Different ways to integrate environmental values into car taxation policy

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1. Green car taxation – an introductory remark

While gathering empirical data for this dissertation, I gradually came to understand that integrating environmental values into car taxation notoriously implied putting a price tag on environmental values. To someone, who is educated as an environmental planner and 'brought up' to protect environmental values as something unique, this seemed an odd and very narrow-minded way of doing things. After a while I decided to investigate the matter more theoretically. I wanted to understand the reasoning behind the traditional way of integrating environmental values, in order better to understand my empirical data. Furthermore I wanted to look for alternatives, since, in my opinion, the traditional way of doing things had several drawbacks from an environmental point of view. The present chapter is the output of this endeavour and in the following I explore and compare different ways to integrate environmental values, in order to qualify the understanding of 'green car taxation'.

In particular two theoretical perspectives offer inspiration concerning the way to integrate environmental values into the economic field of car taxation. The field of Environmental Economics, from which the more traditional kind of integration has evolved, and the field of Ecological Economics, from which a kind of reaction has developed. Based on work within these fields two approaches are discussed and compared in the following showing the scope of methods available. One is termed *"Making transport pay its true costs"*; the other is termed *"Sustainable*

transport taxation". The former approach the question of integration from an economic starting point, the latter approach the question of integration from an ecological starting point.

Both the approaches aim to switch the development within the transport sector onto a 'greener' pathway. They do it from two different perspectives, though, and before I introduce the two approaches, I shortly introduce the two perspectives – Ecological Modernisation and Sustainable Development. In a final section, after the introduction of the two alternatives, I shall return to these perspectives in an attempt to compare the two alternatives. It is even a goal of this final section to draw out the best from each alternative composing a sort of synthethis. In a later chapter the merits of this rather theoretical suggestion is tested in the light of the empirical chapters taking into account the historical, political and institutional reality of car taxation in Denmark and Sweden.

2. Perspectives on environmental policy making

In the last 20 years two perspectives have come to flourish within environmental policy – the perspective of Sustainable Development and the perspective of Ecological Modernisation. To a certain extent the two perspectives share basic assumptions concerning how to approach environmental policy, but basically they have different frames of reference, they are directed towards different problems and they lead to different goals and targets (Langhelle 2000). The two approaches to green car taxation discussed in this chapter can be thought of as leaning either to the perspective of ecological modernisation or to the perspective of sustainable development. As such the discussion in this chapter shows the specific implications of adhering to either of the two perspectives within the policy-making area of car taxation.

Both the concept of sustainable development and the concept of ecological modernization are highly contested and sometimes confused with each other. Thus, there is a vast literature on the subject (see for instance Mol and Spaargaren 2000, Huber 2000; Buttel 2000; Blowers 1997; Dryzek 1997; Hajer 1995). Since the aim of this section is not to discuss the different interpretations, but to introduce an understanding, I have chosen to follow the interpretation of Langhelle (2000) as this one serves to clarify the differences between the two approaches to green car taxation in the best way.

The concepts of sustainable development and ecological modernisation in comparison

Following Langhelle (2000) the concept of sustainable development is a concept that evolves around social justice - understood as needs satisfaction - and serious ecological constraints. As such, the context of sustainable development is quite broad, placing together issues that had not been seen together in an environmental context, up to the time were the concept was initially introduced (ibid.). The perspective is global (north-south), intergenerational and cross-generational. Sustainable development is a concept that focuses in particular on the satisfaction of the essential needs of the world's poor. It is also a concept, which acknowledges ultimate ecological limits. In particular it focuses on environmental problems with global high-risk consequences, and as such it recognises a growing ecological interdependence. An interdependence, which guide the attention to the international, as well as the national arena for decision-making (ibid.).

The concept of ecological modernisation, on the other hand, is a concept with a more modest perspective, basically following from a quite different context being the environmental problems in metropolitan regions of western industrialised societies (see for instance Murphy 2001). Consequently, the perspective of ecological modernisation is primarily present generations within western countries, 'normal' environmental problems like water pollution, chemical waste and

acidification and an institutional focus at the national level (Langhelle 2000). The question of ultimate ecological limits is basically ignored (ibid.). Originally coined in Germany and Holland, the concept conveys a rather optimistic message, describing certain trends in the current development as concerns environmental policy making. Weale, one of the first commentators to describe the phenomena, describe the basic ideology behind the concept as follows:

"The ideology of ecological modernisation challenged 'the fundamental assumption of the conventional wisdom, namely that there was a zero-sum trade-off between economic prosperity and environmental concern' (Weale, 1992, p. 31). Environmental protection, in this 'new' ideology, is no longer seen as a burden upon the economy, but rather as a potential source of future growth (Weale, 1992, p. 75)."

(Weale 1992 quoted in (Langhelle 2000, p. 306))

According to Hajer ecological modernisation is *"… the discourse that recognizes the structural character of the environmental problematique but none the less assumes that existing political, economic, and social institutions can internalize the care for the environment"* (Hajer 1995, p.25). He adds that ecological modernisation basically has a modernist and technocratic approach to the environment leading to strategies, which rely heavily on science, technology, and expert-led processes of change. (ibid. p. 32 and 35).

Looking at the environmental policy implications of the two perspectives several similarities and a few, but very fundamental differences are revealed. Following Langhelle (2000) both positions believe that it is possible to reconcile concern for the environment with economic growth. They also both believe that changes at the micro-level are crucial. What is more, both visions imply (1) a move from remedial to anticipatory strategies, (2) attention directed to the causes of environmental problems, (3) technology as a major instrument, (4) a sector-encompassing approach, (5) the use of new policy instruments like eco-taxes, and finally (6) an efficiency approach – producing more with less. Due to different contexts there are also important differences (ibid.). Basically it is possible to raise issues within the perspective of sustainable development, which it is not possible to discuss within the perspective of ecological modernisation. Sustainable development ranks the environmental problems in such a way that emphasis is put on climate change, energy and bio-diversity. Ecological modernisation, on the other hand, contains no criteria by which to differ between the severity of problems. In practice, then ecological modernisation means policies without any global anchoring. Another difference is that sustainable development has concerns as regard the total consumption, which imply a larger focus on structural change. As such sustainable development is more than an efficiency approach. Finally, sustainable development acknowledge that win-win solutions may only exist at the macro-level and ultimately only at the global level. Thus, the conflictual element of zero-sum trade-offs at the sectoral level is easier conveyed adapting a sustainable development position.

