

SUSTAINABLE DEVELOPMENT AND GOODS TRAFFIC

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SUMMARY

The European community becomes more and more transport intensive. Especially the long distance road transport of goods has grown for a long time significantly faster than industrial production. This is due to the regime of competition and relative prices. It compels to exhaust all economic chances lying in the division of labour. This is the reason why market economies have a superior efficiency and show a dynamic development which cannot be sustainable as it is. Transport policy is challenged to set conditions in a way that market dynamism works in favour of sustainable development. Today the internalisation of the overall social and ecological cost of the transport sector is therefore seen as one possibility. But the outcoming prices do not easily guarantee a transport of goods compatible with sustainability. Prices covering all costs are not identical with prices in a market economy. These are the outcome of the interaction between supply and demand. But what is the supply of environment available to the transport sector? What are the economic consequences of supply volume of environment which is compatible with sustainable development?

1. THREEHUNDRED YEARS OF LAISSER-FAIRE

Around 1700 the Dutch merchant and cosmopolite Bernard de Mandeville formulated basic thoughts for a free economy. In his famous fable of the bees he outlined his thesis - which at the time was revolutionary and provoked the old order - claiming that the pursuance of selfish interests is for the common good of all. This laid the foundation, already some 80 years before Adam Smith, for the liberation of the citizenry from the guardianship of the nobility and the Church. The road to a market economy, to capitalism and to an unthought as prosperity was prepared.

Today, 300 years later, we are faced with the unavoidable question how long this kind of economy will last. The answer to it has an important significance especially today, because after 70 years of manifold endeavours the socialist experiment has turned out to have been a historic blunder. Virtually all over the world the hopes of people are once again placed in the auspicious operation of the 'invisible hand'.

This should be a good opportunity to remember that the sustainability of the capitalist system has been questioned several times. Apart from Karl Marx, certain epigones of John Maynard Keynes, for instance, have also predicted the emergence

of crises and stagnation in capitalism. Joseph Schumpeter, too, developed a point of view on the collapse of this economic system. In his view the capitalist development will come to an end, because the dynamic entrepreneurs will somewhere lose their spark and will be satisfied with what they achieved¹.

In addition to the economically influenced view of the end of time of Marxists and Keynesians and Schumpeter's psychological-sociological view, now also doubts of an ecological nature about the sustainability of the capitalist development system are voiced. Is it possible to achieve compatibility between a market economy and a sustainable ecology?

So far we have been more or less successful in controlling the worldwide instability of the market system by taking measures in the field of economic politics. Moreover we have largely managed to meet the monopolistic tendencies of the markets with success by conducting policies favouring competition and in particular we have accomplished social corrections in the market mechanism. There is no reason to believe that the coordinating instrument, the market, should not be able to cope with additional ecological framework conditions.

2 PRIVATE WEALTH AND ECOLOGICAL POVERTY

It has long been known in economics and most people who are interested in environment politics are by now familiar with the fact that in the markets only those goods are exchanged which allow the transfer of individual rights of ownership. Only for such goods scarcity prices can develop in the market. So the 'invisible hand' does not reach into the domain of free and public goods. The provision, the production or the stock-piling of such goods must either be ensured directly by the state, or the state must impose certain conditions on the market process. In many other areas of politics this has been an accepted fact for a long time.

There is, however, less awareness of the power and dynamism activated by market systems to rigorously launch free goods and to generally take advantage of cost disparities. This matches the logic of competition. All actors are subjected to the competitive regime without mercy. They are not free to somehow take care of the environment in accordance with their own judgment. All decisions are to be subordinated to the profit motive or simply to the objective of economic survival. And as it is, profits are only made on private goods and services rendered.

The process of economic development therefore was aimed virtually exclusively at the production of private goods as well as at the creation of needs for new private goods. With this objective in view our present technology came into existence. Our training systems and the contents of our training programmes are orientated to this objective. Likewise it guides our scientific interest in knowledge in many ways. It hardly needs to be emphasized that obviously our transport and communication systems, too, serve this kind of economic development.

¹ Joseph A. Schumpeter, *Kapitalismus, Sozialismus und Demokratie* (1942), Munich 1980.

The entire economic machinery, including its institutes, the accumulated knowledge as well as the experience of billions of people are devoted to private goods. Seen from this premise, it really is trivial that this development, that is so very one-sided in its orientation, can never be sustainable.

A competitive economy which is ecologically disordered, even forces the disruption of its natural basis for existence.

