personal environmental balance sheet) *is determined in particular by*:
- Income and product price
- Lifestyle, influenced by social-cultural factors such as environmental awareness.

(2) *Products damaging to the environment send false price signals*: i.e. the real environmental costs are excluded from today's account but will have to be paid for by future generations. Only in this way can the costs of conventionally heating or cooling a building be at times cheaper than using solar energy.

Environmental economists are therefore not in the least surprised that although 60% of the German population believe that "the politicians don't do enough for the environment" and 58% are convinced that "if we go on the way we are going at present, we're well on the way to an environmental catastrophe" (BMU, UBA 2004), household consumption patterns do not change. Although 85% demand the promotion of renewable energy (BWE 2004/08) only *one to two percent* (!) of German households use power from companies providing energy from renewable sources (DGS 2003/05, 43).

The conclusion is that the majority of Germans want universally applicable environmental protection measures; but the same majority is not prepared to make significant individual sacrifices in order to achieve a lasting improvement in environmental quality (e.g. only 10% are prepared to pay higher prices for environmentally friendly products: BMU, UBA 2004, 84).

This statement is also true of companies who have introduced exemplary individual improvements in their production methods; but who on the other hand, as a result of the wrong structural conditions, seldom develop and produce really sustainable products. For example, no automobile firm produces 1 or 2 litre vehicles, or calls for a general rethink on personal mobility. This is one of the reasons why, at an international automobile show, a "prehistoric" vehicle with 500 horse power is still more of a prestige object than a 1 litre lightweight vehicle.

(3) *Making an individual sacrifice, on say environmental grounds, is irrational for the individual* because there are no visible benefits for nature. For this reason, although the expanding hole in the ozone layer and the finite limitations of fossil fuel reserves are widely accepted, we still drive fuel thirsty motor cars. Economists call this behaviour the prisoner's dilemma.

The conclusions we draw from this are sobering but, if we don't take account of them, we will delude ourselves about the chances for, and obstacles to, sustainable development:

- An individual's environmental awareness (his or her personal environmental account balance) has only a secondary influence on his or her environmental behaviour.
- The availability of more environmental information is important; but on its own it cannot bring about any significant change.
- Without basic structural changes (e.g. prices and standards) there will be NO sustainable development. On the contrary, we will all continue to systematically destroy the basic natural necessities of life.

The aims of sustainable development

The function of a sustainable economy is to pursue the economic aims of sustainable development. This is defined as follows:

> "Sustainable development strives to achieve justice between nations and generations as well as high ecological, economic and social-cultural standards within the limits of the environmental sphere (the borders of natural tolerance)"

In order to put this definition into effect, a step by step process of sustainability management rules, quality and operative aims and measurement indicators must be evolved. The following three-pronged sustainability action plan forms an adequate basis for the quality *aims*:

(1) Ecological aims

- Protection of the Earth's atmosphere
- A healthy living environment
- Species and landscape diversity
- Minimisation of use of non-renewable resources to the rate of regeneration.

(2) Economic aims

- Full employment and quality of work
- Reasonable income through economic development
- Price stability
- A balance between imports and exports and development cooperation
- A balanced national budget and adequate provision of communal goods.

(3) Social-cultural aims

- Social security
- Participatory democracy and rule of law
- Internal and external security (peace)
- Social integration and equal opportunity
- Quality of life and health

The strategic paths to a sustainable economy

A single strategic initiative is insufficient to achieve a sustainable economy. Three separate strategic paths, of equal importance, are required:

(1) A strategy of efficiency

Existing products must be further developed so that, wherever possible, their resource productivity is increased from a factor of four to a factor of ten. Examples are the one litre automobile or the two litre house.

(2) A strategy of substitution or consistence

New products and facilities must be developed which provide the same services but meet the sustainability management rules. A good example is renewable energy, without which sustainable development cannot be achieved.

(3) A strategy of sufficiency

New lifestyles and structural changes in the industrial states will offer the individual a higher quality of life while, at the same time, making a flattening in the growth rate of consumer goods possible.