In a comment to the exposition of Langhelle on might add that the merits of ecological modernisation is a bit understated here. It is obvious that sustainable development is a concept that more readily conveys the global, conflicting and structural implications of the environmental problematique. Ecological modernisation, on the other hand, is a concept that is more readily accepted in a traditional policy making situation. For one thing it leans on traditional economic values in a search for win-win situations. Secondly a focus on daily observable and understandable environmental problems more easily connect to quality of life arguments.

We will return to the two perspectives later, now we turn to the two approaches. We start with *"Making transport pay its true costs"* – the traditional way of doing things. It is an approach, which predominantly lean on the perspective of ecological modernisation as described above. Indeed, according to commentators like Michael Skou Andersen and Ilmo Massa (2000), the theoretical field of this approach – neo-classical environmental economics – acted as source of inspiration to the concept of ecological modernisation in the first place.

3. *"Making transport pay its true costs"*–throwing out the baby with the bathtub?

Arthur Pigou, one of the founding fathers of welfare economics, was the first person to consider imposing a tax on pollution in order to cope with it. As early as 1920 he published his principal work *The Economics of Welfare* in which the taxation principle was introduced and discussed for the first time. The principle subsequently got the name externality taxation. (Skou Andersen 1994; p.32ff).

Taking his work as point of departure Environmental Economics has emerged as a discipline to tackle environmental problems from an economic perspective. According to Spash (1999) the field has grown significantly since the 1950s, where an initial academic milieu was established in the US. For a long time America remained the place to go to acquire academic training within the area. Only recently a corresponding European milieu has grown up (ibid). In 1991 a European collaboration was formerly created with the establishment of a gathering association for Environmental and Resource Economists. Today, from a professional perspective, Environmental Economics presents itself as a grandly conceived, coherent economic theory on a pair with other economic sub-disciplines (Costanza *et al.* 1997, p.20; Spash 1999, p.20). As concerns the specific area of transport economics the externality discussion has emerged in relation to traditional cost-benefit analyses associated with transport investment appraisals (Button 1993, p.3). Initially, in the 1960s and 1970s, time costs and congestion problems where the main focuses (Johansson and Sterner 1998). Later accidents, noise, health effects and regional environmental effects were included. More recently global effects have been considered. As such the approach fits the local/regional and situated character of the ecological modernisation perspective, although it recently has tried to include more abstract and global problems like the CO_2-emission.

A question of market failures

Basically, Environmental Economics portrays environmental problems as consequences of market failures (Skou Andersen 1994, p.35). They are characterised as *external costs* or *externalities*, indicating that they do not affect how markets operate, when in fact they should (Costanza *et al.* 1997, p.39). Thus, external costs specify the boundary between the economic world and the *"rest of the world"* (Greene *et al.* 1997, p.5). A common textbook within the area of transport economics defines the externalities of transport as:

"… other costs associated with transport that are not directly borne by those generating them. … They may be thought of as relationships other than those between a buyer and a seller, and do not normally fall within the 'measuring rod of money'.

(Button 1993, p.93).

An essential feature of external costs are that they are not imposed on purpose, rather they are *"incidental by-product[s] of some otherwise legitimate activity"* (Mishan 1971 quoted in Greene *et al.* 1997, p. 5). Often external costs fall upon a third party, for instance society as a whole, which is not actually a part of the given market situation. Apart from pollution such phenomena as noise,

congestion and traffic accidents may be regarded as examples of transport externalities. Usually the external costs within the transport area are divided into local, regional and global costs, respectively (Button 1993, p.94; Maddison *et al.* 1996, p.14). Local costs include such factors as noise, traffic accidents, congestion, visual intrusion and local air pollution (e.g. particulate matter and carbon monoxide). Regional costs include such factors as emissions contributing to acidification (NO_x and SO_2) and eutrophication (NO_x). The impact of transport on land use also belongs to this category (T&E 1993). On a global level there is the contribution of transport to the global environmental problems such as global warming (CO_2 emission) and upper level ozone depletion (CFSs).

In a broader perspective, looking at externalities beyond the use of the existing road network, there are even costs associated with the construction of the road system and with the industries that support road transport (e.g. oil extraction and refining, steel and electricity production). Likewise, vehicle disposal gives rise to external costs. Finally, there are external costs in the longer run associated with the use of scarce oil and mineral reserves. These costs are sometimes referred to as upstream and downstream environmental costs associated with infrastructure or vehicles. (Nash *et al* 2001; Maddison *et al.* 1996; Button 1993).

Confronting the motorist with the true costs of transportation

Environmental Economics argues that a way to address the environmental problems is to include them in the market signals that guide the economic decisions of producers and consumers and thereby the overall operation of the economic system. By way of levying a tax on road transport the individual costs of road transport are supplemented by the external costs in order to reach a social optimum:

"The basic problem of road transport is that there are currently many journeys undertaken where the costs to society outweigh the benefits to the individual. It is these journeys which must be curtailed while at the same time giving other road users appropriate incentives to reduce the environmental impact of their journeys. Economists are generally of the opinion that any policy to tackle these problems must involve confronting the motorist with the true costs of his or her journey."

(Maddison *et al.* 1996, p.11)

"The true costs" of transportation refer to the level of the tax levied. In order to allocate societal resources most efficiently and thereby achieve the highest welfare possible, the ideal level of the tax should equal the marginal damage of each extra mile driven (Maddison *et al.*, p.21). Thereby, an optimal trade-off is achieved between on the one hand environmental quality and on the other hand welfare services from the road transport system. In this way economic prosperity and environmental concerns go hand in hand underlining the optimistic message of ecological modernisation[1].

In practice, it is no easy task to correct the market failures associated with road transport in an optimal way. Basically it is not easy to find trustworthy methods to calculate the monetary value of externalities (see the section below). The difficulty of the task also has to do with the fact, however, that the magnitude of the external effects varies strongly according to a range of parameters in a given situation. It depends on the type of technology involved in road transportation: Different types

[1]Since the true costs approach basically imply a focus on the efficiency of the present economic system and the fairness of payment between the road users the approach is also often referred to as *"fair and efficient pricing"* (see for instance CEC 1995 and CEC 1998).

of vehicles with different engines and fuel emit differently. The complexity of the external effects also contributes to the variation in magnitude: CO_2 emission is related to fuel consumption, while accidents are related to speed and driver behaviour. The results of the external effects on health and environment are also extremely space- and time dependent. Thus, the effects of a car driving one mile very slowly in the rush hour close to residential areas is much worse than one driving at optimal speed in the countryside. Even the weather has considerable significance for the accumulation and transformation of exhaust gases. (Sterner and Johansson 1997, p.32).