What I mean is that it is immediately clear that one cannot build in a sort of catalyst in this refined and complex aggregate of the economy in order to make it sustainable. Much rather should a thorough overhaul of this machinery be undertaken. To achieve this the economic interests of all actors in this system should be directed at ecological objectives. A million or more long term research activities towards sustainability should be given a start. And if we are only a little as energetic, rigorous and imaginative as we are in the production of private goods, then there is no need for us to worry about the future.

3 DISTRIBUTION OF WORK, TRANSPORT AND PROSPERITY

It is obvious that on the way to sustainability we shall have to abandon many value judgements that we have been taking for granted. This is not easy, but it is not a tragedy either. All the same many of our preferences are nothing but the offspring of the total economy-technical development process. For example, our conviction that we cannot live without cars any more has been cultivated in the past decades. We can exchange this conviction for one which is in harmony with the demand for an economy of a permanent nature. The same goes for the uninterrupted fast increase in goods traffic, especially road traffic, and the accompanying notions about distribution of work and prosperity.

The significance of goods transport for the distribution of work which furthers prosperity is not challenged. It was already emphasized by Adam Smith that, for instance the early prosperity in Egypt initially had its origin in the extent and ease of its inland shipping, and he added, in an almost identical dense network of waterways as we see in Holland with its Rhine and Meuse today².

An other economist, Alfred Marshall, demonstrated in his 'Principles of Economics', published in 1890, the importance of cheaper transport possibilities. It was his opinion that probably over three quarters of the total profit, which England drew from the development of draperies in the 19th century, was indirectly owed to the low costs of transport of people and goods, electricity and information³.

Finally I would like to mention Friedrich List, who around 1840 looked at the railways and said: 'The cheap, fast, safe and regular transport of people and goods is one of the most powerful

² In the following Adam Smith's 'Prosperity of Nations', edited by Rechtenwald, Munich 1978, is quoted. cf. page 21

³ cf. the 8th edition in English (paperback 1982), page 561

driving forces behind national prosperity and civilisation.' Between the above quotes, which were selected at random, and the Cecchini report on the cost of failure to realize the internal market we find not only parallels, but as an obvious common philosophy: The better transport facilities there are, the larger the markets are. The larger the markets are, the more pronounced the distribution of work is and accordingly prosperity.

Against this background it is hardly surprising that governments have paid special attention to transport. In particular providing the necessary infrastructure was considered a government task - something Adam Smith had already claimed anyway⁴.

4 THE DYNAMISM OF THE DEMAND FOR TRANSPORT

In the course of economic development certain goods and services always lost some of their absolute and relative significance and were replaced by others. There was the phenomenon of satiation in specific markets. In the transport services sector, however, there is no sign of satiation whatsoever. Technical changes not only improved the efficiency of transport services many times, but also caused an explosive expansion in the demand for transport services. Therefore the modern means of transport have not only optimized as existing interregional trade interactions from a traffic-technical and economic point of view they have permanently expanded it as well.

Just like a pebble thrown into a pond draws ever larger circles, so the traffic techniques have expanded the economic areas.

The world economy has become a global agglomeration. Through the interaction of economic interests, the imagination of scientists, competitive pressure, government grants and the successful externalisation of costs practically all markets in the world have been amalgamated to one big market. Nowadays the world economy is organized as a fair as far as the interdependence of transport and communication are concerned. It is as if everything happens at the same place and at the same time. Economists revealingly call this a point-market.

Apparently the decisive factor here is not the ability, which in principle already existed in earlier days, to bridge great distances, but the unparalleled higher speed that is realized nowadays. Space implodes, whereas speed explodes. With equal transport times distances continually increase. Today one can, for instance, travel from any point to any other point in Europe and return the same day. Distances of 50 km covered in the old days correspond with distances of 1000 km and more today, when measured in time.

Together with the radius of transport, however, traffic intensity grows, too. The traffic services rendered are on the increase. The extension of the traffic infrastructure and the increase in transport speeds do not yield a reduction of congestion, but almost in a single act a growth in demand. But that is not all.

With each new development in traffic additional customers are drawn into the economic interaction of relations. The markets

⁴ cf. Adam Smith, page 612 ff.

become larger, the number of transport services and the volumes transported grow. Each improvement in the transport facilities invites additional demand. The Moloch traffic seems to be insatiable.

