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Sustainable Production and Consumption – from Conceptions of Sustainable Development to Household Strategies for Sustainable Consumption

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Report



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FOREWORD

Issues of sustainable production and consumption remain central to ProSus' research agenda. It is a major conviction of the strategic programme that it is in these areas that significant gains can be made in the direction of more sustainable well-being and equity by reducing impacts on natural life-support systems. The current report was commissioned by ProSus as a preliminary position paper for the sub-project SUSHOMES. The purpose of SUSHOMES is to monitor and analyse household consumption so as to determine the potential for change in a more sustainable direction.

Oluf Langhelle has written a report that attacks the problem of household consumption for a very broad – and very open – point of view. The report is in many ways unusual for this area, since it does not take any of the normative premises as to what *really works* for granted. It opens up the entire box of what individual household members *should and can do* to promote sustainable consumption. It provides no easy answers – contributing thereby to highlight how difficult many of the choices individuals confront in trying to determine “correct” behaviour for sustainable consumption. We hope it is met with the type of critical discussion it was written to provoke.

An initial draft of the report was presented at a ProSus/CSTM Workshop on Sustainable Household Consumption: Impacts, Goals and Indicators for Energy-use, Transport and Food. The workshop was held between November 17 and 19, 2000, and was a cooperative venture between ProSus and the Centre for Clean Technology and Environmental Policy (CSTM), University of Twente, Enschede, The Netherlands. The implications of the report will be followed up in an initial SUSHOMES survey in early 2002.

Oslo, November 2001

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INTRODUCTION

Sustainable production and consumption has become one of the most important strategic means for realising a sustainable development path. It became a crucial part of the follow-up of the report from the World Commission for Environment and Development, *Our Common Future* (1987). At the United Nations Conference on Environment and Development (UNCED) in Rio in 1992, “Changing consumption Patterns” became an own chapter in Agenda 21 (United Nations, 1993). After Rio, sustainable production and consumption has been pursued within United Nations Commission on Sustainable Development (UN CSD), and also within the Organisation for Economic Cooperation and Development (OECD) in a series of workshops and conferences.

Defining sustainable production and consumption, however, requires some linkage or reference to sustainable development, which is after all what sustainable production and consumption is supposed to contribute to. There are few explicit references to sustainable production and consumption in *Our Common Future* (1987) (Lafferty, 1996), and, in fact, there have been few attempts to make explicit linkages in the follow-up. Thus, given the widespread confusion over the *concept* sustainable development (the meaning of the term), and multitude *conceptions* of sustainable development (the principles required to apply it), it is obvious that there are different views on what constitutes sustainable production and consumption patterns or levels, and also different strategies for realising a sustainable development.

The first goal in this article is to explore and, if possible, establish linkages between different concepts and conceptions of sustainable development, and different concepts and conceptions of sustainable consumption¹. This implies exploring and establishing links between assumptions and conceptions of social justice (both intra-, and intergenerational justice), views on ecological limits and critical resources, the possibilities of technological progress, and also the possibilities of changes in social organisation.

The second goal of this article has a practical aim. Much of the debate on sustainable development has been focusing on weak and strong conceptions of sustainability. But it is an open question whether or not this debate actually makes any difference for most people at the household level. If you were convinced that you have a duty to contribute to sustainable development what does the different conceptions of sustainability imply for your private consumption? What are the most important actions needed? And, what would be the best strategy in order to contribute to sustainability at the household level?² How important is the conception of sustainable development one adheres to in this regard? Thus the aim is to establish the links to household consumption from *different* perspectives on sustainable development.

¹ The focus is thus on consumption rather than production. As for conceptions of sustainable development who sees changes in production as the most important for realising a sustainable development path, it is the implications of these conceptions for sustainable household consumption that will be explored.

² The following is thus more or less an elaboration within the requirements of ideal theory. Ideal theory is ideal in the sense that it assumes strict compliance. That is, “the relevant concepts and principles are strictly complied with by all parties to the agreements made and that the requisite favourable conditions for liberal and hierarchical institutions are on hand” (Rawls, 1993b: 52). In the following, I will simply ignore problems of free-riding and other problems related to collective action and unfavourable conditions.

The household consumer(s) will speak as we go along. How loud and clear, however, is for the reader to decide, but it will be the (biased) voice of a more or less ordinary Norwegian, Western, consumer with all that it entails. The starting point for this exercise, however, is to show that even within the constraints of ideal theory, contributing to sustainable development as a household consumer is difficult. This is because, on the one hand, that sustainable development is extremely complex. On the other hand, it is because sustainable development is disputed. Thus, there are few straight and easy assumptions, strategies or conclusions agreed upon regarding how to realise sustainable development.

In principle, then, the household consumer has to choose between competing conceptions. In the following, therefore, I will try to establish some basic positions for household consumption based on different conceptions of sustainability. These basic positions will serve as starting points for positions that different household consumers may be said to hold. In the end, the different implications from these positions for the household and what the household should do in order to contribute to sustainable consumption is discussed in order to answer the question of how important different conceptions of sustainable development are at the level of household consumption.

1 CONCEPTS AND CONCEPTIONS OF SUSTAINABLE DEVELOPMENT

The difference between concepts and conceptions relates to the following distinction made by John Rawls (1993a):

Roughly, the concept is the meaning of the term, while a particular conception includes as well the principles required to apply it People can agree on the meaning of the concept of justice and still be at odds, since they affirm different principles and standards of those matters. To develop a concept of justice into a conception of it is to elaborate those requisite principles and standards (Rawls, 1993:14fn.).

Applied to our context, confusion over the *concept* of sustainable development (the meaning of the term) seems to be confirmed by long lists of definitions of sustainable development (see for example Pearce, Markandya and Barbier 1989, Pezzey 1992, Murcott 1997). These differences, however, should not be exaggerated. The definition provided by the World Commission on Environment and Development (1987); “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 43), is, no doubt, the most frequently quoted definition of sustainable development.

While there still are differences of opinion related to *the conceptual level* of sustainable development, the major differences seem to be at the *level of conceptions*, the principles required to apply it. Several authors have tried to classify or organise different approaches in different typologies of sustainable development. Andrew Dobson (1996, 1998) has developed a typology that now describes three broad “ideal” conceptions of what he prefers to call “conceptions of environmental sustainability”³. MacManus (1996) identifies nine broad approaches to “sustainability”. Others have developed typologies that distinguishes between very weak, weak, strong and very strong conceptions of sustainable development (Turner 1993, Pearce 1993, Daly 1996), and Baker et al. (1997) have developed what they call “The Ladder of Sustainable development.”

These typologies, however, only marginally focus on consumption, and the linkages to consumption are often implicit rather than explicit. In the following, therefore, the aim is to explore the consequences for consumption of some of these conceptions of sustainable development. The point of departure will be conceptions of “weak” and “strong” sustainability, within what is often seen as economic approaches to sustainable development. As Serafy (1996: 76) argue, however, “weak sustainability” is not the same as “sustainable development”, and neither is “strong sustainability”. Instead, “weak” and “strong” sustainability should be seen as “rules” for how sustainable development could or should be attained (Asheim, 1999, Langhelle 2000a), or in our context, different conceptions of sustainable development, the principles required to apply it.

³ Dobson (1999:36:60) argues that sustainable development is one form, or theory, of environmental sustainability. Although Dobson is right in his assertion that the conception of sustainable development contains “views on what is to be sustained, on why, and what the object(s) of concern are, and (often implicitly) on the degree of substitutability of human-made for natural capital”, he is wrong, I think, in his assertion that sustainable development “amounts to a strategy for environmental sustainability”. I will return to this later, but for a fuller discussion of this view, see Langhelle 2000a.

Still, however, the focus upon expressions of sustainable development in terms of strong and weak sustainability capture many of the main features of the above mentioned typologies of sustainable development. In Dobson's (1998) typology of three "conceptions of environmental sustainability", for instance, the two first conceptions are close to the weak and strong conceptions of sustainability. The third conception is basically an ecocentric conception of environmental sustainability. There is not space, however, to discuss the ecocentric version in any detail. Given this limitation, the focus from here on will be on strong and weak sustainability⁴.

One further point has to be made. Dobson (1998) makes a rather strong distinction between strategies and conceptions of sustainability. Criticising Pearce (1993) typology of "The sustainability spectrum", Dobson (1998:58) argues that Pearce's spectrum "refers to strategies for sustainability as though they can be uncomplicatedly and definitively related to particular conceptions of sustainability." Instead, Dobson argues that strategies for sustainability are promiscuous across conceptions of sustainability". That is, economic instruments can be supported even by communalist ecocentrists (1998:58). Dobson's point is a good one, and goes to the heart of the research question addressed in this article. These analytic/empirical questions we are now to explore.

⁴ I will, however, later discuss what Ekeli (1999) the anti-materialistic perspective on sustainable consumption. Ekeli identifies an ecocentric and an anthropocentric version of this perspective. Although Ekeli relates the ecocentric version to very strong sustainability, and the anthropocentric version to strong sustainability, I will for simplicity discuss them under the same heading. This implies, however, that there might also be a third ecocentric strategy for household consumption not explored here. I am unsure, however, if this is the case, but it is surely an interesting question if ecocentric conceptions of sustainability have different implications for sustainable household consumption than anthropocentric versions. It is enough just to mention vegetarianism and veganism, however, too see problems associated with this task. There are many vegetarians and vegans who justify their consumer choice not for ecocentric but for health reasons.

2 STRONG AND WEAK SUSTAINABILITY

As an economic concept, sustainable development has been heavily debated (Beckerman 1994, 1995, Daly 1995, Jacobs 1995, Skolimowski 1995, Serafy 1996 and Common 1996). Moreover, according to Pearce and Barbier (2000), most economic interpretations of sustainability take as their starting point sustainable development as defined by the World Commission. The economic debate on strong and weak sustainability has focused primarily on the issues of intertemporal equity, and capital accumulation and substitutability (IPCC 1996: 40). The debate, however, has in many respects been more or less silent on the issue of consumption, although it seems both relevant and necessary for the questions weak and strong sustainability attempts to provide an answer to.

Sustainable development (in economic terms) is defined by Pearce and Barbier (2000) the following way: "Ensuring that future generations have at least the same potential economic opportunities to achieve welfare as the current generation" (Pearce and Barbier, 2000:21). Less complex and more frequent in use is just to define sustainable development as non-declining welfare over time (Holland 1999, Pearce and Barbier 2000).

At the conceptual level, the economic definition of sustainable development has evoked little controversy⁵. The debate has instead focused upon *the composition of capital necessary in order to sustain welfare over time*. According to Pearce and Barbier (2000), most economists accept that economic development around the world is leading to irreversible depletion of *natural* capital. The question is, in their view, is this necessarily unsustainable? If other types of capital, either physical or human, can compensate future generations, welfare could still be non-declining over time and development sustainable. As such, the economic debate has concentrated more on the second key concept: "the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs" (WCED, 1987: 43).

Weak sustainability only requires that *the aggregate value* of the total capital stock (of natural, physical and human capital) is non-declining over time. Moreover, all natural capital is, according to Pearce and Barbier (2000), seen as *non-essential* within the perspective of weak sustainability. If this position is taken seriously, the implications for household consumption seems to be none at all. That is, there is really no such thing as a problem of household consumption. Compared with the positions identified by Pearce (1993:19), however, this position should actually be labelled very weak sustainability, because of the belief in "infinite substitution possibilities", and it is what Baker et al. (1997) labels "the treadmill approach".

Dobson (1998), however, argues convincingly that there are actually very few who makes this claim and Dobson thus excludes this position from his typology of environmental sustainability. A more reasonable interpretation of weak sustainability is thus that even within this perspective, critical natural capital, that is natural capital critical to the production and reproduction of human life, should be sustained (Dobson, 1998:43). The rule, however, is still a constant capital rule. Furthermore, it is argued that "there is considerable scope for

⁵ This is of course only partly true, in the sense that some authors have been critical to the very concept of natural capital. See for instance Hinterberger, Luks and Schmidt-Bleek (1997), Holland (1999). Moreover, for a critique of the exclusion of intragenerational justice in economic approaches, see Lafferty and Langhelle (1999).

substituting man-made wealth for natural environmental assets” (Pearce, Markandya and Barbier 1989:48, Pearce 1993:16). So, even if, as Pearce (1993:19) puts it, “infinite substitution is rejected”, some substitution is still possible and arguably, even desirable from an anthropocentric view.

This, however, makes both weak sustainability and the notion of critical natural capital “radically indeterminate” (Dobson, 1998), in the sense that the discussions of what actually constitute critical natural capital usually never gets beyond the point of being natural capital critical to the production and reproduction of human life. At this level of abstraction, therefore, what the critical resources are, how much of these resources that can be consumed within our generation or which natural environmental assets that can be substituted with man-made capital are usually not addressed. Thus, at this point, for a person or family interested in sustainable household consumption there are actually few guidelines to extract from the perspective of weak sustainability. It is an open question, however, if the perspective of strong sustainable development brings the household consumers any further towards defining sustainable consumption. Strong sustainable development, according to Pearce and Barbier (2000:24), implies the following:

... the strong sustainability view suggests that environmental resources and ecological services that are essential for human welfare and cannot be easily substituted by human and physical capital should be protected and not depleted. Maintaining or increasing the value of the total capital stock over time in turn requires keeping the non-substitutable and essential components of natural capital constant over time.

Defending the strong sustainability position from Wilfred Beckerman's (1994) seminal attack on the concept of sustainable development, Herman Daly (1995) argues that the most important issue in the sustainable development debate is the issue of *complementarity*. This is seen as the “key to strong sustainability” (Daly, 1995:53):

Strong sustainability requires that manmade and natural capital each be maintained intact separately, since they are considered complements: weak sustainability requires that only the sum of the two be maintained intact, since they are presumed to be substitutes. As natural capital more and more becomes the limiting factor the importance of keeping it separately intact increases (Daly, 1995:53).

According to Daly (1995:52), the complementarity of manmade and natural capital is “made obvious at the concrete and common sense level by asking: what good is a saw-mill without a forest; a fishing boat without a population of fish; a refinery without petroleum deposits; an irrigated farm without an aquifer or river?” While it seems odd to deny complementarity in this straightforward sense, it is not obvious, however, what the *implications* of maintaining natural capital intact really are for consumption. Nor is it obvious that natural capital is the limiting factor for all types of production and consumption.

Except for making the point clear that natural capital is a necessary input for production and consumption, the environmental resources and ecological services essential for human welfare are not specified, thus leaving the household consumer more or less in the dark. Daly (1996) however, is quite clear on what he sees as the implications of strong sustainability for consumption: “*What is needed in the first instance are reduced levels of consumption and we need to specify ‘reduced consumption levels’ of resources and environmental services*” (Daly, 1996:14:17)⁶. Again, however, the household consumer may legitimately ask; of what, and for what reasons? It seems that the conclusion needs a further justification, and from the perspective of the individual household it is not that easy to see the big difference, at this stage, between weak and strong sustainability.

⁶ My italics.

While Pearce and Barbier (2000) contends that the debate between weak and strong sustainability is just as relevant today as before, it seems obvious that one needs to move beyond this debate to be able to draw conclusions regarding household consumption. One way forward is to ask the question what the scarce resources really are, if any. If there are none, one could easily conclude that what Pearce (1995:113) has labelled “the overconsumption hypothesis”, is wrong. Before doing that, however, we shall bring in what this debate seems to ignore, but which still seems necessary in order to make an explicit link to sustainable development; the question of intra-generational justice.