From an efficiency point of view a theoretically ideal policy instrument would be a type of road charge where each vehicle actually had to pay for the marginal damage of each extra mile driven. Such schemes, also known as road pricing, are still in the making and so other policy instruments may have to do[2]. Second best solutions involves using different instruments to account for different kinds of externalities. Fuel taxes, for instance, could be used to internalise the costs related to the greenhouse effect, since CO_2 emissions are proportional to fossil fuel use. Other examples are road tolls in order to cope with congestion in urban areas and differentiated vehicle sales taxes or annual taxes in order to cope with air pollution related to the technological characteristics of vehicles.

Calculating the monetary value of externalities

Within Environmental Economics there are different methods available in order to assess the external costs of transport. What kind of method is appropriate depends on the kind of externality in question. Inspired by Hansson (1997), T&E (1993) and Maddison *et al.* (1996) the methods can be grouped according to the kind of value they try to measure: The ones based on market values, the ones based on individual values, the ones based on expert values and the ones based on social values.

The ones based on market values are the traditional kind of monetary cost methods. They are the easiest to calculate as market prices exist. External costs measured along these lines are for instance congestion as concerns business travel and material accident costs. Not many externalities can be measured through these methods, however, so the methods based on individual values are often necessary.

The methods aiming at eliciting people's preferences are usually referred to as willingness to pay methods. Basically, there is two ways to go: Either *ask* people how much money they are willing to pay to avoid a given situation, alternatively obtain a given environmental good (stated preference approach), or *observe* this from the way they act (revealed preference approach). The fall in the prices of houses in an area with polluted air or disruptive noise is a common way to observe preferences. The strength of the revealed preference approach is that it is based on the revelation of actual behaviour rather than relying on hypothetical experiments like the stated preference approach. This approach may in turn measure a broader range of environmental values[3] (Maddison *et al.* 1996,

[2] Recently, however, the Dutch government announced that they will implement some sort of road pricing system in order to cope with congestion and environmental impacts. Introduction of the mileage levy will begin in 2004. Information obtained from www.roadpricing.nl on the 26 February 2002.

[3] Environmental Economics has provided a taxonomy of the different sources of value derived from environmental resources, which are not commoditised. This includes 3 kinds of values: The use values, which are the direct and private benefit that people obtain from an environmental amenity, e.g. scenic views. The functional values, which are values, related to ecosystem performance. And finally the non-use values such as existence value (sympathy for animals) and option value (the value of preserving environmental amenities even when it is suspected that no use can be found of them). In revealed preference methods only the first kind of values can be measured. (Maddison et al. 1996, p.33ff; Vatn 2000, p.498).

p.33ff). Externalities related to transport, which are often measured through these methods, are human values for traffic accidents, noise and congestion as concerns leisure travel.

The third and fourth method - based on expert values and social values respectively - are useful, when it proves difficult to calculate certain costs in monetary terms through either of the two preceding approaches. An example of the third method could be the 'shadow value' approach, which aims to find the so-called shadow prices of an optimal abatement strategy, based on computer modelling. The general goal is to optimise the economic system in the presence of environmental damage. (Maddison *et al.* 1996, p.46ff). The last method, *"the avoidance costs approach"*, aims to define the marginal costs of reducing emissions from transport below certain targets, based for instance on environmental knowledge concerning critical loads (T&E 1993, p.7). The avoidance costs approach takes for granted that the expenditure is worth making and typically has a touch of political judgement. This is probably the reason why some economists dislike this method (See for instance Maddison *et al*. 1996). The externalities, which are measured through these methods, are typically air pollution and climate impacts.

Externality taxation in action

In an attempt to illustrate how monetary valuation is actually carried out Nash *et al.* (2001) is an excellent example of the state of the art. Especially when it comes to estimates of the marginal costs of air pollution and global warming, based as the study is on *"the best estimates now available"* (*ibid.* p.428). The aim of the Nash *et al.* study is to evaluate the implications for transport demand and air pollution of internalising externalities in five strategic corridors in Europe[4]: What is actually the impact of pricing transport according to the principles of efficient pricing?

As is usually the case Nash *et al*. aim to find the optimal use of the existing infrastructure. The case in point is limited to the transportation situation and the externalities of the different transport modes in the 5 corridors. Neither upstream, nor downstream environmental costs associated with infrastructure or vehicles are included. The environmental costs related to the use of the infrastructure, which are estimated in the study, include an array of air pollutants and global warming. Both air pollution and global warming cost estimates are determined on the basis of a scientific modelling approach. Air pollution costs, for instance, are based on a so-called *"impact pathway approach"* developed in the ExternE Transport study (Friedrich *et al*., 1998). About this approach Nash *et al.* states:

"[It] represents the output of what is by far the largest effort ever devoted to the issue in a single European research project. The impact pathway approach [is] based upon a bottum-up analysis of emissions, dispersion modelling, dose-response functions and monetary valuation of impacts relating to human health, ecosystems, crop losses and damage to construction materials for a range of all the major pollutants, including nitrogen oxides, sulphur dioxide, carbon monoxide, particulates and ozone."

(Nash *et al*. 2001, p.420)

Monetary valuations of noise, accidents and congestion are also carried out in the study using different approaches including willingness to pay methods. For each transport mode and corridor high and low costs concerning the different externalities is calculated for the year 2010. On the basis

[4]The five corridors are (1) Cross-channel, (2) Transalpine, (3) Finland -from Helsinki to the Russian border, (4) Oslo-Gothenburg, and (5) Lisbon (Nash *et al* 2001, p.418).

of these cost valuations the existing prices transformed to 2010 is adjusted and consequences for transport demand and air pollution is calculated.

Of special interest to this context the study finally concludes that air pollution and global warming costs generally make up a significant part of the total costs. However, they are not the dominating ones. They continue:

"Overall it must be concluded that even at the higher valuations of externalities the degree of change in mode split, and the contribution to air pollution and global warming targets, that can be expected from the transport sector outside urban areas is small".