As long as there are any discrepancies in costs between the various regions of the world, that exceed the cost of transport, this process will continue. This is the unavoidable consequence of competition and the dictates of the market. A single entrepreneur cannot get away from these dictates. He is faced with the pressure of competition and the daily bottlenecks in our roads and airports. He therefore demands more and better roads as well as the extension of air freight capacity. And government traffic policies, which do not recognize the total interdependence between a greater supply of traffic infrastructure and the consequential greater demand for traffic services, will time and again allow themselves to be at the service of such an obvious demand. We should understand that this will end in a development without perspective and certainly without sustainability.

Traffic congestions cannot be evaded by roadbuilding. A solution which is in harmony with a market economy and leads to sustainability is one of increased prices for transport. Only this will in an economically viable way have the effect of only very great discrepancies in costs in the world markets bringing about profitable transport processes. Only in this manner the individual economic demand for transport services will be reduced or at least maintained at a certain level.

5 THE CORRECT PRICE OF FUEL

The damaging effects on the environment of the various means of transport are, as we know, quite varied. Therefore it will certainly not be possible to create environmentally optimal transport structures with one single instrument, such as the cost of fuel. But the price of fuel or generally the cost of energy should be at the centre of all considerations. After all it is only as the transport sector that has contributed to the increased energy consumption in our national economy during the past two decades. For that reason stabilisation of the climate and the policy on reduction of CO₂-emissions inevitably have to focus their attention on this sector. Therefore I would like to deal briefly with three approaches to a CO₂-reduction policy in the following paragraph:

Most wide-spread and for most people very familiar is the technical approach. This means that the technical potential to economize on energy is assessed in all consumption areas, that is in the transport sector, in industry and in households. Depending on the state of economisation techniques as it is known in each of these sectors, conservation targets are set, technical standards are defined and government implementation programmes are imposed.

This technical approach is miles away from the means employed by a market economy to save on energy. Energy consumption is not reduced where it is particularly economic, but especially where technical solutions offer themselves and where these can also be processed administratively in a relatively easy manner. In practice this may mean that, for instance in heat insulation in

houses drastic steps are taken, and in other areas the status quo is more or less maintained. As a result we see greatly differing costs of energy saving or CO₂-reduction respectively. Besides, this process totally lacks any incentives to promote the development of techniques for the avoidance of emissions. In the long term this is the gravest weakness in the technical approach.

The much-praised way of 'Internalisation of external costs' also shows considerable flaws in spite of its theoretical fascination. The determination alone of external costs is difficult, over longer periods highly arbitrary and, for instance in relation to the CO₂-problem, just absurd⁵. Apart from that this approach can not claim the quality seal of the steering function of a market economy for the simple reason that the cost concept on which it is based is inadequate. The simple idea that cost-oriented prices (including external costs) would be correct prices and that moreover correct prices would lead to correct structures, namely in this context to permanency, is a misguided notion.

What is forgotten is that cost-oriented prices may play an important part in an economy with a central management and generally in state controlled areas, but in a market economy they are just calculation aids. Enterprises aiming at nothing but cost-reflecting prices will not be able to survive in the competitive arena. Such prices, therefore, have little to do with sustainability, neither in the economy nor in the ecology. Market prices are not formed by cost calculations, but by supply and demand.

In relation to our subject it means that we should seriously consider what, for instance, would be the maximum allowable *supply* of CO₂-emissions. And this brings us to the third, and in my opinion the only justifiable, approach. Its object is to understand and enforce the stabilisation of the climate and the quantity of CO₂-emissions respectively as a *limitative factor* for the economic process⁶. Ecological objectives are thus correctly introduced as quantitative objectives. Technical potential, economic assessments of external effects and prices so become instruments or are simply taken to be the result of ecological, technical and economic conditions.

Where and from which sector the limited emissions emanate is determined purely marketwise in this approach. In the market a price is formed for CO₂-emissions which is the same for all emitters and to which they have to adapt. This unit-price is correct, because each CO₂ unit contains the same damage potential. And economically it is correct, because so the best economic reaction is invoked throughout the entire spectrum of the economy. Decisions on the manifold technical-economic and behavioural adaptations are made in the market process. Perhaps

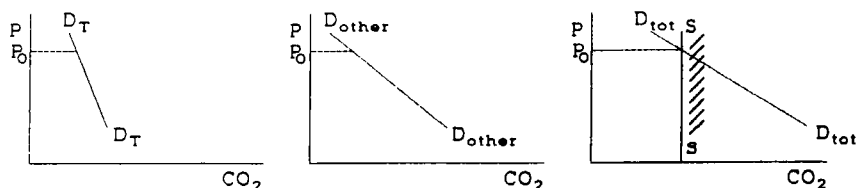
⁵ cf. e.g. the critical discussion with David Pearce, a.o. Blueprint for a Green Economy (The Pearce Report), London 1989, by John G.U. Adams, Unsustainable Economics, in International Environmental Affairs, A Journal for Research and Policy, Vol.2, Number 1, Winter 1990, pages 14-21