3 INTRA-GENERATIONAL JUSTICE

Seen from the perspective of *Our Common Future*, intragenerational justice constitutes an inherent part of both of the concept and conception of sustainable development (Lafferty and Langhelle 1999, Langhelle 2000a). As Dobson (1998) has shown, however, the concept of social justice is as disputed as sustainable development. There are a number of different dimensions of social justice addressing issues like: What is the community of justice? What is the basic structure? What is distributed? What is the principle of distribution? (Dobson, 1998:63). According to Dobson, however, there is a dubious relationship between social justice and sustainability. In fact, these agendas are different in Dobson's view. This is what Dobson labels his *Third thesis*: "the concerns of the environmental movement and movements for social justice are fundamentally different as far as the 'natural' environment is concerned, although they may sometimes coincide" (Dobson, 1998:243).

Our Common Future, however, was first and foremost an attempt to *reconcile* the tension between developmental and environmental concerns at the global level. The context of sustainable development derives partly from global intragenerational (north-south) concerns, partly from intergenerational (global) concerns and partly from a growing awareness of global environmental problems (Lafferty 1996, Lafferty and Langhelle 1999). The fundamental goal of the Commission was to reconcile physical sustainability, need satisfaction, and equal opportunities *within and between generations*, and sustainable development is what defines this reconciliation. At the conceptual level, the overall economic conception of sustainability differs from the Brundtland-report by more or less excluding the issue of intragenerational justice. Instead, intergenerational justice is moved to the front.

The need to reconcile intra- and intergenerational justice in *Our Common Future*, however, was based on a perceived conflict between intra- and intergenerational justice in the sense that there is no neat and easy functionality between social justice within our generation and physical sustainability as a precondition for intergenerational justice. Thus, the point is that justice understood as need satisfaction and equal opportunities constitutes an *independent* development goal which must be reconciled with environmental (physical) sustainability in order not to jeopardise the concern for future generations (Langhelle, 2000a).

Sustainable development was defined by the World Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED: 43). Contrary to Dobson's focus on justice as a necessary and/or sufficient condition for *environmental* sustainability, sustainable development - with social justice as an inherent part of the concept - makes the challenge even harder. It is not enough to achieve physical sustainability. Development must also satisfy the requirements of social justice to be properly called a sustainable development path. This becomes evident when the two *key concepts* that the definition of sustainable development is said to contain is included in the concept of sustainable development. These key concepts are often left out from quotations, but are of vital importance for understanding the concept of sustainable development:

- the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and

- the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs (WCED, 1987: 43).

The satisfaction of human needs must in light of both the definition and the first key concept be seen as the primary objective of development (WCED, 1987:43). Raino Malnes (1990:3) calls this the *goal of development* in *Our Common Future*. The qualification that this development must also be sustainable is a constraint placed on this goal, meaning that each generation is permitted to pursue its interests only in ways that do not undermine the ability of future generations to meet their own needs. Malnes (1990:3) calls this the *proviso of sustainability*. Since the sustainability constraint is a necessary condition for future need satisfaction, which is part of what sustainable development is supposed to secure, the proviso of sustainability becomes a necessary part of the goal of development, thus providing the inter-dependency of the concept. Or, as Malnes formulates it: "the proviso is entailed by the very goal whose pursuit it constrains" (Malnes, 1990:7).

Furthermore, social justice - understood as need satisfaction – is, in this perspective, *at the core* of sustainable development. The relationship between social justice and sustainable development, therefore, is not as Dobson (1998) argues, first and foremost "empirical" or "functional". On the contrary, social justice is *the* primary development goal of sustainable development. Dobson (1998) is of course right in pointing out that *Our Common Future* strongly argues that there are "empirical" and "functional" relationships between social justice and sustainable development. Poverty is seen as a "major cause and effect of global environmental problems" (WCED, 1987:44), and the "reduction of poverty itself" is seen as a "precondition for environmentally sound development" (WCED, 1987:69).

But the priority given to the world's poor is also *independent* of the poverty-environment thesis (Langhelle, 1998). That is, even if the thesis is proved wrong and there is no clear dependency between poverty and environmental degradation, the underlying framework of *Our Common Future* would still lead to a prioritisation of the essential needs of the world's poor in the name of social justice (and sustainable development). As stated in the report, poverty is "an evil in itself" (WCED, 1987:8), and sustainable development requires meeting the basic needs of *all*, thus extending to all the opportunity to fulfil aspirations for a better life (WCED, 1987: 8).

Environmental sustainability (I prefer to use physical sustainability), therefore, is not the primary goal of development, but a *precondition* for this goal in the long term and for justice between generations. Thus, physical sustainability becomes an inherent part of the *goal* of sustainable development. It is defined as "the minimum requirement for sustainable development": "At a minimum, sustainable development must not endanger the natural systems that support life on Earth: the atmosphere, the waters, the soils, and the living beings" (WCED, 1987:44-45). The relationship between social justice and physical sustainability, therefore, is not just "empirical" or "functional", but also "theoretical" and "normative" (see also Lafferty and Langhelle 1999, Langhelle 1999).

Together, the concept of sustainable development and the strategic imperatives constitute the particular *conception* (in the Rawlsian sense) of sustainable development in *Our Common Future*. Moreover, from this frame of reference, the World Commission argued that a set of critical objectives follow from the concept of sustainable development: reviving growth; changing the quality of growth; meeting essential needs for jobs, food, energy, water, and sanitation; ensuring a sustainable level of population; conserving and enhancing the

resource base; reorienting technology and managing risk; and merging environment and economics in decision making (WCED, 1987:49).

There is, however, no necessary link between the concept of sustainable development and the strategic imperatives advocated by the World Commission. One can agree with the goal of sustainable development and disagree with the strategic imperatives and vice versa. The point is, however, that also the way sustainable development is defined (or how the problem is framed) may have implications for the strategic imperatives that can be said to follow from the concept, even at the household level. David Pearce (1993:7) argues that defining sustainable development “is really not a difficult issue”. The real problem lies “in determining what has to be done to achieve it”. In one sense this is true, but in another sense it is wrong.

The point of departure here is that how the problem is framed (which includes the way it is defined), has implications also for what is seen as necessary changes, also at the household level for the individual consumer. This implies, on the one hand, that the definition must be seen in the broader context of other concepts, conceptual and normative preconditions and the implicit interrelations that shapes the framework (Verburg and Wiegel 1997). On the other hand, it implies that consumers may adhere to different conceptions of sustainable development, which in turn will influence what the consumer understands as sustainable consumption for his own part.

Social justice, no doubt, was a crucial part of the ideological baggage of sustainable development in *Our Common Future*. This, however, does not imply that there is neither one conception of sustainable development, nor straightforward implications of different conceptions for household consumers. This is the message also in what Dobson labels his *Second thesis*: “neither environmental sustainability nor social justice has determinate meanings, and this opens the way to legitimising the pursuit of either of them, in terms of the other, in a number of ways” (Dobson, 1998:242). While Dobson (1998) does not address the issue of sustainable consumption explicitly, it is evident from his *Second thesis* that the linkage between conceptions of sustainable development and sustainable consumption is a challenging one.

What Dobson identifies as two “essential tasks” for the sustainable development movement, could also be said to hold for any definition of sustainable consumption. The first is to clarify its terms of reference in relation to justice. What do they mean by the term? With which aspects of the dimensions of social justice are they working? The second task is to organise “a long-term programme of empirical research aimed at clarifying the social, economic, and ecological circumstances under which social injustice is a cause of environmental sustainability”. This is needed, according to Dobson, because “we do not know enough to be able to say whether justice is, or is not, a necessary and/or sufficient condition for environmental sustainability” (Dobson, 1998:244). We shall in the following address the first question as it stands. The second question will be rephrased to the following: What does environmental sustainability entail, and what are the implications for sustainable consumption?

4 TOWARDS JUSTICE BASED CONCEPTIONS OF SUSTAINABLE CONSUMPTION

Based on the assumption that neither environmental sustainability nor social justice has determinate meanings, Ekeli (1999) constructs three different ethical perspectives of sustainable consumption. These are based on different explicit conceptions of social justice, but also (as we shall see later) entails different implicit assumptions on scarcity and limits. The first perspective is called *the anti-materialistic perspective*, the second *the Ecospace perspective* and the third *the needs-based perspective*. Ekeli (1999) defines them the following way:

- 1) The anti-materialistic perspective: According to this perspective, the current unsustainable production and consumption is understood as “a crisis of culture and character” in modern consumer societies. From this it follows that the primary ethical goal of development strategies must be to radically change the contemporary consumer society and its underlying materialistic values and lifestyles. There are at least two versions of this anti-materialistic perspective: religious versions (such as Buddhist and Christian), and deep ecological versions.
- 2) The ecospace perspective: Advocates of this perspective claim that all individuals have the same right to use an equal amount of natural resources and to pollute the global commons. This right to resource access and pollution, applies both to present and future generations. In this view, a just distribution of the global ecospace is an equal distribution on a per capita basis.
- 3) The needs-based perspective: This perspective claim that every person - present and future - has an equal right to get their basic needs satisfied. This is a requirement of international and intergenerational justice, which is expressed in the normative definition of sustainable development presented by the World Commission on Environment and Development, in the UN report *Our Common Future* (1987) ... This perspective is also reflected in the Rio declaration and Agenda 21 (Ekeli, 1999:2).

The anti-materialistic perspective argues that current unsustainable production and consumption is a result of the materialistic culture of high-consumption societies located in the North, and basically what is termed “*overconsumption*”. Overconsumption is seen as morally unacceptable because some consume more than they need while others cannot provide for their basic biological needs. This is unacceptable from an ethical point of view both with regard to people who are starving in the South and with regard to future generations. Overconsumption in this perspective, is regarded as “stealing resources and wealth from presently poor people and future generations”, with a possible environmental disaster during the next generation as a likely outcome (Ekeli, 1999:33). Although the deep ecology version is seen as more radical than the religious versions within the anti-materialist perspective (primarily because of its ecocentric foundation), both seem to agree on two types of measures in order to promote global sustainable production and consumption:

- 1) *Reducing production and consumption levels in the North ...* The necessary change will require an absolute reduction in resource use and a return to simpler lifestyles, as well as a rethinking of the notion of quality of life which focuses on less materialistic goals.
- 2) *A more egalitarian distribution of social and natural resources.* Both versions of the anti-materialistic perspective claim that overconsumption in the North is morally unacceptable. They seem to share the view that radical inequalities as such are unjust, and that global justice requires a more egalitarian distribution of social and natural resources in order to improve the life-conditions of people in the South (Ekeli, 1999:32-33).

The ecospace perspective holds even stronger egalitarian views on social justice, where absolute equality is the principle of distribution. Advocates of the ecospace perspective, however, acknowledge some exceptions to the general rule. There may be factors, such as differences in climate, which create a greater objective need for certain resources in some countries than in others. There are also cases in which it is problematic to apply the principle of equal rights to resources, like the distribution of water. However, the main aim of the ecospace perspective is to serve as a normative metaphor for social change and offer quantitative approaches to assist in objective setting. It is supposed to be a yardstick for broad assessment of current inequalities of resource-consumption and pollution in a North-South perspective, and a starting point for allocation of rights to use and pollute global commons (Ekeli, 1999:8).

The needs-based perspective is first and foremost associated with *Our Common Future*, and implies that all people - present and future - have an equal right to the social and natural resources that are necessary in order to satisfy basic needs such as food, clothing, shelter and jobs (WCED 1987:43). From this it follows that development strategies for global sustainable production and consumption must provide for present and future basic needs. This is also expressed in *Agenda 21*, where the main objective for action in relation to sustainable production and consumption is "to promote patterns of consumption and production that reduce environmental stress and will meet the basic needs of humanity" (United Nations, 1993:35).

Now, as Ekeli (1999:11) argues, these different perspectives have "significant implications with regard to the choice of development strategies for the promotion of sustainable production and consumption". It is reasonable, therefore, also to believe that these broad perspectives have different implications for sustainable household consumption. Moreover, for consumers adhering to different conceptions of sustainable development, it implies that what they regard as sustainable consumption at the household level will be different. The point here, however, is not to argue for one or the other of the above perspectives, but to explore possible implications of these views for household consumption, where they agree and where they disagree on necessary strategies and actions in order to achieve sustainable household consumption.

At the same time, however, it must be recognized that behind these three broad ethical perspectives, there are, in addition to assumptions relating to social justice, a number of additional assumptions regarding ecological limits, economic growth, substitutability, technological progress and so on. And as I have already argued, the above perspectives on sustainable development must be seen in the broader context of other concepts, conceptual and normative preconditions and the implicit interrelations that shapes the different framework in order to explore possible implications. In the following therefore, we shall return to controversy between weak and strong interpretations of sustainability and the question posed earlier, what the scarce resources really are, if any. If there are none, one could easily conclude that what Pearce (1995:113) has labelled "the overconsumption hypothesis", is wrong. To that question we now turn.

5 DAVID PEARCE AND “THE OVERCONSUMPTION HYPOTHESIS”

The overconsumption hypothesis, according to Pearce (1995), states the following:

... resource degradation comes about because people consume ‘too many’ resources. Moreover, if we inspect the data on who consumes the resources, we find that the richer countries are responsible for most of the materials and energy consumption in the world. It follows that, since the rich world is responsible for much of the world’s degradation, the rich world should (a) reduce its own consumption in order to reduce the burden it imposes on the world’s resources, especially those resources that have public good characteristics, and (b) pay for the restoration of the world’s environment. What is required the argument goes, is ‘sustainable consumption’ (Pearce, 1995:113).

Pearce, however, is overly sceptical towards the overconsumption hypothesis understood in terms of a reduction in consumption. In fact, Pearce argues that the hypothesis is “not just a misinterpretation, but a serious mistake which, if acted upon, would make the populations of the developing world significantly worse off” (Pearce, 1995:115). The first objection is that the argument that lower resource consumption in the North will create “ecological space” for the South is seen as a fallacy:

This because the ‘lost dollar’ of consumption in the North does not magically reappear in the South. Not generating it in the North simply means it is not generated at all. Moreover, in so far as some of the consumption in the North spills over into demand for the products of the South, the South is worse off since it loses a market. Sacrificing economic growth, then, means making both the North and the South worse off – this can hardly be the intention of those who advocate ‘sustainable consumption’ (Pearce, 1995:115).

What really matters from an environmental point of view, according to Pearce, is the *ratio* of resource use to production and consumption. This distinction is important because “consumption can rise while the ratio of resources to consumption can fall at the same time. The extent to which total resource use rises then depends on whether the ratio falls faster than the level of consumption rises” (Pearce, 1995:115). *As such, there is a race between resource efficiency, growth in consumption and the total level of resource use.*

Weizsäcker, Lovins and Lovins (1998), argue in the same manner. According to them, what is needed is an improvement in what they label “resource productivity” by a factor of 4. Based on an assessment of “the scientific analysis of climate change and other ecological menaces”, they argue that “the world may have some 50 years left to close the gaps” (Weizsäcker, Lovins and Lovins, 1998:256). Pearce (1995), on the other hand, does not make any claims about the actual improvements needed in the ratio or factor.

Weizsäcker, Lovins and Lovins (1998:244), however, seem to be unsure about what the exact number is: “Factor Four may just not be enough for ecological sustainability”. The argument that the material intensity of EOC countries should be reduced by a factor of ten and not a factor of four, is rendered without any objections (Weizsäcker is a member also of “The Factor Ten Club”). As Schmidt-Bleek (2000:2) points out, however, “Factor 10 is not a mathematical answer to the complex environmental crisis, nor is it an economic model. It is a valid objective. It is a flexible goal that will be refined as experience with changing life styles grows”. What the exact number is, 4 or 10 or 7 or 8 (if there is one), does not make any difference for the conclusion that are drawn from what is described as the “efficiency cure” and the “‘neo-cornucopian’visions”:

Doing more with less is not the same as doing less, doing worse or doing without. Efficiency does not mean curtailment, discomfort or privation. By themselves energy efficiency plus productive, sustainable farming and forestry practices could make up to 90 per cent of today's environmental problems virtually disappear, not at a cost but – given favourable circumstances – at a profit (Weizsäcker, Lovins and Lovins, 1998:xxii).