"*… the belief that proper allowance for air pollution and global warming would lead to major diversion from road and air to rail does not appear to be supported by empirical analysis. On the other hand, very much more diversion could be expected in urban areas, but more as a result of charging for external costs of congestion and accidents than for air pollution and global warming."*
(Nash *et al.* 2001, p. 427 and 429 respectively)

Thus, in these cases, it seems likely that efficient pricing would imply a significant improvement in air quality in major congested urban areas. Other local problems such as congestion, accidents and noise would just as well turn to the better. On the other hand a reduction in more general air pollution and greenhouse gases are not certain.

Evaluating the 'true costs' approach

According to Vatn (2000) there is a strong tendency in today's society to look at the market as the ideal institutional structure for securing the best use of resources. Environmental Economics is a discipline, which seeks to unfold this way of thinking within the area of nature protection and pollution prevention. The ultimate process within the market perspective - production of goods for sale - basically requires two operations: The establishment of a uniform system of exchange values and the capacity to commoditise goods (ibid.). Monetary valuation, by way of establishing external costs, signifies an implicit commodification of the natural environment. The pricing exercise makes environmental goods tradable with other goods, in so far as the exercise transforms the value of every good to a single metric. (ibid.). This is the way environmental concerns are recognised and approached within the *"true costs"* approach and in this way it fits the dominating economic paradigm like a glove[5].

Evaluating the approach from an immediate environmental perspective it is, however, problematic that only a narrow set of environmental concerns are addressed in the approach. Questions of for instance biodiversity, land use and energy resources are sometimes recognised as legitimate problems, but to the best of my knowledge never enter the calculations. This is ever so questionable as these particular environmental problems are of a rather serious kind.

[5]Polemically however, it seems as if the approach has serious troubles establishing a market for environmental goods based on individual preferences. Instead of aggregating each individual preference - the celebrated goal within Welfare Economics - political decisions and expert assessments form the core of valuation as concerns environmental problems (compare the section *calculating the monetary value of externalities*). This is hardly a satisfying feature for any welfare economist and has indeed caused discussions within the ranks of traditional welfare economists (see for instance … that even point to other weaknesses.

Another immediate and more practical comment concerns the efforts to find the 'true' numbers. Most of the energy and resources, it seems, are used to produce true numbers. It appears to be an end in itself. Expanding the approach to include additional environmental concerns and longer time perspectives in order to include the needs of future generations will probably not diminish this problem. What is more, the uncertainty of the results will undoubtedly increase.

Taking a closer look at the fundamental premises of the approach the critical voices increase. A first line of criticism is levied along ethical lines. From a genuine environmental-ethical perspective the "*true costs"* approach coincides with perceptions, which cannot do anything, but deeply question the aptness of monetary valuation. Following Vatn (2000) the position basically claims that ethically and culturally there are goods, which are considered wrong to sell or buy in our society. Nature tends to be one of them. To the extent that nature is regarded as a source of identity and believed to be a sacred heritage, which has to be passed on to the next generation in good shape, it makes little sense to regard it as a commodity within the bounds of a trade-off calculation. On top of this argument, and still following Vatn (2000), yet another ethical consideration questions the validity of monetary valuation. The point is that monetary assessments may just not fit the moral commitments that dealing with nature pose to society. Two arguments, concerning the moral claims related to nature, are put forward. The issue of 'natures own right' (implying that animals and plants have moral claims on us) and the issue of 'what I do will affect you' (implying interconnectedness of humans through their common environment). The point in case here is that both issues go beyond individual evaluations, they basically belong to the realm of social phenomena. Willingness-to-pay methods, on the contrary, measure such moral claims individually[6] and thus "*moral commitments are confused with individual satisfaction"* (Vatn 2000, p.501). The frequent occurrence of non-compliance, refusals and protest bids within stated preference methods have been interpreted as a sign of these ethical considerations (see for instance Spash 2000, Clark *et al*. 2000)[7].

From a more environmental-technical point of view the systemic characteristics of environmental issues present us with still other difficulties as concerns the commodity perspective. Basically, it is difficult to value and draw boundaries and thus define distinct commodities, in a system characterised by functionality. The complementary character of such a system simply dilutes distinctions between waste and resource:

"The [eco]system is self organised – i.e. evolved over vast time spans where biological and geochemical processes have developed their interrelationships in gigantic 'experiments' of trial and error. In the long run, only those processes that have reciprocally supported each other have survived. They have in this way become ***functions of the system.*** *… Thus a working ecosystem is a*

[6] Stated preference methods, like the contingent valuation method, evaluate value categories like functional values and existence values from an individual point of view. Following the societal argument this is not correct, as these values belong to the societal sphere. Use values like scenic views are not affected by this argument, since they refer to the direct and private benefit that people obtain from an environmental amenity.

[7] The honesty of applying monetary valuation methods to environmental dilemmas is an issue intensely discussed and investigated by the valuation literature, especially related to contingent valuation methods (see for instance Vatn 2000, Spash 2000, Clark *et al.* 2000, Diamond and Hausman 1994, Hanemann 1994). Very few investigations, however, analyse the perspective of the respondents, even though this seems relevant to debates about validity and legitimacy. One of the few investigations, however, indicates that people, given the opportunity to discuss monetary valuation, does question the validity and legitimacy. (Clark *et al.* 2000).

*system of complementarities where the distinction between waste and resources is relevant only for each type of organism, but not for the set of all types of organisms as a whole.***"**

(Vatn 2000, p.502, emphasis in original)

Another feature of the natural environment, in line with this principle of functionality, is related to the concept of resilience. Holling, as referred to by Vatn (2000), defines resilience as a measure of the perturbation a system can absorb before it crosses an unstable manifold and converges on another equilibrium state. Obviously, the problem is to define the resilience of the system - when do we cross the line to irreversibility and what does it imply? Going deeper into this, uncertainty, as concerns the understanding of functions or processes attached to the system of land structures, water and air, is a real problem here. Not only uncertainty due to imperfect scientific knowledge, but also intrinsic uncertainties inherent in the irreducible complexity and indeterminacy of some environmental processes (see van den Hove 2000). The challenge of climate change is here the paradigmatic example of scientific and intrinsic uncertainty. When uncertainty prevails as to how much perturbation a system can absorb, the definition of the economic key concept of the margin becomes difficult to operationalise[8]. The marginal cost of each change is zero, only the sum of several changes has the power to alter the system. The fact that congestion and accidents – and not global warming and air pollution – dominate the picture in the externality example previously discussed is an excellent illustration of this point.