⁶ Such an approach is leading directly to the implementation of tradeable permits for CO₂-emissions. See my study: "Kohlendioxyd-politik mit handelbaren Emissionsrechten", Bonn 1990 (manuscript).

the transport sector may be able to 'afford' a large quantity of emissions owing to the elasticity of the demand. Perhaps the process of adaptation will, exactly in this sector, have far-reaching effects. Nobody knows. However, it is certain that an emission structure arrived at by a concerted effort will be the economic optimum.

And this will be compatible with ecological sustainability when the quantitative objective will be properly laid down by the politicians⁷.

The following graph shows hypothetical demand functions for CO₂-emissions in the traffic sector and all other sectors accumulated as well as a deduced function of the total demand, against which an inelastic 'total supply function' for CO₂ is set down. The emissions emanated by the individual result from the equilibrium price applicable to all. On the right-hand side of the supply curve is, as it were, economic no man's land.



D _T - Demand of Transport Sector	D _{other} - Demand of other Sectors
S - Supply of CO ₂ -Emission Rights	D _{tot} - Total Demand
P - Price	P ₀ - Equilibrium Price

Graph: Hypothetical distribution of CO₂-emissions among the sectors traffic on the one hand and private households and industry on the other by limitative supply.

6 THE SEARCH FOR SUSTAINABILITY

The consequences of a stringent policy of climate stabilisation on the economy as a whole or specifically on goods traffic can, of course, not be precisely measured. Even a seemingly perfect computer aided economic model can never do that. The dynamic adaptation potential of market economies can on principle not be simulated. At best we can design a few rough scenarios, indicate trends or 'patterns' (v.Hayek).

Three questions are essential in my opinion:

Firstly, on what prices for CO₂-emissions or fossil fuels respectively should we base ourselves?

Secondly, which adaptation processes can be expected?

⁷ We shall never be able to indicate permanent limits for the pollution of the atmosphere with CO₂. Exactly for that reason we must cut back emissions quickly and clearly.

Thirdly, what are the possible consequences for our prosperity and for the overall economic objectives, namely stability of the price level and employment?

When the worldwide increase in CO₂-emissions is halted and the emissions are, for instance, halved in the next twenty years, the price of fossil fuels could double and at its peak reach ten times today's price. That would be much more than OPEC aimed at, but did not achieve in the end. For, after deduction of the general increases in price levels, the prices of mineral oil today are roughly at the same level as at the end of the sixties.

The way to accomplish a sustainable development of the world economy therefore requires a strong political willingness to create a totally credible and reliable strategy for the long term. What we need is something like an ecological OPEC, a powerful '*Organisation of CO₂-Emission Avoidance (OCEA)*'. It should be allowed to operate autonomously, similarly to some of our central banks.

A search process that would thereby be set in motion towards sustainable forms of economic activities is hardly different from the process which the economy has presented under the competitive regime to step up the supply of private goods during the past 200 years. Different are only the direction of the countless adaptation processes and the moment they are started off. It is not up to the dynamic entrepreneurs themselves to set the new dates, but to the community of nations. This community acts, so to speak, as the dynamic entrepreneur for the commodity 'stable climate' and pursues sustainability of the economy instead of maximisation of the supply of private goods.

This adaptation process, too, is strictly subject to the criteria of a market economy in all its elements and stages, also in the sense that it is carried and propelled by self-interest of each individual for the good of all. So we can expect that it will get off to a flying start. And just like a change in structure up till now has produced growth, so will this new change in structure lead to a sustainable development.

How the transport sector will meet these new conditions, is - as we said before - unforeseeable. The inevitably higher cost of transport will in any case change the location criteria all over the world. As is the case in any change in structure there will be winners and losers. The worldwide expansion of many markets will shrink. This will create new regional opportunities and trade interdependence, for instance along waterways and railways, which because of lower energy consumption will yield a cost advantage for example against road transport.

When we compare the invaluable advantage that a sustainable development will bring with the price that will have to be paid for it, then this price is ridiculously negligible. It only exists in the otherwise possible increase in the supply of customary goods, in other words in the sacrifice of the traditional increase in prosperity. But that now is the exact purpose of the exercise. We want the economy to produce c.q. not to destroy the goods matching our preferences. And what purpose of economic activity could have a higher priority than the conservation of the natural living conditions on this earth?