These strategies are indivisible because none of them can achieve the operating goals on their own. A stand-alone efficiency strategy would only meet short term aims, because economic growth in threshold and industrial states would balance out any gains in efficiency and a pure strategy of sufficiency would have no chance of winning acceptance.
The simultaneous implementation of all three strategy paths is the only way to ensure the success of **the formula for sustainable economic development**:

The increase in resource productivity must be consistently greater than the increase in the gross national product (GNP).

Here an automatic mechanism is recommended, which ensures that when the formula for environmental emissions is not adhered to, the prices of energy and raw materials are increased annually by 5% until the formula is met and the excessive use of resources in previous years is balanced out (ecological tax reform).

Nowadays we know that an overhaul of environmental technology alone is insufficient to counter the global threats described. We must undertake an ecological reconstruction of our economy instead. The following selected fields of action show how we might achieve this.

Economic policy

I described the economic goals of the three-pronged sustainability action plan earlier. How these are pursued by the three most important economic schools of thought can be shown in the following models:

(1) Neo-liberal supply economy

This economic-political initiative can be described as an attempt to achieve steady economic growth through sinking of production costs and an increase in incentives. This is achieved by reducing public spending and personnel costs, introduction of a performance rewarding tax system, sinking of social welfare payments and deregulation.

(2) Keynesian control of demand

With this economic-political instrument the state attempts to achieve steady economic growth through an anti-cyclic control of demand. This is accomplished by credit financed public demand programmes, a sinking of interest rates and taxes, public employment programmes and investment benefits.

Neither of these two schools of thought has as yet been able to solve global problems satisfactorily. The *neo-liberal economy of supply* risks the further impoverishment of many more people, loss of national potential for control and includes no solutions for the ecological crisis. The *Keynesian demand economy* has proved its worth in several economic crisis situations but risks excessive public debt and also offers no help towards solving the ecological threats.

(3) *The sustainable economy*

There is still no perfected economic-political concept for a sustainable economy. Nevertheless, the following strategies are offered as a basis for consideration by the more developed industrial states

+ Ecological modernisation of the national economy through, amongst other things, ecological accountability of the finance system and the setting of higher environmental standards
+ Sinking of interest rates to finance ecological modernisation
+ Redistribution of employment by introduction of shorter working hours (e.g. 20-32 hour part-time work)
+ Reduction of subsidies in order to finance communal labour (Scandinavian model) and broadening of the education system
+ Introduction of minimum global standards for social-ecological aspects and taxes (incl. Tobin Tax).

Energy politics

A sustainable energy policy seeks to satisfy mankind's requirements for energy services at reasonable prices without exceeding naturally imposed limits. In the long term nuclear, fusion and fossil fuels will be phased out and the new renewable energy sources will guarantee a secure provision of power. The aims of an energy policy for the developed industrial states will then be (using Germany as an example):

Achievement of a reduction in greenhouse gases by 40% by 2020 and 80% by the year 2050. The primary energy requirement should also be reduced by 50% by 2050 and half of this – 25% of today's consumption – be met from renewable energy production sources. These aims can be met by consistently implementing the following strategies:

(1) *Increase in energy productivity* (strategy of efficiency)

+ Power supply: Whereas traditional power stations, depending on their age and technology, have an efficiency rate of only 20 – 40%, modern gas and steam turbine power plants or de-centralised block-type thermal power stations can, by utilisation of waste heat, achieve an efficiency of up to 95%.
+ Heating of buildings: passive energy houses, insulation renovation
+ Equipment sector: energy efficiency class A++
+ Material: new materials, secondary materials

(*2*) *Development of renewable energy* (RE) (strategy of substitution)

+ Sun: thermal- and photovoltaic-plants, thermal solar plants
+ Biomass: solid residues, bio oils, gas
+ Water and wind: electric power
+ Geothermal: electric power and heating

(3) *Changes in lifestyles and structures*

Gradual reduction of the material element of economic development by, for example, reduction in freight transport services and in the growth rates of material goods.

An *evaluation* of these strategies gives us a positive result:

- The strategy of efficiency can significantly reduce the use of resources in industrialised countries and, according to different scientific studies, between 190,000 and 430,000 jobs could be created in Germany alone.
- Renewable energy sources enjoy a high level of acceptance. In the long term they can meet the total energy requirement and also create between 500,000 and 900,000 jobs in Germany.
- The strategy of sufficiency can make an important contribution if, particularly in industrialised countries, it ensures an increasing quality of life despite a reduction in the material element of economic growth.