The 21st century need not be depressing at all. If our “neo-cornucopian” visions come true, even the gravest worldwide distribution problems can be solved without any part of the world's having to accept significant sacrifices in well-being (Weizsäcker, Lovins and Lovins, 1998:268).

As such, it would seem that both Pearce and Weizsäcker, Lovins and Lovins's approaches are firmly within the weak sustainability approach. For the household, the important thing to do is to buy the really efficient equipment. Thus, it is really not consumption, it seems, but production that will be directing us towards a sustainable future, (possible with some demand pressure from households). What is called for is primarily the “next industrial revolution”, what Hawken, Lovins and Lovins (1999) calls “natural capitalism”. Following Dobson's (1998) distinction between strategies and conceptions of sustainability, however, it is not clear why the above strategy should only be related to weak sustainability. As Daly (1995) argues in his attack on the weak sustainability perspective:

No one denies the reality of technical progress, but to call such changes the substitution of capital for resources (or of manmade for natural capital) is a serious confusion. It seems that some economists are counting as “capital” all improvements in knowledge, technology, managerial skills, etc. – in short, anything that would increase the efficiency with which resources are used. If this is the usage, then “capital” and resources would by definition be substitutes in the same sense that more efficient use of a resource is a good substitute for having more of the resource. But formally to define capital as efficiency would make a mockery of the neoclassical theory of production, where efficiency is a ratio of output to input and capital is a quantity of input” (Daly, 1995:52).

Therefore, increasing the ratio or factor of output to input is *really not substitution* between different forms of capital, but an increase in efficiency, regardless of whether sustainable development is defined in terms of strong or weak sustainability. Thus, the real difference between strong and weak sustainability, in my view, seem to boil down not to the question of complementarity, but to something which is not always clear in the debate, namely the explicit or implicit view on *scarcity*. What are the real scarce resources? For the advocates of weak sustainability, it is really not that obvious that resources are scarce at all. So, there is still room for substitution between natural and other types of capital. For the advocates of strong sustainability, however, we are beyond the point where the present (or any increase in) consumption of natural capital can be sustained.

6 SUSTAINABLE DEVELOPMENT AND ECOLOGICAL LIMITS – NO LIMITS, LIMITS TO GROWTH OR THE GROWTH OF LIMITS?

As such, the proponents of weak and strong sustainability seem to be divided by their understanding of scarcity. The following quote from Wackernagel and Rees (1996) seem to substantiate the above claim: “As things stand, the pace of stock depletion and accelerating global change suggests that remaining natural capital stocks are already inadequate to ensure long-term ecological stability. In these circumstances, we believe that ‘strong sustainability’ is a necessary condition for ecologically sustainable development (Wackernagel and Rees, 1996:37). Thus, *the links seem to go between scarcity and strong sustainability and no scarcity and weak sustainability*. At the same time, there seems to be substantial disagreement on what the scarce resources really are.

We are, therefore, in need of a further assessment of stocks and natural capital in order to identify and elaborate further on the issue of scarce resources. Pearce (1995:116) addresses this issue in a straightforward way when he argues that one needs to distinguish between “consumption and the consumption of materials and energy, and the assimilative capacity of the environment to deal with waste” (Pearce, 1995:114). The really scarce resources, according to Pearce, “are not materials and energy, but the receiving capacities of our environments”. This view is partly shared by Weizsäcker, Lovins and Lovins (1998:249), when they argue that they “acknowledge (and share) the widespread view that we need not be overly concerned with resource scarcity”, and that we should be “more concerned with emissions than with scarce resources”.

On the other hand, they seem more inclined to view materials as scarce, or at least as potentially scarce, and in fact they argue that they are going back to the Limits to Growth perspective of Meadows et al. (1972), but for different reasons. The reasons are economic profitability and efficiency, where the factor 4 approach, if implemented, is believed to enable control over, and the diminishing of, consumption of primary resources. Still, Weizsäcker, Lovins and Lovins (1998:220) seem to take the limits to consumption resulting from the ecological footprints perspective and ecological space, as basically true.

The same perspective is found in the Factor 10 Manifesto. In the answer to the question what the limits are, “to which we can stress the carrier system earth with our technologies without seriously and irreversibly damaging life-sustaining environmental services for human survival”, the following conclusions are drawn:

Based on observations, the worldwide consumption of natural resources has to be lowered by at least one half on the average before a state of balanced co-evolution between the human economy and the ecosphere can be expected. This implies a reduction in absolute levels of resource consumption, be it for fossils, for metals, for sweet water, or for fish, or timber (Schmidt-Bleek, 2000:2).

Seen from Pearce’s perspective, however, one could argue that Weizsäcker, Lovins and Lovins (1998) and the Factor 10 Manifesto focus on materials looks a bit strange confronted with the fact that for the majority of important minerals and metals reserves have been rising, and also because of Weizsäcker, Lovins and Lovins (1998) own stated concern for emissions rather than scarce resources. On the other hand, the Factor 10 Manifesto seem to

argue that resources are in fact scarce: “in the end, it is the absolute scale of resource consumption that matters”. And further: “What really matters is the sheer volume of material throughput, not so much the pollutants in the output” (Schmidt-Bleek, 2000:3). Although a reduction in material throughput (including energy) would also reduce energy consumption and emissions, this position, nonetheless, seems to be contrary to the position of Pearce.

But the differences may not be that large. Also Pearce and Barbier (2000) argue for the reduction of throughput (materials and energy), but not from the perspective of resource scarcity. There seem to be no short-term prospect of any scarcity, despite rising levels of consumption of materials such as minerals, metals, chemical products, fertilisers, and industrial and construction materials (Pearce 1993). Moreover, growing scarcity would show itself in rising prices, which in turn would lower the demand and stimulate substitution (Pearce, 1995:112). Thus, energy efficiency and reduced emissions of climate gases, seems to be the most important policy implication following from Pearce’s focus on the global commons. Reducing the ratio of resource use to production and consumption is part of the strategy. This, however, is believed to be possible without sacrificing economic growth. As they argue:

The anti-growth view is ... illogical in many respects. Far more fruitful is to pursue the idea that the composition of GNP can be changed. What matters is not economic growth as such, but the way economic growth is secured. It is essential that growth be secured at lower and lower ratios of materials and energy input to economic output (Pearce and Barbier, 2000:32).

Why growth has to be secured at lower and lower ratios of materials, when materials are not believed to be scarce, however, is not straightforward. Especially when confronted with Sagoff’s (2000) argument, that the belief that increased consumption will inevitably lead to scarcity is wrong: “It is simply wrong to believe that nature sets physical limits to economic growth – that is, to prosperity and the production and consumption of goods and services on which it is based. The idea that increasing consumption will inevitably lead to depletion and scarcity, as plausible as it may seem, is mistaken both in principle and in fact” (Sagoff, 2000:117). Sagoff identifies four “misconceptions” about consumption, and to these we now turn.

7 MARK SAGOFF AND “MISCONCEPTIONS” ABOUT CONSUMPTION

According to Sagoff the view that increasing consumption will lead to scarcity is based on four misconceptions. The first misconception identified by Sagoff is the claim that we are “Running out of raw materials”. In fact, raw materials – including energy resources – are more abundant and less expensive today than twenty years ago. And lower prices are not leading to more rapid depletion of resources. This, according to Sagoff, for three reasons:

First, with regard to subsoil resources, the world becomes even more adept at discovering new reserves and exploiting new ones ... Second, plentiful resources can be used in place of those that become scarce ... Third, the more we learn about materials, the more effectively we use them (Sagoff, 2000:118).

Sagoff (2000) presents a number of examples to prove his case, among them new methods of extraction, fiber optics replacing copper wire and so on. The second misconception Sagoff labels “We are running out of food and timber”. Again Sagoff points to the fact that prices for food have continually decreased. Expansion in fish farming, more forested area in the US than ever before and advances in biotechnology leads Sagoff to the conclusion that “the limits to knowledge are the only limits to growth” (Sagoff, 2000:123).

The third misconception is labelled, “We are running out of energy”. According to Sagoff (2000:124) the energy problem has “less to do with depleting resources than with controlling the pollutants”. Moreover, pollution-free energy from largely untapped sources is available. This includes geothermal energy, solar energy, wind energy, fuel cells and more. This combined with more efficient use of fossil fuels and energy savings leads Sagoff to the conclusion that technological pessimism is surely “not the only option open for environmentalists” (Sagoff, 2000:126).

The fourth and last misconception Sagoff labels “The North exploits the South”. The problem with this conception is that, with few exceptions, most of the natural resources consumed in the US are from domestic resources. Thus, material flows (except petroleum and bauxite) are almost entirely internal. The problem, therefore, is rather that the North buys too little, not too much, from the South. This is largely because agricultural products from the South have been closed off from markets in the North by subsidies, import quotas and other protectionist measures. This has resulted in political turmoil and economic collapse for many farmers in Latin America, and unnecessary ecological stress in the North. It would be better, Sagoff argues, for both environment and development if the North increased its imports from the South:

It might be better for the environment if the North exchanged the crops for which it is ecologically suited – wheat, for example – for crops easily grown in the South, such as coffee, cocoa, palm oil, and tea. Contrary to common belief, these tropical export crops – which grow on trees and bushes, providing canopy and continuous root structures to protect the soil – are less damaging to the soil than are traditional staples such as cereals and root crops. Better markets for tropical crops could help developing nations to employ their rural populations and to protect their natural resources (Sagoff, 2000:129).

Despite Sagoff’s optimism, however, he argues that there are other good reasons to halt consumption. Consumption becomes a problem when “consumption becomes an end in itself and makes us lose affection and reverence for the natural world” (Sagoff, 2000:135). But the proper frame for sustainability are moral and social terms: “As long as the debate

over sustainability is framed in terms of physical limits to growth rather than the moral purpose of it, mainstream economic theory will have the better of the argument. If the debate were framed in moral and social terms, the result might well be otherwise” (Sagoff, 2000:133).

Sagoff’s views are in many respects close to the conclusions drawn by experts and policy makers at the OECD workshop in Rosendal, Norway, 1995⁷. Here it was concluded that: “targets requiring absolute reductions in consumption levels are hard to justify: many resources are not currently perceived to be in short supply and there is no certainty that reduced consumption will result in ‘sustainability’” (OECD, 1995:8). And furthermore: “Participants expressed doubts about the ability of carrying capacity or critical loads to provide the *guiding principle* of policies for sustainable production and consumption” (OECD, 1995:7).

But OECD’s perspective is different in another respect. For sustainable consumption to be successfully pursued as a distinct policy area, and contribute to clarify objectives and policies, it follows, according to OECD, that clear boundaries have to be drawn around the subject (OECD, 1995:A6). Sustainable consumption was primarily to be approached from an ecological perspective: “issues and assumptions about levels and patterns of energy use, material throughput and use of available land area should be central to the sustainable consumption debate” (OECD, 1995:A6). Moreover, the background paper for the Rosendal workshop argued that the equation between sustainability and equity was “logically dubious” and that they should be kept apart:

An equitable world is desirable for its own sake. It is likely that a sustainable world cannot be achieved without greater degree of equity. But a more equitable world would not necessarily be more sustainable. Therefore, it seems important to draw a distinction between the distributional consequences (equity) of policies for more sustainable consumption, which must be taken into account, and the pursuit of equity as a key objective and necessary condition of these policies (OECD, 1995:A6).

As a consequence, however, the distributional aspects of sustainable development (at least to some extent) have disappeared from the OECD approach, although the working definition of sustainable consumption produced at the Oslo Ministerial Roundtable, January, 1994 can be said to include equity considerations: “The use of services and related products which responds to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations”.

According to OECD, however, this definition is not “operational unless one can determine whether the consumption of any particular good, service or natural resource is sustainable or not. In practice, sustainable consumption has to be interpreted in a pragmatic way” (OECD, 1999:7). Compared with the conception of sustainable development in *Our Common Future*, however, it seems that also some assumptions on social justice are necessary for drawing conclusions as to determining what a sustainable development path is. Even though it is said to be “politically very sensitive” (OECD, 1995:11), it seems difficult to do without.

Our Common Future (1987) argued that even physical sustainability “cannot be secured unless development policies pay attention to such considerations as changes in access to resources and in the distribution of costs and benefits” (WCED, 1987:43). If sustainable development implies reconciling physical sustainability and social justice it seems implausible

⁷ OECD Workshop, Rosendal, 2-4 July 1995, *Sustainable production and consumption: Clarifying the Concepts*.

not to make any assumptions about social justice and the distributional aspects, despite the political sensitivity of the issue. These assumptions influence not only the available ecological space, but could also influence the very composition of future generations (Langhelle, 1999). For example, scarce resources could probably be maintained over a longer period of time if a small minority were to consume them, than in a situation where they were to be consumed equally by all (Lafferty and Langhelle, 1999:7).

Sustainable development, however, was one of the concepts the OECD workshop on *Sustainable consumption and production: Clarifying the concepts* (strangely enough), did not address. Of the considered concepts, eco-efficiency was seen as the more promising concept. Not only because of the obvious advantages of this strategy, but also because it was argued that it did not inhabit the same "ideological baggage" as the other concepts explored, especially ecological footprints and ecological space. The ideological baggage was identified primarily as "assumptions within" these concepts, related to ecological limits and equity.

The "de-linking" of equity, however, seems somewhat awkward from the perspective of sustainable development. The claim that sustainable consumption should be approached from the ecological perspective and assumptions about levels and patterns of consumption, is a too limited approach from a sustainable development perspective, and it could be argued that equity considerations should be equally central to the sustainable consumption debate (OECD, 1995:A6). It may be that this is what is meant by sustainable consumption as an integrating concept (for economic, social, developmental and environmental policies), but as Dobson (1998) shows clearly, there are many conceptions of social justice with quite different implications for the balancing of economic, social, developmental and environmental policies. For OECD it is probably the case that social justice is too political an issue to address.

Sagoff's arguments point in the directions of other reasons than ecological limits to be concerned with consumption. On the other hand, however, Pearce and Barbier (2000:49) argue that environmental limits have a place in the sustainability equation: "determining the ecological limits to exploitation of the natural capital stock is an important ecological contribution to measuring sustainability." For the ordinary household, however, knowing what to do (if anything) is, from the above perspectives on sustainable consumption, not that straightforward. How urgent and serious should a family take environmental problems given the above possibilities and positions? Why should we trust the one's who argue that we have to consume less? What knowledge do they have which the politicians, environmental authorities and other actors who argue against the "over-consumption hypothesis" do not seem to have? And if it is true that we have 50 years to close the gap, why do anything at all now? Why not wait for something better, cheaper and environmentally much more friendly stuff to come in a not too distant future? Why worry? These questions, I think, most household consumers being told to consume less, ask themselves. And still?

Why trust the one's who argue that sustainable development will be achieved not at a cost but at a profit? In the following section, therefore, we take a brief look at two interpretations of strong sustainability, two concepts developed in order to reconcile the upper ecological limits for consumption and social justice, ecological footprints and environmental space⁸.

⁸ Unfortunately there is neither footprint nor space for a full presentation and discussion of these concepts. Without doing full justice to neither of the two concepts, however, the brief presentations should still capture the most essential features of these approaches and some of their main implications for household consumption.

8 LIMITS TO GROWTH AND ESTIMATES OF WHAT PROBABLY CANNOT BE ESTIMATED

While the above perspectives on ecological limits are comforting for the (Norwegian Western) consumer, others have argued, firstly, that it is possible to develop estimates of upper limits (although not with absolute precision), and secondly, that we have passed these limits already. It is not obvious from the above discussion, however, that the claim that “there is wide agreement that the Earth’s ecosystems cannot sustain current levels of economic activity and material consumption” (Wackernagel and Rees, 1996:1) is true⁹. Regardless of the lack of “wide agreement”, the arguments made by the proponents of strong sustainability must be scrutinised by the household consumer.