Taken all together it is highly questionable whether it is actually possible to scientifically modulate impacts of complex environmental problems like air pollution and indeed the greenhouse gas emissions with any kind of soundness. Let alone to speak of calculating marginal costs of these prognoses. The real challenge is to protect systems resilience, not to search for marginal values.

Looking at the kind of decision-making that emerges from the application of a *"true costs"* approach a final hesitation is revealed. The implicit assumption behind Environmental Economics is that objective scientists determine the truth about environmental systems, mathematical economists find the right price to induce effective management, the politicians adopt a law to carry out efficient pricing and the invisible green hand of market mechanisms silently bring about the changes in demand. However, the character of environmental phenomena frequently call into question whether this instrumental rationalism actually carries an adequate description of the situation and whether such narrow decision-making circles is really what the situation demand. Based on the arguments above the need is simply there for a different kind of information and legitimisation. Information drawing on a wider range of expertise, involving a larger range of actors, in a more dynamic trial and error process.

To sum up economic fairness and efficiency under existing circumstances are the values celebrated in the *"true costs"* approach. It addresses questions of efficient allocation of resources in the present situation, leaving the initial distribution of environmental goods among people and between generations as given. Structural changes at the systemic level in order to address environmental concerns are not at the forefront of the approach. The comprehensive vision of the *"true costs"* approach is represented by the absence of externalities. The goal is to switch from one kind of (economic) equilibrium situation to another (see also Ring 1997). Environmental phenomena are

[8]See the earlier section *confronting the motorist with the true costs of transportation* for a comment on the concept of the margin.

basically understood as economic goods, which can and should be traded off against other economic goods in an instrumental kind of decision-making process.

Given the ambition to integrate environmental concerns in a way that would not jeopardise the initial concerns the "*true costs"* perspective needs to be abandoned. The ties to the 'optimal price' fiction must be loosened. Instead of optimising systems efficiency, we need to optimise incentives to change structures and behaviours in cases of serious environmental problems. There is a big difference between putting a price on environmental goods and using the market mechanisms to obtain structural and behavioural changes. The question of balancing different interests and needs is still there, though: How is it possible to balance environmental concerns against other concerns, when the consequences of some environmental problems are not really known and the use of monetary valuation is deeply flawed?

In the following the approach of *"sustainable transport taxation"* is presented. It represents an attempt to proceed from the recognition of the global environmental problems, while at the same time trying to balance different values and interests in a non-reductive manner.

4. *"Sustainable transport taxation"* – loosing sight of a daily life?

The approach of *"sustainable transport taxation"* is based on theoretical work from the field of Ecological Economics. Ecological Economics is a broader and more interdisciplinary field than Environmental Economics. In its present form it is founded upon the concerns of the 1960s and early 1970s for limits to growth and the work of Georgescu-Roegen regarding the role of energy in economic processes (Spash 1999; p.422; Costanza *et al.* 1997, p.56ff). However, the more formal establishment of the field, with associations and journals, only occurred in the late 1980s (Spash 1999; p.422). The field aims to combine knowledge across the specialist areas of ecology and economics with a clear impetus to formulate policy advice regarding environmental problems on this basis (Spash 1999; p.423). To a certain degree Ecological Economics can be viewed as a reaction to Environmental Economics and the neo-classical frame of reference of this field (Spash 1999).

The approach developed in this section, for the sake of this dissertation named *"Sustainable Transport taxation"*, is a more ambiguous approach to 'green car taxation' compared to the one developed within Environmental Economics. The limits and principles are not as fixed and well defined – making it at bit risky to summarise it. The ambiguous nature of the approach is partly a consequence of the fact that the discipline from which it derives its character is quite young. Still, this is not the whole explanation. The wish, to underline multiplicity, is one of the hallmarks of Ecological Economics. In a tenth anniversary survey article from the journal Ecological Economics, one of the more influential figures within the field Robert Costanza, writes:

"Ecological economics does not conceive of itself as a mutually exclusive alternative to any existing discipline. Rather, it attempts to create an intellectual culture where the boundaries between disciplines can be transcended and where problems and questions can be addressed in an integrated way, consistent with their real complexity. … Because of the complexity of the problems, there is no one mutually agreed upon 'right' approach, model, or paradigm. Like the blind men and the elephant, our limited set of perceptual tools can only touch pieces of the system, and can produce distorted results if they are not sufficiently integrated with alternative approaches, models, and paradigms."

(Costanza *et al.* 1999; p.2)

Thus, there is a tension within Ecological Economics as concerns the very definition of the concept and whether or not Environmental Economics, for instance, is really a part of the field (Spash 1999, p. 424). In this dissertation a more progressive version of Ecological Economics is presented to indicate the scope of methods regarding environmental integration.

A question of ecological limits and distributional issues

Ecological economics starts from the premises of the existence of ecological limits to the scale of the economy (Costanza *et al.* 1997, p.1ff). Cultural development, and hence economic development, cannot progress without considering fundamental laws and principles of nature (Ring 1997, p.237). Laws and principles, which are being violated at the moment leading to the present state of affairs as concerns environmental problems:

We are moving beyond an age of acute, localised, and relatively simple environmental problems reversible at economically reasonable costs and on politically realistic time and space scales. We are moving into a period of chronic, global, and extremely complex syndromes which threaten to constrain and even reverse progress in human development"

(Clarke and Holling, quoted in (Ring 1997))

Problems that fit this category are the greenhouse effect, the effects of acid rain, problems of soil degeneration and erosion, groundwater pollution and the loss of biodiversity. They have also been referred to as *"creeping catastrophes"* due to the slow feed back of environmental deterioration. (Ring 1997, p.239). Another point of departure for Ecological Economics is the question of equity within and between generations as concerns the distribution of material wealth:

*"**Distribution** refers to the relative division of the resource flow, as embodied in final goods and services, among alternative people. How much goes to you, to me, to others, to future generations. A good distribution is one that is **just** or **fair**, or at least one in which the degree of inequality is limited within some acceptable range."*

(Costanza *et al.* 1997, p.80. Emphasis in original)

The question of equity is seen as crucial to the process of environmental degradation and to the possibilities for sustainable development (Costanza *et al.* 1997, p.35). Thus, compared to Environmental Economics, Ecological Economics generally has another priority of problems. The *"true costs"* approach deals extensively with the issue of efficient allocation of resources, secondarily with the issue of a fair distribution and not at all with the issue of ecological limits to the scale of the economy or as it is usually referred to the issue of sustainable scale[9]. Ecological Economics deals with all three issues, though with an emphasis on scale (Costanza *et al*. 1997, p.80). What is more, compared to the approach within Environmental Economics, Ecological Economics puts a strong emphasis on the complex, global and chronicle character of the environmental problems of today.