Mobility and sparing use of resources

The factors mobility and sparing use of resources show the great potential that a sustainable economy has for the environment and the economy:

- Resource efficiency can be increased enormously by new types of building, lightweight cars, newly developed products and new forms of water supply.
- In the long term almost all non-regenerative resources can be replaced step by step with renewable or secondary materials. Examples are alternative transport systems, in particular public transport systems, biogene fuels and other newly developed products.

Instruments of a sustainable economy

As discussed, market forces cannot on their own enable us to keep within the bounds of environmental tolerance. A society fit for the future cannot therefore be a pure market economy. Instead it must be a social-ecological market, or mixed economy, in which the democratically elected decision-makers introduce legal instruments which function as ecological guardrails. These are absolutely essential for sustainable development and must ensure that the strategic paths are followed so that future generations also enjoy conditions fit for human beings. We can divide these instruments into three categories:

(1) Direct (hard) steering instruments

These are the fixed regulatory instruments setting legal limits, quality standards and bans on the use of certain materials. They lay down for example the requirements for vehicles, installation regulations for solar plants and bans on the use of heavy metals.

(2) (Soft) instruments with an indirect effect

This we understand as general encouragement, advice or information provided by the government, e.g. environmental information, additional training in firms, economic self-regulation, and subsidies (development subsidies, building insulation programmes).

(3) New economic instruments

These are instruments capable of changing the conditions of the economic framework. Examples include making the finance system ecologically accountable (ecological tax reform) and introduction of permits for use of natural resources (e.g. CO2 emission trading permits).

An *evaluation* of these instruments gives us the following results:

- The *direct steering instruments* are effective but tend to be reactive. This is a disadvantage which can be avoided by applying a step by step concept with foresight.
- The *indirect instruments* have little effect but can be used as supportive measures in order to gain a greater overall acceptance. In this connection the integration of environmental education in all forms of vocational training is of particular importance.
- The *new economic instruments* can evolve their own dynamism; but at present they are not consistently applied in any country. If this does not change steering instruments with a direct effect will have to be vigorously re-introduced.

Whether the new economic or the direct steering instruments are introduced or reintroduced with the necessary consistency is still uncertain, despite the considerable threat to the basic necessities of life. The power of short-sighted lobbyists and of the media often dominates the discussion. As a result those in power resort to symbolic rather than solution-seeking politics. The representatives of a stronger, sustainable, economy can counter this by forming new alliances and networks between politicians and the rest of society and by using windows of opportunity as they occur. If the required instruments are not consistently introduced in the future, politicians and scientists from the sustainability corner will have to be satisfied with a mix of instruments and measures. This demands a patchwork strategy which needs the application of every available instrument on some scale.

Summary of the results

(1) There is no alternative to sustainable development

The policy of "carry on as before" is not a viable alternative option to sustainable development. The way things have been developing to date has *no future*!

(2) Aims can be met

The aims of a sustainable development can, for the greater part, be met *by the year 2050* if the three strategy paths efficiency, substitution und sufficiency are consistently and exhaustively pursued.

(3) There can be no sustainable development without a change in the basic framework of the economy

A sustainable economy will not develop on its own, for example as a result of market forces. It will develop only if *the basic economic framework* for consumers and producers is changed through the introduction of political-legal instruments. These must be anchored in both regional and global strategies.

(4) Ecological modernisation of the national economy is investment in the future

An ecological modernisation of the national economy must be regarded as an *investment*, financed by the sinking of environmental costs and exploitation of resources (e.g. 750 trillion € in Germany).

*(5) A sustainable economy brings with it a fivefold dividend***:** it

(1) reduces *environmental pollution*, by a decreased use of resources

(2) creates *jobs* through the ecological reconstruction of the national economy

(3) secures the *social security system* by the expansion of the finance base (ecological tax reform)

(4) reduces *economic dependence* and the costs of resource imports thereby

(5) contributes directly to international *peace and security*.

Conclusion: sustainable development is possible if a sustainable economic policy can be introduced.

This conclusion should give hope to all those on board the Titanic who don't join the queue for the champagne, but are ready to man the lifeboats.

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