The thrust of the argument is that the cumulative effect of seemingly insignificant resource uses and waste releases “put a load on the biosphere that is exceeding its regenerative capacity” (Wackernagel, 2000:102). Thus, there are, in the perspective of Wackernagel (2000:102), some “non-negotiable boundary conditions; the question is how we are to organise ourselves best within these constraints”. The challenge becomes one of “providing constructive and practical ways to bring human actions in line with the necessity to reduce human impacts” (Wackernagel, 2000:102). The tool created for this purpose is the concept of *Ecological footprints* (Wackernagel and Rees 1996, Chambers, Simmons and Wackernagel 2000, Wackernagel 2000).

Ecological footprints analysis is “an accounting tool that enables us to estimate the resource consumption and waste assimilation requirements of a defined human population or economy in terms of a corresponding productive land area” (Wackernagel and Rees, 1996:9). And again, the concept is anchored in strong sustainability: “... it can help translate strong sustainability into planning action”. And further: “Gaining acceptance for strong sustainability hinges on finding a meaningful unit to measure the natural capital requirements of the economy” (Wackernagel and Rees, 1996:40).

The reason for estimating the ecological footprint is to identify absolute environmental impact. This is justified by Chambers, Simmons and Wackernagel (2000:153) with the following example: “For example, one washing machine might score 1000 Ecopoints, another model might score 2000, so we can compare the two products. But unless we know how many EcoPoints there are in the world we have no way of estimating the contribution of that product to carrying capacity and therefore sustainability”. Estimating the ecological footprint is meant to perform precisely this task. The task of doing just that, however, seems extremely difficult. Ecological footprints are in principle estimated the following way:

The Ecological footprint starts from the assumption that every category of energy and material consumption and waste discharge requires the productive or absorptive capacity of a finite area of land and water. If we sum the land requirements for all categories of consumption and waste discharge by a defined population, the total area represents the Ecological Footprints of that population on the Earth *whether or not this area coincides with the population’s home region*. In short, the Ecological Footprint measures land area required per person (or population), rather than population per unit (Wackernagel and Rees, 1996:51).

⁹ Given the arguments presented in the previous section, the opposite seems closer to the truth. In my view, claims like this only contribute to making the household consumers suspicious about “green” consumption.

Thus, Ecological footprint “summarises a given population’s impact on nature by analysing aggregate consumption (i.e., total load = population x *per capita* consumption) and converting this to a corresponding land area”, and this is said to “produce a single measure of ecological demand” (Wackernagel and Rees, 1996:53), based on estimates of consumption of food, housing, transportation, consumer goods and services (Wackernagel and Rees, 1996:67).

The question is, however, if Ecological footprints can be said to represent true ecological limits. As Spangenberg (2000) argue, Ecological footprints suffer from the fact that land, material and energy have no common denominator. Converting different types of resource consumption to land area are therefore not only difficult, but it seems hard to justify specific reductions in consumption based on Ecological footprints analysis. If true, as argued by Wackernagel and Rees (1996:105), that industrialised countries’ ecological footprints “are particularly large due to these countries’ voracious use of fossil fuel”, it is hard to see exactly what is gained from the analysis of ecological footprints and how it relates to ecological limits. Moreover, it is hard to see ecological footprint analysis delivering what monetary approaches are said to be blind to:

In summary, monetary approaches are blind to the requirements for ecological sustainability because they do not adequately reflect biophysical scarcity, social equity, ecological continuity, incommensurability, structural and functional integrity, temporal discontinuity, and complex systems behaviour (Wackernagel and Rees 1996:47).

As such, it is doubtful that ecological footprints “provides a useful quantitative approximation of the extent to which human demands are, or are not, within the means of Nature” (Wackernagel, 2000:106)¹⁰. But, although ecological footprints (most likely) do not reflect any true ecological limits, “something” is nonetheless estimated (in terms of available hypothetical land equivalents). Based on the population in the world as a whole in 1995 (5687114000 people), the average ecological footprint for the world was estimated to be 2.2 ha/per person. The average available bio-capacity was estimated to be 1.9 ha/per person, giving a global ecological deficit of 0.3 ha/per person. Moreover, given the predicted global population of 9 billion for the year 2050, available space will be reduced to 1.2 ha/per person, including bioproductive sea space (Wackernagel, 2000:106). Furthermore, the analysis shows (although not surprisingly) huge differences between nations:

For example, the average Canadian required over 6 ha of biologically productive land and 1 ha of ecologically productive sea space to provide for his or her 1995 level of consumption ... These add up to 7.2 ha or 72 000m² (720 times 100m) or more than ten typical soccer fields. In comparison, the average American lives on a footprint about 30% larger, the average Italian on about half the size (Wackernagel, 2000:104).

Already, however, the average Italian is said to use “more than double what is available for the average world citizen, or nearly three times more than is at hand per Italian within their national territory” (Wackernagel, 2000:106). For the World, “the overshoot is 15%”. Thus from this point of view, according to Wackernagel (2000:106), the most significant question in research, business and politics, is how all people can enjoy satisfying lives within an average of no more than 1.8-1.2 ha per person. For the household consumer, however, these

¹⁰ The statement also seems unreasonable given the following quote from Wackernagel and Rees (1996:63): “A ... reason for keeping things simple is that certain ecosystem functions are analytically intractable. For example, it is difficult to quantify the connection between such generalised life-support services as global heat distribution, biodiversity and climate stability and either per capita demand for these services or associated ecosystem area. While these life-support services are essential for well-being and we all ‘consume’ them, they cannot as yet be incorporated directly into the Ecological Footprint”.

perspectives stand in a sharp contrast to the conclusions drawn from the weak sustainability perspectives, and it makes one wonder if there really are as easy ways out as advocated by the factor 4 and factor 10 approaches.

Another concept developed to handle the question of ecological limits creates some of the same worries for the household consumer, the concept of environmental space. The term environmental utilisation space (or ecospace) was first used by Horst Siebert in 1982, and has been further developed by Hans Opschoor. The ecospace concept has been adopted with enthusiasm by NGOs, most notably Friends of the Earth Europe. In Norway, John Hille (1995, 1996, 1997) has worked extensively with the concept. Hille has tried to define the available environmental space in order to answer the question what a sustainable Norway would look like, and if the current consumption patterns and levels could be sustained for a number of given resources. Environmental space is defined the following way:

The “environmental space” for a given resource is the maximum amount that the world may sustainably consume per year, given the constraints imposed by long-term availability as well as by the environmental effects of its extraction and use. Once the environmental space for a given resource has been defined at the global level, environmental space per capita is given by the assumption that each world citizen has an equal right to consume (Hille, 1995:33).

For Hille (1995:49), environmental space is a combination of the *equitable* and the *sustainable*. For equity, the “general rule” is that Norwegian (or any other country) consumption “is compatible with global equity if, and only if, it would be possible for all other peoples to consume resources, and to pollute, at the same rate as we do.” “Possible” is here used in the same meaning as sustainable. Moreover, sustainability, according to Hille, means “that the global rate of consumption must not make the quality of the environment poorer, or the availability of resources less, for any future generation than for the present one (Hille, 1995:49). Environmental space is thus a shorthand for the maximum level of sustainable and equitable consumption (Hille, 1995:56). Within these constraints, Norway’s environmental share in a given resource is defined as:

Environmental space/Global population X Norway’s population + C

Where C is “a correction factor for special conditions in Norway, that might make the objective per capita need for particular resources greater or less than the world average” (Hille, 1995:51). Discussing this issue, however, Hille (1995:308-314) found few arguments supporting or justifying greater shares for Norwegians¹¹. Hille (1996), however, argue that due to natural peculiarities, some peoples and nations can use more of a resource than others. Water and timber are examples used in the Norwegian context. Environmental space should, therefore, according to Hille (1996:8), be taken for what it is, a simplified tool for getting the grips on “equitable global resource distribution”. Environmental space is calculated for energy, agricultural products, timber, minerals, raw materials for organic chemistry, land for other uses than agriculture or forestry, and environmental resources (i.e. the absorptive capacity of the environment). The time frame is 2025 with an expected world population of 8.5 billion people. The following conclusion is reached for energy consumption in Norway:

¹¹ Some resources, like water, may be more reasonable to account for at the regional rather than the global level when estimating the environmental space. In Hille’s study, however, all resources was accounted for at the global level. Water was disregarded since “there is simply no likelihood of its becoming a scarce resource in Norway” (Hille, 1995:60).

... the global environmental space for energy may at best accommodate a per capita consumption at about the current Norwegian level; at worst, it will only be around a third of that level, and the availability of high-grade energy could be less than one-quarter of what we use today (Hille, 1995:225).

Moreover, the strongest requirement regarding energy use is the need for a sharp reduction in the use of fossil fuels because of the needed reduction in CO₂-emissions. Beside the need for changes in energy generation, however, *the general conclusion is that present Norwegian consumption may be sustained, except for meat and fish consumption:*

If, over the next generation, we use every means in our power to increase the efficiency with which materials and energy are used, and to replace unsustainable with sustainable methods of agriculture, forestry and energy generation, it *may* be possible for everyone to consume almost in the way Norwegians do today. It is rather unlikely that this will apply to consumption of animal foods, but it *might* apply to most other forms of consumption.

It is important to note the “might”.... The state of knowledge does not permit us to say with certainty that there would be enough energy and material resources to achieve this, however, efficiently exploited ... It is significantly less likely that it would be possible, within the constraints of sustainability and equity, to consume everything at twice the rate we do today. It is less likely that there would be materials enough; less likely that we could find land enough to do it *sustainably*, even in Norway ... However, yet the question remains whether we might nevertheless double, or triple, or quadruple consumption levels, if we were able to alter the pattern of consumption. The answer is probably yes – in pure theory and on conditions which are not likely to be fulfilled ... the mix of consumption – at least of the private kind – has shown no tendency to become “greener” over the past generation (Hille, 1995:363-364).

For the household consumer, the above conclusions are not straightforward, and it is by no means easy to grasp the immediate implications for household consumption. It gets even more confusing with the estimated shares for Norway presented by Hille (1996:46) and Hareide (1996). Hareide (1996) presents the following table showing the needed reduction in current consumption in order to reach the estimated environmental share in 2030:

Table 1. Environmental Shares for Norway:

	<i>Environmental shares per person per year:</i>	<i>Current consumption in Norway:</i>	<i>Must reduce</i>
CO ₂ -emissions	1.7 tons	7.6 tons	78%
Energy use	18 000 kWh	53 000 kWh	66%
Concrete	80 kg	280 kg	71%
Raw iron	36 kg	440 kg	91%
Aluminium	1.2 kg	19 kg	93%
Crop land	2.4 acres	3.2 acres	25%

Source: Hareide (1996:101)¹²

These changes are described as “not drastic” (Hareide, 1996:103). Seen in relation to the Factor 4 and factor 10 approaches, they may not be, but it is not clear how these targets should be understood. Seen in relation to Hille’s (1995) own study, there are many discrepancies, and huge differences between the high and low estimates. Moreover, environmental space estimates will vary according to different assumptions made for technological development. As such, it is hard to see how these estimates in any way could be taken as authoritative figures for the household consumer.

¹² My translation

Furthermore, given the above discussions of scarcity, it seems even more difficult to draw conclusions from the presented estimates of “scarce” metals. Hille (1996:55) presents figures showing that extracted at the present rate, copper will last for 260 years, lead for 440 years, nickel for 140 years, zinc for 240 years and cobalt for 440 years. But what are the implications for household consumption? Hille (1996:55) argues that it is necessary to “limit the consumption of the most common metals”, and to “reduce the consumption of the most scarce”, among them “copper, zinc and lead” (Hille, 1996:54). The justification for limiting and reducing the consumption of these metals, however, is not primarily the scarcity of these metals, but instead emissions and land-use associated with extraction. So, again other factors than material scarcity seem to be decisive.

9 BRINGING EQUITY BACK IN (AND COMPLICATING THE MATTER EVEN MORE)

The most decisive factor, however, for the conclusions drawn on sustainable consumption seem to be the strong egalitarian perception of global justice in both Ecological footprints and Environmental space. When drawing their conclusions about consumption patterns and levels, it is approached from the perspective of imbalances in consumption between the North and the South. Moreover, reductions in consumption in developed countries are justified from the perspective of the poor people in developing countries. It is, however, possible to agree with the estimated environmental limits, but disagree that sustainable development requires an equal distribution of goods. A change from a egalitarian to an in-egalitarian conception of justice would increase our (western consumers) share of the environmental space and justify larger footprints.

At the outset, comparing consumption at the national level seems plausible. What is overlooked is the many differences in consumption patterns and levels nationally which are often regarded as just. Differences *within* countries are different from differences between countries in many respects. First, it can be argued that differences within a democratic society reflect some kind of public conception of social justice defined collectively, and implemented through the democratic institutions of society. Second, even the democratic society is not conceived of as a (perfectly) just society, it is probably more just than a non-democratic society. Third, it is common in most democratic societies to view *inequality* as both legitimate and just in many circumstances. The strongly egalitarian approaches of sustainable consumption within Ecological footprint and Environmental space may therefore be seen as unjust from other conceptions of social justice.

Moving from social justice within a democratic society to international justice between states further complicates the reasoning about equity. The moral relevance of state borders is not easy to determine. Moreover, how the actions of household consumers in developed countries affect people in a developing country, are not always straightforward. And if inequality is just within states, why can it not be also between states? It is no surprise, therefore, that equity creates problems for defining sustainable consumption. There are a number of different and competing conceptions of social justice relevant for sustainable development (Dobson, 1998). Moreover, contrary to ecological limits that at least have a “scientific” or “realist” core, equity falls under the more “soft”, “unscientific” and “political” sphere. This, no doubt, makes equity considerations extremely difficult to handle in relation to sustainable consumption, and as we have seen, especially for organisations like OECD.

According to Ekeli (1999), the needs-based perspective, in contrast to the ecospace perspective, assumes that intergenerational justice requires weak sustainability. This conclusion, however, is not necessarily correct, at least for the needs-based perspective in *Our Common Future*. On the one hand, *Our Common Future* is argued that energy and the biosphere’s receiving capacity are the most important critical resources, in the sense that it is here the first limits to global development will materialise. In accordance with this, the World Commission on Environment and Development also concluded that the consumption of these resources had to be reduced. Due to the problem of climate change, the World

Commission proposes a low-energy scenario of a 50 per cent reduction in per capita primary energy consumption in industrial countries and a 30 per cent increase in developing countries (WCED 1987:173).

In contrast to the ecospace perspective, however, the Commission regarded this scenario as compatible with further global economic growth, although fundamental political and institutional shifts were seen as necessary in order to realise this low energy scenario (WCED 1987:173). The needs-based perspective nonetheless seems to allow a higher degree of substitution between man-made capital on the one hand, and renewable as well as non-renewable resources on the other. The World Commission expresses the following view on the relation between substitution and future supply of natural resources in general, and non-renewable resources in particular:

As for non-renewable resources, like fossil fuels and minerals, their use reduces the stock available for future generations. But this does not mean that such resources should not be used. In general the rate of depletion should take into account the criticality of that resource, the availability of technologies for minimising depletion, and the likelihood of substitutes being available. With minerals and fossil fuels, the rate of depletion and the emphasis on recycling and economy of use should be calibrated to ensure that the resource does not run out before acceptable substitutes are available. Sustainable development requires that the rate of depletion of non-renewable resources should foreclose as few future options as possible (WCED 1987:46).

On the other hand, the conception of social justice in *Our Common Future* is quite complex. The World Commission argued strongly for an *equitable* (but not necessarily equal) access to resources (WCED, 1987: 39). The following passage in *Our Common Future*, however, can be seen as an argument for equal shares between nations on a per capita basis for some goods:

Living standards that *go beyond* the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability. Yet many of us live beyond the world's ecological means, for instance in our patterns of energy use. Perceived needs are socially and culturally determined, and sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire (WCED, 1987: 44).