In order to face these often far-reaching and complex environmental and distributional issues Ecological Economics takes a point of departure in the precautionary principle. Basically, ecological

[9] The ecological concept of scale refers to the physical volume of the throughput, the flow of matter-energy from the environment through the economy and back to the environment as waste (Costanza *et al* 1997, p.80ff). Limits to the scale of the economy is set by *"the need to sustain the carrying capacity of the ecosystems and resources of the globe"* (Gudmundsson og Höjer 1996, p. 271)

economists are no more than environmental economists in a position to anticipate what will really be the consequences of the *"creeping catastrophes"* earlier defined. Thus, an *"evolutionary"* strategy is recommended, which, out of precautionary reasons, step by step change fundamental structures of society (Ring 1997).

Changing fundamental structures of society

The whole point is to adjust the fundamental economic system to the ecological system in a rather slow and pragmatic fashion. The uncertainty of risky environmental problems are taken into account, but at the same time radical changes from one day to another is avoided, allowing people and structures to adjust in due time.

Following Ring (1997) an evolutionary strategy can be defined as follows:

"To encounter chronic and pervasive problems, a process oriented approach in environmental policy has to be developed. There is a need for an enlarged perspective of the interactions between ecological and economic systems, allowing for political decisions even under uncertain conditions. The corresponding strategy may be called an evolutionary strategy because it includes aspects of both economic and ecological evolution."

(Ring 1977; p.239)

The interactions between ecological and economic systems are the object of inquiry in an evolutionary strategy. The goal is to create a metabolism of the economy in consistency with the metabolism of nature[10]. In an analysis of the patterns of development regarding the economic system as well as the ecological system several major distinctions can be observed (Ring 1997). In terms of energy, for instance, an obvious distinction is that the ecological system uses flow resources, while the economic system rely heavily on the use of accumulated solar energy (oil for instance). Another distinction concerns the flow of matter. The ecological system exhibits closed material cycles, while the economic system exhibits open material cycles. Also in terms of time there is a distinction, we have to encounter as a society: The ecological system exhibits slow time rates, while the economic system exhibits a huge acceleration of cultural evolution. On the basis of such analyses the task is "*to maximise performance of economic adaptations to ecological principles in those cases where environmental problems arise from economic activities*" (Ring 1997, p.245). For instance, the reliance of economic activity on fossil fuel as a stock resource has to be continuously reduced to approach the ecological principle of reliance on solar energy as a flow resource. The basic message is that reconciling economic activities with ecological principles requires long-term structural changes.

From this perspective environmental policy goals and corresponding instruments should be designed to continuously set signals for long-term structural change. The focus is *not* on a specific aim that has to be efficiently reached, as is most currently the praxis within environmental policy, but on a specific incentive that will change economic patterns of development. Instead of trying to determine exact levels of pollution where they are not suitable, i.e. in the case of chronic and pervasive environmental problems, environmental policy should aim at giving continuous incentives to encourage this kind of adaptation for precautionary reasons (Ring 1997).

[10] The use of the term metabolism is inspired by (Huber 2000).

Translating these principles to the area of transport an argumentation might look this way. The present transport system contributes to a variety of serious environmental problems. Some of them are the greenhouse effect, the loss of biodiversity and the effects of acid rain. Road transport, with its reliance on fossil fuel and its immense material through put and its huge space consumption plays a major role. Addressing some of these environmental problems in a precautionary way requires continuous signals for long-term structural change. Inspired by Gudmundsson and Höjer (1996) gradual structural change implies increasingly changing the balance between different modes of transport to the benefit of public transport and a more and more integrated social and urban structure coupled with incentives to spur technological innovation in the direction of environmentally sound technology. As concerns car taxation the resulting consequences of such a precautionary strategy would be increasingly to raise the prices of private motoring. Looking at the three common car taxes from this perspective, for instance, it would make perfectly sense to increase the tax on petrol, each year a little more, to create a strong incentive to shift the reliance on fossil fuel to a reliance on solar energy as a flow resource. This would also slowly change the balance between private motoring and public transport. Another option would be continuously to increase the vehicle sales tax in order to keep down or even reduce the number of cars altogether and thus take into account the scale of throughput. The tax could eventually be differentiated according to 'shade of greenness' in order to promote the best cars from an environmental point of view. Similar arguments could be used as concerns the ownership tax. Even new types of taxes, like road pricing or green tax reform[11], could be introduced according to these principles.

In a policy-making perspective an evolutionary strategy poses a rather big challenge. For one thing it challenges the traditional raison d'être of policy-making. In a traditional understanding of policy-making the aim is to switch from a well-known (and undesirable) present to a known (and more desirable) near future. In an evolutionary strategy the issue is not the definition of the (often very distant) future, but building up the process towards it. An implication of this difference is furthermore that the evolutionary strategy escapes the traditional balancing of interests as it is most commonly done in a cost-benefit analysis. Thus, there is a need for other policy-making instruments. A final challenge has to do with the magnitude of the aimed for changes. Even if the changes are done little by little an evolutionary strategy, sooner or later, implies greater structural changes, thereby confronting the existing social order. Social conflict is thus an inevitable part of the strategy in the longer run.

Ecological Economics has come up with different suggestions in order to face these policy-making challenges, among which the role of participatory approaches in decision-making and multivariable analysis as a new kind of policy instrument will be dealt with in the following. The first issue because it deals with the subjects of uncertainty and social conflict, the last issue because it deals explicitly with the subject of how to balance interests in a non-reductive manner.

The crucial role of participatory approaches in decision-making

The uncertainty and complexity of the environmental problems paired with inevitable distributional consequences of trying to change fundamental structures of society serve as the arguments behind a focus on participatory approaches in decision-making.

[11] A green tax reform aims to shift the burden of taxation from more traditional taxes like income taxes to taxes on ressources and consumption. In economic litterature it has been extensively discussed whether such a reform results in a so-called double dividend or not. A double dividend referring to increased employment as well as increased environmental benefits (see for instance Ekins 2000 and Bosquet 2000).