7 ILLUSORY CONFLICTS AND CONCERN

Seen in this way the often quoted conflict or antagonism between economy and ecology manifests its utter absurdity. How could it be that the absolutely primary economic goal, namely the conservation of the natural basis of human life on earth is inconsistent with the undisputed secondary goal of a further improvement in the supply of traditional goods? We would call one single person an idiot, if he were to spend his entire income on luxury goods and at the same time were unable to raise the money for a easy and life-saving medical operation. Seen in this light the conflict between economy and ecology is nothing but the result of the reductionist and private market fixed ideas about the ends of economic activity.

Although the task before us is of a clear and simple structure and we do not strike out upon new territory with regard to the adaptation process and its intensity, or have to fear any surprises, two major obstacles must be removed: The concern about the risks for the overall economy and the opposition of the business world that is directly involved. Both will be briefly dealt with.

The dreaded risks of unemployment and inflation on the way to a sustainable development are deduced from simple relations. Here the concept of national income or national product is centrally placed. It comprises essentially private goods and services. Their availability is accepted as a measure for the efficiency of an economy. The adaptation of the economy to forms of sustainable growth means the commitment of additional capital and labour resources for this purpose. However, since purely for reasons of definition the result of this adaptation process will not, or in any case not fully, be reflected in an increase in the national product, the impression is created that the environmental policy may reduce the efficiency of the economy, as more resources are required for the same quantities of goods and services. In other words, the measured productivity of labour falls or rises less, respectively.

In addition the measured rate of inflation goes up due to the way this adaptation process is financed, namely as a rule on the prices of traditional goods.

The reduced increase in productivity and the comparatively smaller growth of the national product on the one hand, and the higher prices for traditional goods on the other seemingly lead to an inflation problem and according to the textbooks to a problem for the utilisation of capacity. Nevertheless, these consequences for the overall economy are not real, but exclusively a consequence of the handed down limitation of the concepts national income and national product. In fact only the relationship between private goods and the public commodity environment has changed. The production structure has adapted itself to the new preferences. But, since we do not recognise this sufficiently and ignore it in the systems of concept of our national accounting, we take the appearances measured there to be events in the real world. From this error stems the belief that environment protection and a sustainable development are fraught

with danger⁸.

The second obstacle on the road to a sustainable development is the opposition from trade and industry who are compelled to adaptation. To an environment-conscious politician it should be abundantly clear that he must play the part of the dynamic entrepreneur towards the economy. The dynamic entrepreneur gets his combinations and products through in the face of competition, irrespective of statements of possessions, market shares and individual places of employment. Only because he was successful in this regard economic development took place at all. In strict analogy to this it should be recognized that the transition from the present self-destructing development to a sustainable development can only succeed when the politicians act in a similarly rigorous manner. That is the message from the theory of economic development by the Austrian Joseph Schumpeter that all of us should embrace today, around 80 years after it was first published⁹.

Finally we should pay some attention to Adam Smith again; he warned against putting the interests of merchants on the same footing as the public interest. In his 'Wealth of nations' he wrote: 'The interests of merchants in all branches of trade and industry always deviate in many respects from the public interest, at times it hinders them. (...) Each proposal for a new law or a new regulation regarding trade which comes from them should always be treated with the utmost prudence. It should never be accepted without first examining it thoroughly and accurately, yes, even with some mistrust and suspicion, for it stems from a group of people whose interests never correspond exactly with the public good, and who as a rule are much more interested in misleading, or even abusing the general public. In many instances it has actually had to experience both¹⁰.

These quotes unmistakably convey the order to the environment politicians to firmly restrain the invisible hand, also if this is contrary to the interests of trade and industry. This is in harmony with a market economy and is a precondition for bringing the economic development in harmony with the ultimate goal of the economy, its sustainability.

⁸ Further expositions on this problem can be found in: H. Flassbeck/G. Maier-Rigaud, Umwelt und Wirtschaft. Zur Diskriminierung des Umweltschutzes in der Ökonomischen Analyse, Tübingen 1982, and in: G. Maier-Rigaud, Umweltpolitik in der offenen Gesellschaft, Opladen 1988.

⁹ Joseph Schumpeter, Theorie der wirtschaftlichen Entwicklung (1911), Berlin 1964.

¹⁰ Quoted from the edition published by von Recktenwald, Munich 1978, page 213 (last paragraph of chapter 11.