From this conception of sustainable development the task is no longer directed towards defining the minimum level of need satisfaction and equal opportunity, but (as in the ecospace perspective) to define the upper limits, in this case for energy use and greenhouse gas emissions. The passage can be interpreted to contain two distinct principles, which apply to living standards that go beyond the minimum requirement: (i) That consumption standards are to be within the bonds of the ecologically possible. This can be formulated as *the principle of physical sustainability*. And (ii), that consumption standards are to be such that we all (persons and peoples) reasonably can aspire towards them (though not necessarily achieve them). This can be called *the principle of universality* (Lafferty and Langhelle, 1999).

Developed countries have in liberal theories of international justice like Rawls's (1993), no duty towards developing countries beyond basic need satisfaction and equal opportunity (or to create the conditions which make a well-ordered society possible). The above principles thus impose duties upon developed countries that go beyond liberal principles. Changing production and consumption standards in *developed* countries becomes a necessity in order to reconcile the concern for intra- and intergenerational justice. The alternative would be to prevent developing countries from aspiring, and later attaining, a living standard equivalent to that of developed countries, and to argue that developed countries have an exclusive right to their present standard of living.

But even though the principle of universality may imply an equal share of the available depository capacity for greenhouse gases on a per capita basis, it does not necessarily imply an equal distribution of other environmental resources or resources in general¹³. It does not imply that living standards, lifestyles and consumption will, or should, turn out equal. The principle of universality only demands an equal or equitable share of the resources that fall under the scope of the principle of physical sustainability. It is doubtful that freshwater, food, and other goods can be distributed equally on a global basis. But it is equally clear that the consumption of some of these goods may make other worse off. The principles, therefore, takes into consideration that what is required by justice is not making successors better off, which, according to Barry (1991: 241), is a nice thing to do but not required by justice, “and not making them worse off, which *is* required by justice” (see also Shue, 1999).

For this reason, it is more precise to say that *the principle of physical sustainability* - working in tandem with *the principle of universality* - constrain inequality for certain environmental goods by demanding that these are distributed either equally or more equitably. But the principle of universality would apply only for the distribution of those environmental goods that come in conflict with the principle of physical sustainability. Unlike the “environmental space” approach, therefore, *Our Common Future* does not argue for an equal distribution of timber, metals, minerals, aluminium, copper and so on. On the one hand, it is not viewed as demanded by justice. On the other, resource scarcity is not perceived as a *general* problem. This because of the possibilities of technological progress, changes in social organisation, substitution, and that limits for many environmental resources and contrary to climate change, will “manifest themselves in the form of rising costs and diminishing returns” (WCED, 1987: 45).

The problem of climate change, however, is complex, far-reaching, and relates to most human activities. A list linking climate change to its related activities would turn out far from short. Reducing energy consumption and equalising per capita emissions of greenhouse gases would, therefore, effect both the production and consumption of a variety of goods. In practice, two countries can have the same level of greenhouse gas emissions on a per capita basis, and still - because of differences in the internal distribution, technology, available national resources, social organisation, culture and so forth - have very unequal living conditions and large inequalities in GDP pr. capita. This is why the combination of the two principles gives rise to what can be called an “open-ended egalitarianism” or “constrained inequality”. The egalitarian implications of *the principle of universality* in relation to the limited resources constrain inequality, but only for the resources that fall under the scope of *the principle of physical sustainability*¹⁴.

This explains the proposed low energy scenario proposed by the commission. It was in accordance with the assumption that the deponic capacity of the Earth is the (first) limiting factor for global development. This would “require profound structural changes in socio-economic and institutional arrangements and it is an important challenge to global society” (WCED, 1987: 201). Still, this was the preferred option and the Commission believed that “there is no other realistic option open to the world for the 21st century” (WCED, 1987: 174).

¹³ The atmosphere has both the characteristics of a pure public good: nonrivalry and nonexcludability. These are defined the following way by IPCC:

Nonrivalry means that additional consumers do not have to compete with each other to use the good and therefore drive up its cost: the marginal cost of an additional individual using the good is zero. Nonexcludability means that the marginal cost of exclusion - of stopping an individual from enjoying the good - is prohibitive. Public goods thus permit ‘free riding’ (IPCC, 1996: 28).

¹⁴ See Dover (1992) for an interesting comparison.

As we have seen, there is wide disagreement on sustainable development, social justice and environmental limits among distinguished scholars in academia. It seems reasonable to conclude that strong sustainability is linked to strong egalitarian assumptions on equity, and weak conceptions linked to more in-egalitarian assumptions on equity, although, as we have seen, *Our Common Future* fall somewhere in between. When arguing that consumers should change their behaviour it seems that most advocates of sustainable development take for granted that the above disagreements and controversies can easily be overridden. Given these differences, it seems unreasonable to suspect consumers to agree on *one* conception of sustainable development in their daily life.

In the following we shall disregard the differences on social justice and instead look for common ground in order to explore the possibilities for household consumer actions. In doing so, we shall take the consumers (possible) legitimate convictions and views on sustainable development, social justice and environmental limits seriously, but narrow the focus and try to establish some common ground between different perceptions of consumption patterns and levels and strong and weak sustainability. In order to do so, we shall develop a typology of what these convictions would imply under the condition of ideal theory.

10 ECOLOGICAL LIMITS AND SOME COMMON DENOMINATORS

We have found that both ecological perspectives and equity considerations influence the available ecological space, and that this space varies according to the assumptions made. For potential ecological limits, however, we have still not looked for common denominators regarding patterns and levels of consumption. Baker (1996), reporting from the Oslo Ministerial Roundtable on sustainable production and consumption, February 1995, describes one of the self-perceived goals of the symposium to frame the issues within the perspective of *changing the patterns of consumption*, rather than the *level of consumption*:

Of crucial importance in the Oslo Roundtable's elaboration of policies aimed at achieving sustainable consumption was the belief that their main task was to identify means to bring about 'necessary improvements in environmental quality through the substitution of more efficient and less polluting goods and services (patterns of consumption) rather than through reductions in volumes of goods and services consumed (levels of consumption)'. Changing patterns of consumption and not levels of consumption are seen as more politically plausible in developed, democratic societies (Baker, 1996:94).

Although Baker may be correct in explaining the focus on patterns rather than levels as a result of political "comfortism", it could also be seen as the result of a "real" shift in perception. The focus on patterns fits nicely with the strategies of sustainable development that focus upon eco-efficiency and "producing more with less". The proponents would challenge Baker's view, however, that there is a necessary contradiction between a focus on patterns or levels. Instead, they would argue that changes in consumption patterns eventually would affect consumption levels as well.

Understood as a real shift, however, what Baker (1994) describes can be seen as an expression of the "re-conceptualisation" of the relationship between economy and the market, in accordance with what Weale (1992) and others call *ecological modernisation*. 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, 1992:31). Environmental protection, in this ideology, is no longer seen as a burden upon the economy, but rather as a potential source of future growth (Weale, 1992:75). In Hajer's (1995) perspective, ecological modernisation is presented as a reaction to the radical environmental movements of the 1970s.

The background paper for the OECD Rosendal workshop in many ways confirms this change. Here it is claimed that the "no growth" positions from the 1970s has been "largely discredited": "Sustainable consumption, as an issue in the 1970s, centred around the belief that economic growth was inherently limited by the finite nature of fossil fuel energy, minerals and other non-renewable resources. This 'no-growth' position has since been largely discredited on the grounds that it failed to give due weight to the ability of markets to stimulate technological substitutes as scarcities emerge" (OECD, 1995:A5).

Our Common Future (1987), in many ways, represents the same shift in perception on the issues of limits and economic growth. Although seen as "a bit ambiguous on the existence on limits" (Dryzek, 1997:144:129), limits still have a real existence in *Our Common Future*: "But ultimate limits there are, and sustainability requires that long before these are reached, the world must ensure equitable access to the constrained resource and reorient technological

efforts to relieve the pressure” (WCED, 1987:45). Moreover, different limits hold for the use of energy, materials, water, and land. Thus, there are different limits for different resources, and these limits have a real existence.

What seems to worry Dryzek (1997), however, is that these limits never seem to have any implications for policies, most notably curbing economic growth. The shift in perception described by Baker (1996) and OECD (1999), however, also includes a shift in perception on technology and social organisation. These are seen as “variables” that can be “manipulated”. Manipulated in such a way that changes in technology and social organisation, in theory at least, can make *economic* growth possible within the limits set by nature (Langhelle, 2000b). This is also the core of the second of the two key concepts sustainable development is said to contain. Technology and social organisation are the “tools” which (hopefully) will make it possible to meet the needs of the present without violating ecological limits and ultimately the ability of future generations to meet their own needs.

In the interpretation of *Ex Officio* for the Commission Jim McNeill, together with Winsemius and Yakushiji (1991:27), the “maxim of sustainable development is not ‘limits to growth’; it is ‘the growth of limits’”. It is the growth of limits in the sense that the “basic food and energy needs of 5 billion people (with 5 billion more to come in the next five decades) require large appropriations of natural resources, and the most basic aspirations for material consumption, livelihood, and health require even more” (McNeill, Winsemius and Yakushiji 1991:27). It is, to a large extent, from this assumption the need for a sustainable development, and thus sustainable production and consumption, is derived.

There are, however, as we have seen, at least two different opinions regarding the existence of ecological limits and whether or not these have been exceeded by human actions. These have been linked to two different conceptions of sustainability, weak and strong. As argued earlier, the differences between them are closely related to the views on ecological limits and the present state of the environment. So far we have concluded, on the one hand, that *the links seem to go between scarcity and strong sustainability and no scarcity and weak sustainability*. On the other hand, it seems reasonable to conclude that there is an additional *division between those who believe that “the efficiency approach” is sufficient, and those who believe that “the efficiency approach” is necessary but not sufficient for a sustainable development*. Moreover, the differences between these seem closely related to the views on patterns or levels of consumption. Thus *the links seem to go between sufficiency and pattern and insufficiency and level*. Seen together, these findings give rise to four different perspectives that can be illustrated the following way:

Table 2. Perspectives on sustainable production and consumption:

	Weak sustainability (No scarcity)	Strong sustainability (Scarcity)
The efficiency approach sufficient (patterns)	1. Pearce?	2. Weizsäcker, Lovins and Lovins
The efficiency approach necessary but not sufficient (levels)	3. OECD	4. Wackernagel and Rees, Schmidt-Bleek, Hille

The placing of Pearce, Weizsäcker, Lovins and Lovins, and Wackernagel and Rees and Hille should follow from the above discussion. Pearce has a question mark because the logic of his approach places him in route 2, but he seems to place himself in route 1. OECD,

however, needs some further explanation. Ever since the Rosendal workshop OECD has argued that eco-efficiency may not be sufficient for sustainable consumption:

[Eco-efficiency] did not offer a comprehensive framework for thinking about which consumption trends were unsustainable and how changing those trends could best be managed. The achievements gained through an eco-efficient economic development strategy could be overwhelmed by continued growth in consumption (and the production which that engendered, just as past gains in efficiency in several areas (e.g. in the energy and transport sectors) have been outstripped by absolute growth in the volume consumed.¹⁵

Thus, OECD is placed in route 3 due to the expressed views on ecological limits, the present state of the environment and the limitations of eco-efficiency. The table above, however, may leave the impression that the differences between the 4 identified perspectives are both watertight and also large. The opposite may be closer to the truth. That is to say, the problem is not so much that strategies for sustainability “are promiscuous across conceptions of sustainability” (Dobson, 1998:58), but rather that there are many areas where there is much agreement. Therefore, the strategies and conceptions of sustainability crossed analytically at their borders, needs to be specified further as to where they actually overlap and agree in order to grasp the implications of these perspectives.

Some agreement can be identified in the following. The first thing to note is that *none of these perspectives are “business-as-usual” perspectives! All of them give certain recommendations that are important and have implications for household consumers and their strategic choices.* This implies that no matter how sustainable consumption is conceived, it implies some kind of change in behaviour or demands certain actions. As such, in all the above perspectives “business-as-usual” will lead us further down the unsustainable development path we may presently be in.

The second thing to note is the *uncertainty about conclusions.* This can be illustrated by the following from Chambers, Simmons and Wackernagel (2000:12). On the one hand it is stated that “human consumption is *most likely* exceeding that which nature can regenerate”¹⁶. A sentence later, however, it is made clear that “*we are in overshoot*”¹⁷, with a footprint larger than the carrying capacity of our planet” (Chambers, Simmons and Wackernagel, 2000:12). The same duality and tension is to be found in Wackernagel (2000). “If we accept the fact that we are currently in overshoot...” is quite different from the statement that we are “now reaching the point of ecological overshoot”. This is not, however, an objection against Ecological footprints analysis, but a reflection of the complexity of the question at hand¹⁸, and thus also the large amount of uncertainty which any attempt to specify ecological limits are associated with. This, I think, proponents of all four perspectives agrees upon. It is most certainly present in Pearce and Barbier’s (2000) writing:

We suggest that a good part of the weak versus strong debate is misguided since weak sustainability is common to both approaches. Nonetheless, crucial issues remain. Perhaps we have reached a stage in human development when additional environmental depreciation does have such high costs that it constitutes de facto non-substitutability. This is what many ecologists have been saying for some time. But advocates of strong sustainability have been strongest in assertion and weakest in offering empirical substance to their views. That does not make them wrong, but it does suggest they have yet to be proved right (Pearce and Barbier, 2000:100).

¹⁵ <http://www.oecd.org/consumption/Concepts.htm>.

¹⁶ My italics.

¹⁷ My italics.

¹⁸ Wackernagel (2000:103) may disagree with this view. The following statement commenting on Cohen’s (1995) overview of carrying capacity studies over the past 100 years at least seem to indicate a different view: “Some interpret the range of answers for carrying capacity as a proof for the uncertainty of ecological limits.”

As such, sustainable development is not about certainties but uncertainties, and it puts the following conclusion by Stevens (1999) in perspective: “Most consumers say they are willing to pay to protect the environment, sort their waste for recycling and shop in an environmentally sound way. But in reality they do little to change their consumption patterns” (Stevens, 1999:10). Uncertainty most certainly contributes to that, and is, unfortunately one might say, fundamentally linked to sustainable development.

The third thing to note, however, is that somewhat surprisingly; there seem to be a common conviction that the first ecological limit we (most likely) will reach or have reached relates to climate change. As Wackernagel and Rees (1996:27) writes: “It may not be energy resources, but the waste assimilation capacity of our planet, that becomes most limiting.” The same seems to be the case with Pearce (1995) and Weizsäcker, Lovins and Lovins (1998). It is also the view expressed in *Our Common Future* (1987), where the biosphere’s capacity to absorb the by-products of energy use, is conceived as the ultimate limit for global development (WCED, 1987:58-59). Moreover, Brundtland (1990:138) argues that of the “large ecological issues – the greenhouse effect, the disappearing ozone layer and sustainable utilisation of tropical forests”, the “most global – and the potentially most serious – of all the issues facing us today”, is “how we should deal with the threats to the world’s atmosphere”. Moreover, inherent in the conception of sustainable development in *Our Common Future*, there is a hierarchy of priorities and weighting of different concerns. Based on my interpretation (Langhelle, 2000b), the following list represents the hierarchy of priorities within the conception of sustainable development in *Our Common Future*:

1. The satisfaction of human needs, in particular the essential needs of the world's poor to which overriding priority should be given
2. Climate change (and thus the energy issue)
3. Loss of biological diversity
4. Pollution (PCB, radioactive pollution, acid rain etc.)
5. Food security¹⁹

This constitutes what one could call a “baseline” also for environmental policies in accordance within the conception of the World Commission²⁰. While the list of issues is quite limited, it relates to most of the indicators proposed for sustainable household consumption, but more to some than to others. Although the issues and problems listed are complex, the above “baseline” provides one possible “theoretical construct” or conception of sustainable development, which could provide at least some weighting of the different indicators.²¹

¹⁹ Other candidates for this list are of course ozone depletion, nuclear war, and population growth. I have excluded them from the given list on purpose. However a full justification of this would take another paper, and I am not going to do that here (Langhelle, 2000b).