Faced with uncertainty, complexity and possible irreversibility we need to integrate science with management and decision-making in a much more dynamic and adaptive fashion, acknowledging the fact that we are on uncertain ground. Monitoring is of particular importance as well as problem-solving situations that allow for the participation of the different actors involved, when that involvement is required (Costanza *et al.*1997, p.63; van den Hove 2000). Figuratively speaking there is a need for establishing a *"hot line"* between decision-makers, researchers and other affected actors in order to progressively pool information and co-ordinate action (van den Hove 2000, p.470). Extensive monitoring of changes in important environmental indicators is a part of this approach.

Apart from this more practical and effective perspective on participation, there is the power related and ethical perspective (*ibid.*). Social conflicts will arise as a consequence of the call for fundamental structural changes. Conflicts will arise between actors, between issues, between generations and possibly even within actors in the sense that actors often represent multiple interests. The conflicts between generations are particularly twisted in cases where the burden of change will be felt in the short run, while benefits are only felt in the longer run.

To cope with these conflicts there is a basic need for processes of capacity building that entail "*procedures for dispute resolution and power balancing"*, while at the same time aiming to find "*innovative answers"* (*ibid.*). The nature of the conflicts also implies a need to devise "*new political ways of governance"*, as traditional policy making is typically short sighted. Finally, as concerns the ethical perspective, the irreducible uncertainty of some environmental phenomena imply processes that allow for the "*integration of different value judgement"*, thus even securing a higher degree of legitimacy. (*ibid.*).

Looking at the area of car taxation policy making through the eyes of a participatory perspective, it seems obvious that an attempt to integrate environmental concerns would involve a large array of actors and indeed challenge existing decision-making procedures. Integrating environmental concerns into the car taxation area obviously would be part of a much larger effort to counteract complex environmental problems. Anyway, a pronounced collaboration between different units within the governmental sphere is evident in this approach. Since private motoring is deeply routed in cultural traditions, values and practices, it also seems obvious that some kind of public involvement would be required. A closer examination of all this is relegated to the empirical chapters.

Inventing new decision-making instruments

Multidimensional analysis is an answer to the question of how to balance interests in a non-reductive manner. It is a form of disaggregated analysis, where *"non-monetary impacts are kept separate from monetary impacts"* (Söderbaum 2000, p.60). A multidimensional analysis often aims to facilitate a political dialogue instead of bringing out a final answer[12]. Thus, in both respects, a multidimensional analysis deviates from traditional neo-classical instruments like the CBA analysis. In the following I give a short example, in order to illustrate how it is possible to balance interests in a non-reductive manner.

[12] Examples of decision support instruments that employ a multidimensional approach could be Environmental Impact Assessment (EIA) and Strategic Impact assessment (SIA). The former instrument is employed at the level of projects in order to predict and assess the environmental impacts of a given project, such as a bridge. The latter is employed at the level of policy-making in order to assess the potential environmental impacts of decisions made at the strategic level (see for instance Kørnov 2002).

Peter Söderbaum (2000) has developed a so-called positional analysis (PA), which is a kind of multidimensional analysis that focuses on states or positions *over time*. Impacts are not relegated to only one point in time, as is usually the case with a traditional CBA. In addition PA aims to bring out the conflictual elements of a decision-making process by focusing on affected activities and interests. In a CBA all kinds of impacts and interests are made tradable and do not appear separately (Söderbaum 2000, p.55).

The overall purpose of a PA is to *"facilitate learning processes and decision-making"* and the role of the analyst is that of a facilitator (Söderbaum 2000, p.66):

"At the societal level, prices and their interpretation are, in large measure, a matter of politics and ideology, and the role of science should therefor, it may be argued, be limited to one of elucidating an issue."

(Söderbaum 2000, p.60)

In practice then a PA involves illuminating an issue as regards (1) alternatives of choice, (2) impacts, (3) interests affected and possible conflicts as well as (4) possible ideological orientations that could be useful for valuation and decision-making (Söderbaum 2000, p.87). The decision support techniques involved are such as interviews, round table discussions and complementary technical approaches in order to identify affected systems, kinds of impacts, affected activities and interest. In figure 2.1 and 2.2 general examples of how to compare alternative solutions are given as concerns impacts and interests.

Impact dimension	**Alternative**	
	A_1	A_2
I_1	Equivalent to A_0	Considerably better than A_0
I_2	Somewhat worse than A_0	Considerably worse than A_0
I_3	Somewhat better than A_0	Considerably better than A_0
I_k	Considerably better than A_0	Equivalent to A_0

Figure 2.1 A1 and A2 are both compared with a 'No action'alternative as concerns impacts. The impacts can be of both a monetary and a non-monetary kind. (Söderbaum 2000, p. 102)

Activity with connected interest	**Alternative**		
	A_0	A_1	A_3
AC_1	2	3	1
AC_2	1	2	3
AC_3	3	2	1
AC_n	2?	3?	1

Figure 2.2 An activity-interest analysis, where compatibilities of interest and conflicts of interest are made visible. In some cases it is not always easy to seperate two alternatives with respect to an activity with connected interest – indicated by a question mark. (Söderbaum 2000, p. 103)

The whole point of the exercise is to invite to a political dialogue and render open the assumptions behind the ranking of alternatives, which again depends on the assumptions made about goal direction.

Evaluating the sustainability approach

The approach of sustainable transport taxation fulfils the requirements for genuine environmental integration. The vision is an economic development confined within the limits of serious environmental problems. The strategies set out on the road towards this vision are based partly on a

dynamic understanding of ecosystem management, partly on ethical-environmental concerns related to several dimensions. Some hesitating or even sceptical voices can be levied against the approach, though, of which I will put forward two in the following[13].

For one thing, the sustainability approach is a genuine challenge to traditional decision-making approaches of today. The long time span of the approach, for instance, is hard to unite with electoral cycles of today's politics. More short-sighted interests and fights will inevitably dominate the scene. The administrative process of today is neither very fit to tackle uncertainty of the kind exposed here. Cost-benefit analyses, for instance, are not cut out to deal with insecurity and complexity. The participatory approach, with its dynamic and conflict oriented characteristics, is even a rare fellow in traditional western decision-making. All in all, the challenge of a sustainability approach is much different from the challenge of a 'true costs' approach.