²⁰ What is lacking in the international follow-up of *Our Common Future* is also evident from the list of priorities: A global Framework Convention on the Eradication of Poverty. Taken seriously, that is what follows from the conception of sustainable development in *Our Common Future*. Such a Framework Convention could, just as for Climate Change, be organised with national reduction targets, timetables for meeting the targets, scientific bodies and so forth (Langhelle, 2000b).

²¹ A couple of reservations: First, if one, for example, live somewhere where there is no access to clean drinking water, this would be given priority over 2, 3, 4, and 5. The reason is, of course, that this links up to 1, vital needs. The list will therefore vary from country to country depending on the problems that relate to 1. Second, the issues are of course interconnected and must in many cases be seen together. A fact that further complicates policies for sustainable development (Langhelle 2000b).

Pearce too seem to hold the view that the global commons are the most crucial resources in a sustainable development perspective. Pearce convincingly argues that one needs to distinguish between consumption and the consumption of materials and energy, and the assimilative capacity of the environment to deal with waste, because these categories have different implications for defining sustainable consumption. What might puzzle the household consumer reading Pearce, however, is that nothing seem to be gained from the distinction made. That is, Pearce never seem to draw any conclusions about consumption from the perspective of *the assimilative capacity of the environment*. So, if one agrees with Pearce's analysis about scarce resources²², and even his conclusions about the fallacies of reducing consumption *per se*, it seems odd that Pearce nowhere (as I have been able to find), argue that the consumption of resources contributing to climate change must be reduced. Nor is it argued that it from this perspective becomes more important to improve the ratio of production and consumption that relates to emissions of greenhouse gases. While this probably would happen more or less automatically if the true costs of resource use were embodied in the prices of products and materials, the very notion of limits and ecological sustainability becomes blurred in Pearce's perspective because they are never specified in any way.

From Pearce's perspective on limits the recommendations made by the Intergovernmental Panel on Climate Change (IPCC) (1996) should be of special interest. It is by far the most thoroughly researched ecological "limit" ever, and represents maybe the most authoritative statements on the issue of whether consumption is too high or low. IPCC's conclusion, that a 60-80 per cent reduction in emissions is necessary to stabilise our climate, however, never seems to have any implication for consumption, not even the consumption of fossil fuels! Why not, from the above perspective, conclude that the most important thing the household can do is to *reduce the consumption of goods that contribute the most to climate change (i.e. fossil fuels)?*

This conclusion never gets drawn explicitly, but is instead dressed up in the language of "correcting the prices". As Pearce and Barbier (2000:249) conclude: "... we have to attach price tags to environmental assets if we are to change the way we treat the environment". But correcting the prices is based on precisely the assumption that the act of correcting the prices would affect both production and consumption (and also investments), and eventually lead to the real target, reduced emissions of climate gases. Unfortunately, although there seem to be more or less universal agreement (at least within OECD) that correcting a distorted price system represents the most effective course of government action (OECD, 1995:5), such actions have shown to be politically extremely difficult.

Thus, even in Pearce's perspective it must be possible to argue that the consumption of fossil fuels should be reduced? What seems to hold Pearce and Barbier (2000) from drawing such conclusions is a belief that appealing to moral stances are in fact counterproductive, and blurs the relationship between causation and solutions:

... the critics still find it hard to come up with a better and more convincing story about causation and solutions. But we think that so much of the moralizing is either whistling in the wind or counterproductive. One can take a moral view and also look to pragmatism for effecting those views. Above all, whatever route is taken has to be democratic and we share the wider concern that some modern environmentalism has lost its roots in what people, as opposed to elites, want (Pearce and Barbier, 2000:250).

²² Pearce argue that the scarce resources are the global common resources related to the receiving capacity of the environment; ozone layer depletion, global warming, ocean pollution etc. (Pearce, 1995:116).

So, while there in ecological footprints and environmental space analysis is an eagerness to recommend reductions in consumption (maybe more than necessary), there is in Pearce's perspective the same eagerness to avoid making such recommendations about reductions in consumption (maybe less than necessary), even when it follows from the approach itself. Thus, there may be more agreement on necessary reductions in consumption than what is usually acknowledged.

The fourth thing to note is that despite the focus upon materials in the factor 4 and factor 10 approaches, there also seems to be some acceptance that limits should be looked for elsewhere than material scarcity. The concern has therefore shifted to other (possible) limiting factors. For OECD (1995), the following are listed as potential limits:

- the degradation of renewable resources, particularly agricultural land;
- the accelerating rate of species loss;
- the accumulation of emissions and wastes in the environment whose effects, particularly in combination, represent a largely unknown risk (eg toxification, climate change) (OECD, 1995:A5).

Wackernagel and Rees (1996) express similar views:

... models concerned with the biophysical dimensions of sustainability should concentrate on understanding potentially limiting factors. Current trends suggest that the factors most likely to impose limits on human activity are certain forms of natural capital and the life-support functions they perform. In the 1970s, the limits-to-growth debate was largely concerned about the depletion of non-renewable resources such as metal ores and fossil fuel. In contrast (and ironically), a more likely bottleneck today seems to be the declining stocks of renewable natural capital such as fish, forests, soil and clean water (Wackernagel and Rees, 1996:63).

As such, the move away from the limits-to-growth debate in the 1970s is present in most of the above perspectives of sustainable production and consumption. At the same time, there seems to be a growing concern about possible limits, or in other words, the growth of limits.

Given the above common denominators - that none of the perspectives are "business – as-usual", the agreement on uncertainties, the challenge of climate change and other possible limits - it may seem that there is more disagreement on the issue of global social justice. As we saw earlier, however, even on the issue of global social justice there is some common ground between the needs-based perspective, the ecospace perspective and the anti-materialist perspective. Although an equal (global) distribution falls outside the conception of social justice within the needs-based perspective, this conclusion is far from evident when it comes to the question of how to distribute the deponic capacity of the Earth over the long-term and also during the transition to the long-term distribution²³.

Moreover, the problem of climate change establishes a direct causal link between many (if not most) types of consumption and the fact that one may ultimately make other people worse off - in the present and in the future— which is a violation of what *is* required by justice also within liberal and needs-based perceptions of social justice. Thus, the problem of climate change links consumption and social justice in a fundamental way in all the above perspectives. This link holds for both indirect and direct energy consumption, as long as it can be related to the emission of greenhouse gases.

²³ See Shue's (1993) seminal article on the distributional questions raised by the problem of climate change.

Furthermore, there is another way to link what can be described as social justice-driven conceptions of consumption, and ecology-driven conceptions of sustainable consumption. Although the challenges of sustainable consumption no doubt raise fundamental issues of justice, it can also be seen as an “empirical” issue, where the future increase in consumption is not a matter only of justice, but concerns *the consequences* of policies aiming at economic growth and development in developing and developed countries, regardless of what one thinks constitutes social justice²⁴. This line of reasoning is usually expressed in the form of “what will happen if China ...” or “what would happen if India...” and so on (see for instance Brown 1995, Chambers, Simmons and Wackernagel 2000).

In a fundamental way, this changes the perception of the challenge of consumption and also the perception of developing countries. For consumption the challenge becomes one that is fundamentally linked to global ecological interdependence. For developing countries it implies that they can no longer be seen necessarily only as victims of an unjust world order, but also responsible for their own development. And most likely, they will develop no matter what the consumer thinks is a just distribution of goods globally. As far as the development in developing countries also affect developed countries, and vice versa, this fundamentally changes the relationship between the North and the South. For the consumer then, it may not only be the issue of social justice that creates challenges for sustainable consumption, but also the household consumers expectations about how the world will actually develop the next 50 years or so.

In our context, however, *the actual development is something the consumer can influence and plays a part in*. A more pragmatic approach to consumption will therefore have to include the option that the reasons for doing something need not necessarily to be based on equity considerations, but on arguments along the lines presented above. This is not an argument, however, for taking the equity considerations out of the sustainable consumption equation. Instead, it implies that the fact of increasing ecological interdependence may lead to egalitarian conclusions for other reasons than justice. Still, consumers will hold different views on equity, what it should mean both nationally and internationally, and different expectations about world development. The different positions, however, should be respected (and discussed). As with limits, equity is hard to define in precise terms, and pessimists and optimists hold different expectations even when they are presented with the same facts about the world.

In the following, we shall use the identified common denominators –the rejection of “business –as-usual”, the agreement on uncertainties, the challenge of climate change, the growth of limits – as the starting point for identifying different household *strategies* based on the above perspectives.

²⁴ In addition, assumption about population growth further complicates the matter.

11 LINKING PERSPECTIVES ON SUSTAINABLE CONSUMPTION AND HOUSEHOLD CONSUMER STRATEGIES

For the household consumer, as we have seen, contributing to sustainable development implies taking a stand number of complicated issues. Moreover, taking the household consumer serious implies taking the different (legitimate) views on equity, limits and strategies seriously. We have identified different views on scarcity, eco-efficiency, patterns and levels and weak and strong sustainability. On the basis of these differences, we constructed four conceptions of sustainable consumption. There are reasons to believe that household consumers also share these different conceptions. As such, *these four perspectives can also be seen as potential foundations for different household strategies, reflecting some of the basic assumptions that the household consumer legitimately may believe to be true.* In lack of evidence and the likelihood of falsifying any of these, all four approaches must be seen as real and also legitimate positions for household consumers.

As pointed out by Cantell and Ericsson (2000), many people are willing to assume more responsibility for the environment, but in reality they do very little to change their consumption patterns. This could be, they argue, a result of lack of information about appropriate choices and inadequate or unavailable recycling programmes, but it need not be. The link between attitudes and action is no doubt a complex one. In the following, however, I will disregard this complexity and try to look at possible implications for household consumption under the condition of ideal theory from the positions and common ground identified above.

Given the above differences and common ground, we shall in the following focus upon two questions: The first question we want to address is *what to do?* The second question is *how to do it?* The first question will be addressed by looking at a set of proposed indicators for household consumption. One of the most comprehensive approaches to map household consumption and advice household consumers has been conducted by Lorek and Spangenberg (2000). Their aim has been to identify those areas of consumption where private households can make “significant contributions to environmental sustainability, and to present a transparent and comprehensive set of indicators for them”. In their analysis, they focused upon consumption clusters and the environmental significance of these, and the potential influence of households on these consumption clusters.

We shall use their set of indicators also to address the second question, and discuss different ways the household consumer can influence these indicators. The how to do it question will be discussed from the *conceptions of sustainable production and consumption* identified in table 2. That is, the different perspectives on sustainable production and consumption will be seen as different household strategies for sustainable consumption. The question we want to explore is if the identified conceptions offer any guidance for the household consumer on how to achieve what is seen as necessary changes, and how different the strategies are; after all, turn out at the household level.

There are a number of available guidelines for household consumption. Ecolifestyles²⁵, Earth Sisters' Green Lifestyle Team²⁶, EcoCal²⁷, the Environmental Home Guard in Norway²⁸ are just a few examples. Schmidt-Bleek (2000) in the *Factor 10 Manifesto* point to the following actions for household consumers:

The MIPS of products can be lowered – or the resource productivity increased - by social choices as well as by technical improvements. For instance, moving into a smaller apartment when the children have left, sharing things within a family and among friends, or the purchase of a smaller car can contribute significantly toward preserving natural resources. Improving the longevity of a machine can be achieved by either a technical change (e.g. modular design) or by better maintenance and longer use on the part of the user. Exchanging materials (replacing materials with those carrying lower rucksacks) can of course also lower MI. And S can be increased by re-designing the product altogether (for instance by developing a multifunctional product like the Swiss army knife) (Factor 10 Manifesto, 2000:4)²⁹.

Chambers, Simmons and Wackernagel (2000) also provide the household consumer with advice on what to do. Their recommendations are based primarily on the EcoCal software program developed by Chambers and Simmons and used in United Kingdom from 1997. The EcoCal questionnaire consists of 45 question organized into six categories of household impact: transport, energy, water, waste, house and garden, and purchasing. By answering the questionnaire, the household gets an EcoCal score, which should be as low as possible, and also a dial divided into green, amber and red. Green shows a score better than most similar households, amber about the same and red means a worse score than most similar households. Moreover, the EcoCal gives the household consumer hints and tips on practical environmental action.

By analysing data from 42 households from six regions within the UK, transport was found to have the highest environmental impact, closely followed by direct energy use while waste and water scored the lowest. From this, the following conclusions were drawn: “Guided by these findings any public campaign to minimise individual environmental impact would probably wish to focus its resources firstly on household transport choices, then energy use. Even with the limited information on shopping habits, it seems that education about specific purchasing decisions would also yield benefits. Of course, consumption data may vary from region to region, necessitating different priorities” (Chambers, Simmons and Wackernagel, 2000:168).

As we shall see, these findings are quite close to the findings of Lorek and Spangenberg (2000).

²⁵ See <http://www.ecolifestyles.com/main.html>.

²⁶ See <http://www.geocities.com/earthsisters/>.

²⁷ See <http://www.tidybritain.org.uk/gfg/webs/gfg/ecocal/ecocal.htm>.

²⁸ See <http://www.miljoheimevernet.no/>.

²⁹ MI = Material Input, S = Service. This relates to the measure material input per unit service – MI/S or MIPS, which is also called Ecological Rucksack. The measure was proposed by Schmidt-Bleek in 1992 “as a basic measure for the ecological stress potential of products and services. The M is the sum total of all natural material inputs (Life-Cycle-Analysis – LCA), including those displaced and used for making the necessary energy available. S, the service or utility desired, must obviously be defined in each case. Contrary to M, S is not measurable. The higher MIPS, the higher are the “ecological costs per unit utility”. The MI associated with a given S can then be assessed in weight units. With the help of MI-factors for basic materials (like steel, plastic, wood, or cement, see: <http://www.wupperinst.org>), the MI and the ecological rucksack of complex products can be computed straightforwardly ... The ecological rucksack of a product is defined as its MI minus its own weight (Schmidt-Bleek, 2000:4). Schmidt-Bleek was awarded the Takeda Environment Reward 2001 for his innovative work with the MIPS and ecological rucksack concept.

11.1 Lorek and Spangenberg's indicators for sustainable consumption – what to do?

In their study, Lorek and Spangenberg (2000) chose resource consumption as a simplified, but what they call “reliable representation of environmental pressure dynamics. Growing resource consumption goes together with growing environmental pressures and vice versa”, although, as they point out, “not necessarily proportionally”. The key resources they analysed were energy, material consumption, and land use. Three priority fields for action by households were identified: “*construction and housing, food/nutrition and transport (in this order)*”. Furthermore, Lorek and Spangenberg (2000) developed 14 indicators in relation to the three identified consumption clusters. They reflect key driving forces of current environmental problems, and are based on estimates of actors' influence (where they can make a difference). This is called an “actor-centred approach”. The methodological approach is also said to overcome “weighing and aggregation problems”. The proposed indicators are presented in table 3:

Table 3: indicators for sustainable household consumption.

Construction and housing:
<i>Indicator 1:</i> Heating energy consumption (kWh/m ² a)
<i>Indicator 2:</i> Settlement area (m ² /cap)
<i>Indicator 3:</i> Relation of private investment in existing houses to the erection of new buildings (dimensionless)
<i>Indicator 4:</i> Resource intensity (kg/m ² a)
<i>Indicator 5:</i> Living space (m ² /cap)
Food/Nutrition:
<i>Indicator 6:</i> Meat consumption (kg/cap a)
<i>Indicator 7:</i> Organic products (% market share of food products)
<i>Indicator 8:</i> Food transportation (km/kg)
Transport:
<i>Indicator 9:</i> Shopping and recreation transport distances (km/cap a)
<i>Indicator 10:</i> Modes of transport for vocational purposes (share of cars, rail and other public transport, non motorised transport)
<i>Indicator 11:</i> Modes of transport for shopping and recreation purposes (share of cars, rail and other public transport, non motorised transport)
<i>Indicator 12:</i> Number of passenger cars (dimensionless)
<i>Indicator 13:</i> Holiday flights (km / cap a)
<i>Indicator 14:</i> Average energy consumption of new cars (l gasoline / 100 km)

(Source: Lorek and Spangenberg, 2000)³⁰.

³⁰ The proposed indicators and the significance analysis are based on German data. They should, according to Lorek and Spangenberg (2000:3), still “be applicable to the majority of industrialised countries without major readjustments”.

Any meaningful assessment of human-made environmental distortions should, according to Lorek and Spangenberg (2000) be based on “a life-cycle wide approach, from resource mining to final disposal”. At the household level, however, simplifications are necessary, and the indicators are one way of doing so. Moreover, it is done by inputs rather than outputs measurements, where material flows, energy consumption and land use are the seen as primary inputs. An input analysis is justified from the following arguments:

Shifting the focus of concern from the reduction of emissions to resource consumption, from industrial chimneys towards the sales point, is as well changing the role households from being a victim of environment hazards to being co-producer. This growing attribution of environmental responsibility to households calls for their empowerment as actors, partly by equipping them with reliable information and meaningful indicators about the resource intensity of the goods and services on supply. This kind of assessment is called *directionally secure* if with decreasing inputs the level of environmental damages will be decreasing with a high probability. Most of the current environmental problems can be addressed this way, except for those caused by relatively small flows of highly active substances like dioxins or pseudo-hormones ... Reverting the current growth patterns towards a significant decrease in resource consumption would lead to a reduction of a multitude of environmental problems (Lorek and Spangenberg, 2000:5).

Lorek and Spangenberg (2000) analysed a total of 10 consumption clusters representing more than 95% of private household induced resource consumption. Three of them were related to state consumption (health care, education/training and social life understood as the police, the military and other public services), and therefore disregarded in the analysis. The three clusters, construction and housing, food and transport, however, together constituted 70% of material extraction, energy consumption and land use. The remaining four clusters, hygiene, clothing, cleaning and recreation (without transport), constituted less than 5% of the total resource consumption, and where therefore regarded as “environmentally secondary” (Lorek and Spangenberg, 2000:6). Given the fact that the consumption of these goods constitutes an important part of many “lifestyles”, the exclusion of these consumption clusters also implies a less “lifestyle-oriented” approach than many other approaches.

The priority given to construction and housing as the most important consumption cluster is due to the fact that energy consumption of housing accounts for 32% of the total demand, with heating representing 49% of total households' energy consumption when passenger transport is included. A reduction in the energy demand for heating would thus, according to Lorek and Spangenberg (2000:7), significantly contribute to sustainable household consumption. Moreover, construction and housing causes 29% of the total material consumption, including raw materials and resources for construction, extension, maintenance and in the end, demolishing of the building.

The housing sector, therefore, offers significant opportunities for savings regarding land use, material flows and energy consumption, and the indicators for housing and construction are designed to capture this savings potential. Heating energy consumption can be used as a “selection criterion” when buying a house or flat, but does not indicate “specific action” during the phase of use. The second indicator, settlement area, is “one of the main contributors to sealing off land, together with transport and production infrastructure”. It is, however, only to a limited degree attributable to day to day consumption decisions”, but still seen as “driven by consumer choices as regards the flat or house they rent, buy or build” (Lorek and Spangenberg, 2000:7).

The third indicator, "Relation of private investment in existing houses to the erection of new buildings (dimensionless)", is not self-explicatory. It is chosen because modernising existing flats and houses instead of building new ones reduces material flows and land use significantly "per unit of functionally identical output". The fourth indicator, "Resource intensity" is supposed to capture the use of recycled materials, materials that can be easily rebuilt or demolished. The fifth indicator, "Living space area per person" is necessary both because energy and material consumption is correlated with living space area, and in order to avoid misinterpretations, since a single person will consume less energy than a four-person household in an equally sized flat (Lorek and Spangenberg, 2000:7).

The second most important area for household consumption is food. In Germany, the food chains share of energy and material consumption is about 20%. Moreover, the output of greenhouse gases constitutes 3,2 tons per capita. Indicator number six, "Meat consumption" is seen as a crucial indicator because of both emissions and the large areas of land needed. Indicator seven, "Organic products (% market share of food products)" is chosen primarily because of the considerable reduction in pollution associated with organic farming. Indicator number eight, "Food transportation (km/kg)" is chosen due to the fact that transport is the third largest factor contributing to resource consumption in the food sector, and its share is increasing. The consumers influence, however, is limited, according to Lorek and Spangenberg (2000:11), partly because of limited information (labelling) of transport intensity, and partly because of non-available substitutes.

The third most important area for household consumption is transport. 24% of all energy consumption by the household is caused by transport, 60% of this by gasoline consumption. Moreover, like in many other countries, transport in Germany is the sector with the highest annual growth in greenhouse gas emissions. Furthermore, the growth in transport volumes and distances is still closely related to economic growth, and no attempt to curb transport growth has so far succeeded. In fact, the trend goes towards more unsustainable modes like heavy cars and air transport (Lorek and Spangenberg, 2000:11-14).

Indicator 9, "Shopping and recreation transport distances (km/cap a)", is chosen primarily for three reasons: these transport activities account for more than half of the kilometres covered per person; they are strongly dominated by passenger car use; and households have significant potentials for choosing more sustainable means of transport to (Lorek and Spangenberg, 2000:12). While indicator 9 measures distances, indicator 11, "Modes of transport for shopping and recreation purposes (share of cars, rail and other public transport, non motorised transport)", monitors the modes of transport chosen for shopping and recreation.

Indicator number ten, "Modes of transport for vocational purposes (share of cars, rail and other public transport, non motorised transport), aims at capturing the mix of commuting. Although the consumer to a limited extent can influence the frequency and distance of trips, the mode of transport chosen has a significant influence on the resource consumption for transport, and is also a decision that to a large degree is open to consumer decisions. Indicator 12, "Number of passenger cars (dimensionless)", is chosen because once a car is available, it is used frequently regardless of any environmental awareness (Lorek and Spangenberg, 2000:13).

Indicator 13, "Holiday flights (km / cap a)", is chosen because of the current trend to use air transport more frequently, and to more distant destinations. Although the resource consumption of aviation is still relatively small, the current development indicates a steep increase in energy and resource consumption in aviation. Indicator 14, "Average energy

consumption of new cars (l gasoline / 100 km)”, is a crucial indicator in the sense that the only way the energy consumption of new cars can be decreased is a shift in the current trend towards bigger, faster, more comfortable and heavier cars, towards smaller, more energy-efficient cars (Lorek and Spangenberg, 2000:14).

This is also an area where technological development is moving forward with rapid speed. Electric cars, hybrid cars, recycled cars, cars built with new materials and fuel cell technology, may in the future offer the consumer a vast of environmentally friendly consumer choices. In a sense, therefore, there is a tension between the indicators chosen here. On the one hand, you can reduce the distance and frequency of your driving, or you can buy a more energy-efficient car and drive the same distance and reduce the environmental impact in both cases. The question is, therefore, if one accepts that the above three consumption clusters are the most important ones, how should household consumers relate themselves to the challenges raised?

With the proposed set of indicators, therefore, as an answer to the question *what to do?* we now turn to the second question of how to do it, how the household consumer can influence these indicators, with the different *conceptions of sustainable production and consumption* as the starting point.

11.2 Sustainable consumption strategies – how to do it?

The question we want to explore in the following is if the identified conceptions of sustainable production and consumption offer any guidance for the household consumer on how to achieve what is seen as necessary changes, and to what degree the different conceptions lead in different directions for household actions. As already argued, there are strong reasons to believe that household consumers also share the different conceptions of what sustainable production and consumption implies. Converting the four identified perspectives on sustainable production and consumption to household strategies, therefore, implies that these perspectives reflect some of the basic assumptions that household consumers legitimately may believe to be true. A strategy can be many things. It can be seen as a plan, some sort of consciously intended course of action, or guidelines for how to deal with a situation. A strategy can also be seen as a perspective, as an ingrained way of perceiving the world (Mintzberg, 1996). In the table below, four different household strategies are identified in the sense that they constitute ingrained ways of perceiving the world and also some guidelines for how to deal with sustainable consumption:

Table 4. Household strategies for sustainable consumption:

	<i>Weak sustainability (No scarcity)</i>	<i>Strong sustainability (Scarcity)</i>
The efficiency approach sufficient (patterns)	1. The Cornucopians	2. The Prometheans
The efficiency approach necessary but not sufficient (levels)	3. The Worried Cornucopians	4. The Radical Prometheans (Survivalists and Green Radicals)

I have called the first household strategy *Cornucopian*. The name is taken from Dryzek’s (1997) description of what he presents as a reaction to the *Survivalists*. The basic story-line

of Survivalists, according to Dryzek, is that “human demands on the carrying capacity of ecosystems threaten to explode out of control, and draconian action needs to be taken in order to curb these demands” (Dryzek, 1997:34). Cornucopian, on the other hand, means “abundant natural supply: unlimited natural resources, unlimited ability of natural systems to absorb pollutants, and unlimited corrective capacity in natural systems” (Dryzek, 1997:45).

In a way, the view of no scarcity and the sufficiency of eco-efficiency can be seen as *Cornucopian*. Still, it needs to be understood in a correct manner. It is not Cornucopian in the (extreme) sense as understood by Dryzek. *The Cornucopian position is only valid for its proponents under certain conditions*. In the case of Pearce, for instance, it would only be true if the prizes of goods also reflected its true environmental costs. Thus, Cornucopians would argue that markets, correct prices and technological development would make continued economic growth possible without ever hitting any environmental limits. As argued before, this is not a business as usual approach. This position, therefore, is quite different from the one described by Dryzek, and as a strategy for household consumption it has a number of implications for the household consumer. Seen in relation to the proposed indicators by Lorek and Spangenberg (2000), the first thing to note, is that some indicators turn out as more important than others. The basic assumptions of this perspective are no scarcity and efficiency, but as we saw earlier, also Cornucopians are inclined to view environmental problems as real, including climate change, if “business-as-usual” is to continue. In their view, however, energy is a problem first and foremost of abundance. Thus, indicator 1 (Heating energy consumption, kWh/m² a) would be a bad measure in the sense that the important thing would be the share of renewable energy sources used for heating. (Lorek, together with Fuchs (2001), actually propose this indicator as an additional indicator in another study).

Moreover, for the Cornucopian, it is an open question how relevant indicators 2-5 actually are. Indicator 4 (Resource intensity) is probably the one most closely related to this perspective, with its focus on efficiency, new materials and technological development. On the other hand, since resources in general are not perceived as scarce, the major focus would be (given the common ground identified before) on greenhouse gas emissions. Furthermore, it is not evident that Cornucopians necessarily would see investments in existing houses as a better strategy than building new houses. Many houses have a limited life span anyway, and building new houses opens up for technological solutions which are difficult and much more costly to realise in existing houses. As such, a new house can be built with the latest technology in heating (solar cells, windmills, bioenergy, heat-pumps, ventilation with heat recovery units, just to mention a few of the available options). In the sense that these measures have the intended effects, Cornucopians would have more problems with accepting the restrictions associated with indicators 2 and 5. Settlement areas and living space restrictions are hard to justify from the perspective of no scarcity and efficiency.

Cornucopians would also be less inclined to view food and nutrition as areas where consumption should be restricted (with Sagoff’s arguments in mind). In the sense that meat consumption can be related to climate change and greenhouse gas emissions, they might accept a moderate version of this goal, but they would probably not view organic products as necessary for sustainable consumption. Indicator 8, “Food transportation” may be accepted for the same reason, i.e. that it can be related to climate change and greenhouse gas emissions. On the other hand, it may not, for obvious reasons. The reasons, of course, have already been addressed. Technological development in energy use associated with transport is the one area where the Cornucopians may be seen as overly optimistic, but also with

some justified support. Not only is the technological development moving forward with rapid speed, but fuel-cell technology may in the future provide the consumer with an emission-less car, a dream for many, soon reality for some, and a nightmare to others.

As such, reducing driving (Indicator 9) is less important than getting yourself an energy-efficient car (Indicator 14) in this perspective. You can drive the same distance and uphold the frequency of your driving, and still reduce the environmental impact of your driving significantly. Cornucopians would still welcome developments in public transport and non-motorised transport, but would probably be more interested in the development of efficiency of different modes of transport. Indicator 13, "Holiday flights" is probably the most problematic indicator for the Cornucopian. The likelihood of a technological development in aviation that would substantially reduce the environmental burden lies further ahead. Cornucopians would therefore provide an ad hoc justification for ignoring this area. The ad hoc justification would be based on three premises: the resource consumption of aviation is still relatively small, there are no substitutes available, but by taking the reductions in other modes of transport, we could keep our holiday flights.

The Cornucopian sustainable household strategy, I would argue, is a strategy many consumers endorse. It is, furthermore, not a business-as-usual strategy. Under the condition of ideal theory, it provides many good reasons to act, simply because the basic premise of the position is lacking. Prices are not correct and do not reflect the true environmental costs today. Pushed to its limits, this strategy implies *acting as one would have done if prices were correct*. As Pearce and Barbier (2000:4) argue, "many environmental resources have no market. They are bought and sold. Accordingly, there are no price signals to alert us to their scarcity or to induce discovery, substitution and technological change". As a consequence, the challenge for the household consumer is to prize the goods properly. In itself a difficult task, but still a logical consequence of this view. If prizes go up, consumption usually changes. As such, the Cornucopian household consumer must induce discoveries, substitution and technological change by his own action.

Moreover, the belief in technology and human ingenuity is so strong in this strategy that the household consumer holding this view would have to invest in the latest technology in the consumption areas where there exist no market. Thus, the Cornucopian strategy can be seen as an expensive strategy (and much more expensive than strategies that advocate a reduction in consumption). If one already owns a house or flat, the strategy implies investments in energy-saving equipment, insulation, maybe new windows etc., actions it can be argued would be even economically beneficial if the prizes were correct. If building a new house, it could imply utilising the last technology in heating, insulation, windows, building techniques and materials and so on. I suspect, however, that some consumers actually act in this manner for the reasons provided above, although they are often not regarded as environmentalists at all, there is a consistency in their actions based on a sincere belief that this is the way to realise sustainable consumption.

The *Promethean* strategy comes very close to the Cornucopian strategy. It differs from the Cornucopian strategy by its belief in scarcity, by accepting less environmental loss and refusing substitution between man-made and natural capital. It shares, however, the same belief in human ingenuity. The Promethean strategy is based on what Dryzek (1997:45) calls the "environmental discourse of growth forever", and is as the Cornucopian view a response to Survivalism. The name comes from Greek mythology and is based on the following: "In Greek mythology Prometheus stole fire from Zeus, and so vastly increased the human capability to manipulate the world for human ends" (Dryzek, 1997:45).

The basic assumptions of this perspective are scarcity and efficiency. Due to scarcity, Prometheans are inclined to view climate change as a larger and more challenging problem than Cornucopians. They share the view that energy is a problem first and foremost of abundance, but they would see the energy problem in relation to a variety of other problems and other areas of consumption. Thus, for the consumer, it is not enough to only take into account direct energy use, but the consumer must also take into account indirect energy use. Moreover, the scarcity assumption makes the overall energy consumption the major target. Thus, Indicator 1 (Heating energy consumption, kWh/m² a), would be the most important, although it also in this perspective would be regarded as necessary but not sufficient.