A second hesitation even has to do with the political realities of the approach, though in a slightly different manner. The thing is that Ecological Economics keeps revolving around the issues of *"creeping disasters"* and distributional fairness on a global scale. From an environmental and equity point of view this is a very sound thing to do, but from a policy-making point of view it lacks the ability to touch upon the daily life of present (western) generations. Gudmundsson and Höjer (1996) has elaborated on these issues in relation to the transport sector, specially the part of the system related to passenger transport. Generally they put the issues of ecological limits and distributional fairness in a slightly different perspective than is normal within Ecological Economics, as they also accentuate the quality of life for present as well as future generations. Furthermore they distinguish more clearly between present and future needs. They define sustainable development in the following manner:

"… [S]ustainability and development represent different dimensions. Sustainability refers to criteria for long-term stability of the social system, relevant for future generations, while development is the perceptible improvement of the quality of human life, of which consumption for the present generation is an important element."

(Gudmundsson and Höjer 1996, p.273)

Long-term stability of the social system relate partly to the safeguarding of the natural resource base within critical loads, levels and usage patterns (ecological limits), partly to the maintaining of the option value of a productive capital base for future generations[14]. Development relates partly to the improvement of the quality of life for individuals, partly to the securing of an equitable distribution of life quality. As concerns quality of daily life in relation to passenger transport, for instance, they basically find it hard to consider further increase in general traffic volumes a positive indicator of development. Evaluating quality of life is, however, an exercise that ideally demand *""an open political process influenced by scientific advice and public opinion."* (ibid. p. 279).

[13]A curious thing about the approach is even the fundamental tension between the aim to confine the scale of economy within ecological limits and the recognition that ecological limits are not easy to define as concerns the more complex problems. Choosing an evolutionary and participatory strategy is obviously a way to deal with this problem, but it basically still exists as a challenge to decision-making.

[14] In relation to the transport system Gudmundsson and Höjer (1996, p.278) defines the option value as follows: *"The components of transport systems are part of the human and man-made capital base of society. Moreover, the working of the system contribute to the development and enhancement of other capital assets in society"*.

Much will thus depend on how a sustainability approach would cope with the policy-making challenges of the approach. In accordance with the two lines of criticism discussed above two crucial questions would be: (1) How can we appropriate traditional economic thinking and decision-making? (2) How can we offer people an appealing alternative, which is intellectually challenging, socially meaningful and economic interesting? After all fundamental structural changes are called for on the basis of uncertainty. It would benefit the case if more immediate advantages could also be pointed to (see even Håkansson and Rasmussen 1993). In this respect the *"true costs"* approach has an advantage, since this one concerns more visible problems like air pollution, accidents and congestion in cities, which actually affect people in their daily lives. It might be worth a consideration, whether this kind of problems could act as a sort of lever, to kick-start the whole process towards 'sustainable governance'.

5. *"Situated action in a global perspective"* – suggesting a synthesis

Drawing on the knowledge obtained in the previous sections, it is the aim of this final section to sum up and compare the two different approaches to green car taxation. As stated earlier it is even an aim to tease out the best from each alternative trying to compose a sort of synthesis. We start out with the comparison.

A characterisation of the two approaches

The best way to compare two alternatives is often to put them together in a matrix. This has been done on the next page on the basis of the presentation of the two environmental policy making perspectives and the discussion in each of the chapters dealing with their characteristics in words and writing. Seven dimensions are listed to the far left pointing out the significant parameters of difference. What is noticeable about the scheme is that even though sustainable development and ecological modernisation share a lot of common thoughts, the implications of adhering to either of the two perspectives within the policy-making area of car taxation are quite different.

It is obvious that the approach to the left has a traditional economic and decision-making point of departure trying to modify the existing economic order, but leaving the institutional order the same. It is even fair to say that the environmental economics approach reinforces the existing technocratic style of decision-making. What is happening here is basically an 'add-on' of environmental concerns to the existing decision-making regime – thereby risking to loose what should be preserved and preserve what needs to be changed.

The situation is quite different as concerns the ecological economics approach. This approach challenges both the existing economic and institutional order. It wants to see changes that really take into account environmental values – thereby risking to loose sight of daily life and playing the role of unachievable utopia.

Perspectives on integration	**An Environmental Economics Approach**	**An Ecological Economics Approach**
Paradigm	• Ecological Modernisation	• Sustainable development
Primary Goals	• Economic Efficiency • Fairness of pricing in a Western perspective	• Staying within ecological limits • Social justice in a global perspective
Magnitude and Quality of Change	• "Business as usual" • Env. and economic concerns pull together	• "Structural changes are needed" • Env. and economic concerns might conflict
Environmental Understanding	• Highlight local/regional transport and env. problems • A partial understanding of the environment • Environmental concerns as "one among many"	• Highlight global and complex environmental problems • A systemic understanding of the environment • Environmental concerns as "one of a kind"
Ethical Implications	• Nature as a commodity • Nature seen in terms of individual satisfaction	• Nature as a sacred part of life • Nature seen in terms of collective commitment
Decision-making Style	• Top Down – Technocratic • Emphasise objectivity	• Bottom Up – Participatory • Emphasise Values
Decision making Assumptions and Instruments	• Welfare Economics • Trade-off principle as a basis • Cost-benefit Analyses • Monetary Valuation	• Ecological Economics • Precautionary principle as a basis • Multivariable Analyses and political dialogue • Consensus Conferences

Suggesting a synthesis

Is it at all desirable and possible to tease out a synthesis of two such different approaches one might ask? Leaning on the works of Christensen (1997, p.398ff) the answer seems to be yes. It is not a question of building up a new, third approach, taking a little bit of this and a little bit of that, but a question of acting being conscious about the strengths and weaknesses of both approaches. The two approaches create a sort of field, in which they are both *"mutually complementary <u>and</u> mutually inconsistent towards each other"*(*ibid.* p.399, emphasis in original).

In this case the 'mutually complementary thing' has to do with the fact that if environmentally sound solutions are not found in accordance with what is socially meaningful and economic interesting, there is ample reason to believe they will not materialise. Basically the right side of the figure is where we want to go from an environmental point of view, but is has to happen without loosing sight of existing dominating values and ways to do things. The challenge is in each particular situation to reinterpret what is socially meaningful and economic interesting in a way that satisfies the environmental propositions. The 'mutually inconsistent thing' has to do with the different contrasts as illustrated by the seven dimensions of the figure.

Whether or not it is actually possible to use an approach based on 'situated social action in a global environmental perspective' is an empirical question, to which we now turn.

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