Moreover, the scarcity assumption also makes indicators 2-5 much more relevant for Prometheans. As for the Cornucopians, indicator 4 (Resource intensity) would be the key indicator, but it would be so primarily as a means to affect also the other indicators. Thus, efficiency, new materials and technological development could be used in order to influence the need for new settlements areas, to make existing houses up to date technologically, and to reduce the need for large(r) living space by using the latest knowledge and techniques in architecture and construction techniques. Furthermore, since resources are, to some extent, perceived as generally scarce, the major focus would be not only on greenhouse gas emissions but also on material scarcity. Contrary to Cornucopians, they would see investments in existing houses as a better strategy than building new houses. But to the extent that the technological development stipulated by factor 4 and factor 10 is achieved and have the intended effects, also Prometheans may get problems with accepting the restrictions associated with 5 ("Living space"), in the sense that it may not be necessary.

Prometheans would be more inclined to view food and nutrition as areas where consumption should be restricted. They may share Sagoff's optimism, but they would still act primarily on the assumption of scarcity. Meat consumption, therefore, would be related not only to climate change and greenhouse gas emissions, but also to land use the protection of biological diversity and other emissions. They would, however, just as the Cornucopians, probably not view organic products as necessary for sustainable consumption. For Indicator 8, "Food transportation", the arguments would also be the same as for the Cornucopians. As such, also for Prometheans, reducing driving (Indicator 9) is less important than getting yourself an energy-efficient car (Indicator 14). They would accept that you can drive the same distance and uphold the frequency of your driving, and still reduce the environmental impact of your driving significantly. They would, however, also welcome developments in public transport and non-motorised transport, and they would for the time being probably accept Indicator 13, "Holiday flights" as a necessary indicator.

Also the Promethean sustainable household strategy, I would argue, is a strategy that some consumers endorse. It is obviously not a business-as-usual strategy. Under the condition of ideal theory, it provides many good reasons to act, and also guidelines for how to act. Moreover, the belief in technology and human ingenuity is even stronger in this strategy than in the Cornucopian strategy. Furthermore, the Promethean strategy is by far the most expensive strategy, and more expensive than the Cornucopian strategy. The reason is of course that the belief in scarcity makes the necessary technological improvements even larger. The household consumer holding this view would have to invest in the latest technology even in *consumption areas where there exists a market*. It implies doing what can possibly be done by technological improvement. It requires energy and material savings which are not yet available on the market for regular consumers, but which still is possible to get hold of if enough time and resources are used for the purpose. So it implies, for example,

going for the heat recovery ventilation system that recycles 90 per cent of the energy, not the one that recycles 60 per cent, even if it implies paying more. Thus, it is a strategy that needs additional investments in time, money and efforts. Still, I believe, some consumers actually act in this manner for the reasons provided above. Compared with Cornucopians, they are most often regarded as environmentalists with a technological “twist”, and there is also here a consistency in their actions based on a sincere belief that this is the way to realise sustainable consumption.

The strategy of the *Worried Cornucopians* is more complicated and maybe more difficult to interpret. It represents a more mixed strategy in the sense that it opens up for a reduction in consumption levels for some resources, and a change in the pattern of consumption for other resources. Or alternatively, such large changes in consumption patterns that also the level of consumption is affected. Moreover, also here it is most likely that the reductions would be directed towards the environmental resources that have no market, that is, the global commons. Thus, one way of interpreting this strategy is that it rejects material scarcity, but acknowledges climate change as an ecological limit that we have already reached or moved beyond.

Seen in relation to the indicators proposed by Lorek and Spangenberg (2000), this strategy would pick the indicators that systematically influence emissions of greenhouse gases the most. Thus, this implies that also here, Indicator 1 (Heating energy consumption, kWh/m² a) would be necessary, but not sufficient. Contrary to the Prometheans, however, Indicator 1 (Heating energy consumption, kWh/m² a), would not be the most important. The most important would instead be the share of renewable energy sources for heating. Moreover, since the scarcity assumption only relates to climate change, indicator 2 is less important. Indicators 3-5 would be relevant to the extent that it contributes to climate change (which it obviously does). This implies, therefore, that the *Worried Cornucopians* are more inclined to accept these indicators, and also to accept restrictions on living space as indicated by Indicator 5, as long as it can be justified from the perspective of climate change.

The *Worried Cornucopians* does not deny or reject the possibilities of technological progress. They share the focus on efficiency, new materials and technological development. The difference is, however, that this is regarded as necessary but not sufficient in order to combat climate change. The *Worried Cornucopians* would see investments in existing houses as a better strategy than building new houses, only to the extent that it reduces emissions of greenhouse gases. They would be more inclined to view food and nutrition as areas where consumption should be restricted. Especially meat consumption, which would be regarded the most important indicator. Organic food would be less important. Food transport, on the other hand, would also be important to the extent that it can be justified from the perspective of climate change.

The *Worried Cornucopians* also rely on technological development within transport. They share the belief that this development is necessary, but they do not believe that technological development necessarily will be enough. This is what lies behind the more mixed strategy. If it turns out to be enough, that is fine. If not, the *Worried Cornucopian* will be more inclined to accept restrictions on driving and reduced driving (Indicator 9). It is difficult, however, for the *Worried Cornucopians* to come to terms with himself on what is the most important. It is, no doubt, important to get an energy-efficient car (Indicator 14). But it could be that one also should drive a shorter distance and reduce the frequency of the driving. The reason for the doubt, of course, is uncertainty about how much the environmental impact of driving must be reduced. The *Worried Cornucopians*, therefore, argue for large improvements in public

transport and non-motorised transport. Indicator 13, "Holiday flights" is basically accepted as a target for household consumption.

The Worried Cornucopians sustainable household strategy, I would argue, is a strategy many consumers endorse. It is, as the other strategies, not a business-as-usual strategy. Under the condition of ideal theory, it provides many good reasons to act, and the actions are justified primarily from the perspective of climate change. As with the Cornucopian strategy, correcting the prizes would be important, and also to act as one would have done if prices were correct. This, for the *Worried Cornucopians* implies more than anything to contribute to the reduction of the consumption of fossil fuels. I suspect that some consumers act in this manner for the reasons provided above. They are more often regarded as environmentalists (but not always), and there is a consistency in their actions based on a sincere belief that this is the way to realise sustainable consumption.

The last household strategy is the most radical, in the sense that, at least in many versions, it points towards a radically new society. The Radical Prometheans (which here include Survivalists and Green Radicals) are seen as Prometheans, not for their belief in technology and high-tech solutions, but instead because of their belief in the human capability to manipulate *the human world* for human ends. This is also a Promethean strategy (see Langhelle 1999b for a further discussion), and maybe more challenging and difficult at the collective level than the other strategies. As a household strategy, however, it is simpler in the sense that many of the necessary changes can be done quite cheaply. Instead of owning a care, you can use a bicycle, share a car with others or use public transport. This would reduce the consumption of fossil fuels substantially. The money could instead be used for windmills, solar panels and organic food to increase the consumption of renewable energy at the further expense of fossil fuel consumption. In most other areas too, it is possible to reduce the level of consumption or change the pattern of consumption. The precondition for doing so in our context, however, is that one actually believes this to be necessary. And that is precisely what the Radical Prometheans believe.

Seen in relation to the proposed indicators by Lorek and Spangenberg (2000), the first thing to note is that it is difficult from the Radical Prometheans perspective to argue that any of the indicators are more important than others. The basic assumptions of this perspective are scarcity and levels. Although some argue that climate change is the biggest problem, the approach does not specify actions according to priorities. The focus on levels, however, makes indicator 1 (Heating energy consumption, kWh/m² a) a good and appropriate indicator in this perspective. The share of renewable energy sources used for heating would also be important, but not as important as the level of energy consumption.

Moreover, for the Radical Prometheans, all the proposed indicators 2-5 are relevant. They would, however, be less focused upon Indicator 4 (Resource intensity) than Prometheans and Cornucopians. Since resources in general are perceived as scarce, the major focus is on consumption as such. They would agree that investments in existing houses is a better strategy than building new houses. Radical Prometheans have no problems with accepting the restrictions associated with indicators 2 and 5. Settlement areas and living space restrictions are seen as easily justified from the perspective of scarcity and levels of consumption.

Furthermore, Radical Prometheans have no problems with accepting that food and nutrition is an area where consumption should be restricted (despite Sagoff's arguments). Moreover, they would see organic products as necessary for sustainable consumption. Indicator 8, "Food transportation" would for Radical Prometheans imply buying locally

produced food instead of imported, or food produced in other regions. Technological development in energy use associated with transport is not regarded as sufficient for making food consumption sustainable. Thus, reduced driving (Indicator 9) is more important than getting yourself an energy-efficient car (Indicator 14) in this perspective. Although you can drive the same distance and uphold the frequency of your driving, and still reduce the environmental impact of your driving significantly, it is not enough. Besides, the indirect energy consumption of producing the car makes the project more or less futile. The best thing is not to have a car at all. Thus, Radical Prometheans demand developments in public transport and non-motorised transport. Indicator 13, "Holiday flights" is seen as a strategically crucial indicator. There is no way we can keep our holiday flights.

The Radical Prometheans sustainable household strategy, I would argue, is a strategy not many consumers endorse. It is not a business-as-usual strategy. Under the condition of ideal theory, it provides many good reasons to act and also guidelines for how to act. Radical Prometheans household consumer must basically consume as little as they can. Moreover, the belief in human capabilities to manipulate *the human world* for human ends is as strong in this strategy as the belief in technology in the other perspectives. For the household consumer, however, it is by far the cheapest way to realise a sustainable development, although extremely hard would some say in other respects. I suspect that some consumers act in this manner for the reasons provided above. They are always regarded as environmentalists, and there is a consistency in their actions based on a sincere belief that this is the way to realise sustainable consumption.

11.3 Concluding remarks

These four strategies are different, but in my view, logically consistent with their underlying assumptions. They are to some degree overlapping, but not promiscuous across conceptions of sustainability. They constitute different options for people who want to contribute to a sustainable development. Being real world strategies, they provide the household consumer with some priorities and some weighting of different environmental problems. To some extent, the priority is in the *Cornucopian* strategy given by the concern for the environmental resources that have no market. The same would hold for the strategy of the *Worried Cornucopians*. In the *Promethean* strategy, there are fewer priorities made. The same holds for the *Radical Promethean* strategy. And in a way, there seems to be unwillingness within these two perspectives to make priorities, maybe because everything is seen as equally important.

Chambers, Simmons and Wackernagel's (2000:115) answer to the following question illustrates the point. The question posed is the following: "A big part of any footprint appears to be due to energy use. If we switch to energy sources, such as solar energy, that do not add carbon dioxide to the atmosphere, won't this dramatically reduce our footprint to the point that the concept is meaningless?" The answer given goes as follows: "True, in industrial countries, fossil fuel use accounts for about half of the footprint ... Still, the non-fossil footprint of some industrial countries remains larger than their own ecological capacity and their per capita consumption is higher than the average earthshare." But surely, given Wackernagel and Rees (1996:27) claim that "it may not be energy resources, but the waste assimilation capacity of our planet, that becomes most limiting", it should be possible to give some kind of priority to reducing the consumption of fossil fuels and the emissions of climate gases? The ability to provide priorities and weighting of different environmental problems, however, is to

some degree inherent to all the above strategies, and probably cannot be solved solely within these perspectives.

The growing interest for indicators is interesting in many respects. Indicators are one way to operationalise sustainable development and sustainable consumption. Indicators can, no doubt, also be used to monitor trends and provide strategic information for action. But the focus on indicators can also be seen as reflecting a general frustration with the implementation of sustainable development. For the most part, there seem to be a general agreement that indicators are valuable and necessary tools for implementing sustainable development policies. Others are more critical, however, and argue that most indicators are not indicators of sustainability but environmental indicators that show trends in the environment and sometimes in social and economic conditions. These indicators are valuable, but not really, according to Pearce and Barbier (2000), indicators of sustainability:

Such indicators are often very valuable but they do not constitute measures of whether an economy is on or off a sustainable development path. For that to be the case they would first have to be rooted in some theoretical construct of what sustainable development is, and, second, would have to have some origin that is a point on the scale below which the economy is declared unsustainable, and above which it is sustainable. Very few of the environmental indicators so far developed meet these tests (Pearce and Barbier, 2000:85).

There seems, however, at least to be some agreement on what it is that needs to be monitored, despite the lack of agreement on the assumptions on equity and ecological limits. Many of the indicators proposed by OECD (1999) for measuring progress towards sustainable household patterns are similar to the indicators developed by the Division for Sustainable Development (1998) within the UN. At this level, that is, for practical purposes, limits and equity considerations are maybe not needed:

Policy-relevant quantitative measures of progress towards sustainable consumption require a good understanding of how the related driving forces and policy instruments interact, as well as appropriate analytical tools and a good knowledge of underlying concepts and definitions. Assessing the sustainability of consumption further requires some understanding of environmental limits within which consumption can take place — although this is usually difficult to define at the level(s) at which consumption patterns have an effect. Thus it may be more meaningful to talk about the path towards “increased sustainability” rather than about absolute end-points (OECD, 1999:22).

Although assessing the sustainability of consumption requires, “some understanding of environmental limits within which consumption can take place”, OECD argue that “concepts such as carrying capacity or ecological footprints could be useful in this respect, but require further development before they can be measured” (OECD, 1999:7). Reports from OECD, therefore, have yet to include some kind of defined limits. Given the above discussion, however, “increased sustainability” is maybe the best one can achieve in real life. We will probably never know how many EcoPoints there are in the world. But this does not imply that we have no way of estimating the contribution of a certain product to environmental impact, even if the exact estimates of carrying capacity and sustainability will ultimately be uncertain.

OECD (1999), however, argues in the same manner as Lorek and Spangenberg (2000), that environmental impact can be related to a few domains, namely food, transport and housing (heating, use of electric appliances) at the household level, and that policy-makers therefore “do not need to have an exhaustive view of all possible aspects of household consumption, as long as they have an understanding of the key domains of household consumption” (OECD, 1999:22). In principle, the same should hold for the household consumer. As the above discussion illuminates, indicators are insufficient by themselves to provide guidelines for sustainable household consumption. The household consumer can

and will address (these or other) indicators by all of the four identified strategies above. *This implies that indicators alone (in general) are unable to provide the strategic means for the household consumer, thus making strategies and the choice of strategies even more important.*

Following Atkinson et al. (1997:119), the “problem in selecting appropriate indicators lies in determining exactly which assets are critical”. The four identified strategies on sustainable consumption to some degree contribute to the identification of critical assets. All of the above perspectives, however, could be further developed, and they should in principle provide the consumer with lists of priorities.

The different perspectives, however, would probably provide different answers to questions like: Is it more important to recycle glass than wet organic waste? Is it more important to reduce driving than to invest in a new hybrid car? Should I instead eat less meat? Should I do both? Should I eat meat imported from Botswana in order to contribute to development in Botswana? Should I buy ecological food in Norway, even though it is imported from Egypt? Should I invest in energy saving equipment or invest in renewable energy sources? Is it more important for the household consumer to reduce CO₂-emissions, energy use, concrete, raw iron, aluminium or cropland consumption? Another example is the following. Products grown in Norwegian greenhouses, like tomatoes for instance, may, when heated by the use of oil, be more environmentally damaging from the perspective of climate change than to import tomatoes from Spain. Growers, however, are now converting to natural gas and use the by-product (CO₂) as fertiliser. The point is that to know which tomato to buy (even when the priority is set -to reduce greenhouse gases) a whole research project seems necessary in order to come up with an answer. Lack of information and uncertainty is thus a major contributor to consumer confusion. Moreover, from the ethical perspectives on global justice, one may argue that the most important contribution to sustainable consumption would be developmental, the transfer of consumption opportunities to poor people in the South.

From the above discussion, what sustainable household consumption really is, is not that easy to determine. Disguising conflicts about the complexity and difficulties with determining what sustainable development really implies for households, however, is in my view counterproductive to the agenda of sustainable development, especially when families and households are discussing and struggling with these issues, trying to figure out what best to do. Thus, to underestimate consumers is the first fallacy a sustainable consumption strategy has to avoid.

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