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## Three strategies for sustainable consumption

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### *Abstract*

An environmental program of sustainable consumption is one that causes humans to flourish along with the ecosystems. It fosters humans' well-being and quality of life, along with environmental quality. We argue that there are three different, but complementary, ways to achieve these objectives: eco-efficiency, de-commoditization (or de-commodification), and sufficiency. The paper shows how these three strategies arise from a decomposition analysis of sustainable development as a program of maximizing a well-being-environmental load ratio. After describing the main characteristics of the three strategies, the paper concludes with the necessity to build mixed sector policies that have varying eco-efficiency, de-commoditization and sufficiency components, according to the consumption domain and social, economic and social circumstances and, in particular, the probability and importance of efficiency and sufficiency rebound effects.

### *Index terms*

**Keywords** : eco-efficiency, de-commoditization, sustainable consumption, sufficiency; life style

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## ***Full text***

# **1. Introduction**

- 1     Regardless of the differences among existing conceptions and theories of sustainable development, they all begin by acknowledging vital environmental issues (climate change, loss of biodiversity, water and soil pollution, coming shortages in non-renewable resources, deforestation, overharvesting of natural resources, etc.) caused, notably, by inappropriate production and consumption patterns. As stated in Agenda 21(4.3), “[T]he major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries”. It is therefore imperative that consumers in industrialized countries adopt more sustainable consumption patterns, making ‘use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations’ (Ofstad 1994). Sustainable consumption policies should concentrate on the dematerialization and detoxification of current consumption practices and models. Dematerialization consists of reducing the amount of material required to satisfy social needs or, if otherwise stated, increasing the productivity of the materials used (Geiser 2001, p204) in bringing about human wellbeing. Less material used means less natural capital drawn, less resource (notably energy producing resources) depletion, and less material released as waste. Detoxification means reducing the toxic characteristics of materials used in products and processes. In practice this can be achieved by reducing the volume of toxic materials used in a process or a product, reducing the toxicity of materials used by changing their chemical characteristics and substituting more benign substances for toxic chemicals.
- 2     The path towards dematerialized and detoxified goods and services can be summarized by the four R’s: Reduce, Repair, Reuse, and Recycle. There has been a tendency to consider these objectives as technical problems for which solutions are to be found in technological and scientific innovations that lead to improvements in the eco-efficiency of production and consumption patterns. However, scientific-technical innovations are only part of the solution if not, as some critics argue, more of the problem than solution. We assert that significant benefits in Reducing, Reusing, Recycling and Repairing will not result from changes at the production level only, but from inescapable changes in consumption practices and institutions. More generally, a decomposition analysis of sustainable development program shows that the policy that privileges technical innovations is only one of three possible strategies, the two others being de-commoditization and sufficiency. This paper proposes such a decomposition analysis and explores in greater detail each of the strategies that emerges from it. It concludes with the need to mix them in suitable proportions, according to the characteristics of each consumption issue.

# **2. Sustainable development: a decomposition analysis**

- 3     Sustainability can be described (and measured) in productivity of environmental

resources (or of material efficiency) in fostering the well-being of humans.

This is the road taken by Common (2007) in measuring national economic performance without using prices and by the New Economic Foundation with its “Happy Planet Index”, which consists of the following ratio:

$$S_{it} = WB_{it} / EF_{it}$$

where:

$S_{it}$  = the sustainability of country  $i$  at time  $t$

$WB_{it}$  = the level of well-being in country  $i$  at time  $t$ ;

$EF_{it}$  = the ecological footprint of country  $i$  at time  $t$ .

There are many different ways to express and measure wellbeing, but a discussion of this is outside the scope of this paper. Common and the NEF’s option consists of multiplying an objective measure of wellbeing (life expectancy at birth) by an indicator of reported happiness (subjective satisfaction with life), obtaining as a result a kind of “happy life expectancy”. We will leave  $WB$  unspecified hereafter and continue with the following expression (with country and time subscripts dropped):

$$S = WB/EF(1)$$

This formula can be used in parallel with Nørgård’s (2006) decomposition of what he calls the “overall efficiency” of production and consumption patterns. He demonstrates that “overall efficiency” is the interplay of four “local” efficiencies: satisfaction efficiency, service efficiency, maintenance efficiency and throughput efficiency. The overall efficiency ratio of the final output (satisfaction) to the primary input (“eco-sacrifice”) is thus disaggregated in a succession of interrelated intermediary ratios, as follows:

$$\begin{aligned} \text{Overall-efficiency} &= \frac{\text{Satisfaction}}{\text{Eco-sacrifice}} \\ &= \frac{\text{Satisfaction}}{\text{Service}} \frac{\text{Service}}{\text{Stock}} \frac{\text{Stock}}{\text{Throughput}} \frac{\text{Throughput}}{\text{Eco-sacrifice}} \end{aligned}$$

The formula is best understood by starting with the last ratio, the “Throughput/Eco-sacrifice” ratio or throughput efficiency. It expresses the productivity of the production process with respect to environmental resources. Then comes what Nørgård calls the “maintenance efficiency”. It refers to the durability, reparability, etc., of the stock of goods and is expressed by the “Stock/Throughput” ratio. This ratio is the inverse of the goods replacement rate, i.e., the number of new goods entering the inventory (stock) in relation to the size of the existing inventory (stock). The service efficiency, or “Service/Stock” ratio, refers to the number of services provided by a given stock of goods. This mainly concerns the way in which the goods are appropriated and used. For instance, the ratio is higher for a taxi than for an individual car, because the former is used throughout the whole day by many customers, while the latter is typically used only twice a day by one customer. Finally, the satisfaction efficiency refers to the satisfaction brought by the service. For instance, in the town’s current traffic conditions, the mobility service provided by the individual car is becoming less and less satisfying. As Nørgård (2006, p18) observes, “The reason for adding satisfaction efficiency ... is that in the affluent part of the world, the *marginal* satisfaction of increasing services from the market seems to be very low and declining, maybe even below zero”.

Nørgård’s analysis of consumption efficiency shows how limited and partial are public and business policies that concentrate exclusively on the throughput efficiency ratio by aiming only at *decreasing the mass of materials in products*. This is only one part, and perhaps not the most important part, of the answer to the issue of

sustainability of our production and consumption patterns. However, it is probably the easiest policy to put to work in a capitalist and technology-driven economy (and culture) because it doesn't challenge their fundamental growth and production orientation. Actually, the more you move from the right of the formula to the left, the more you move away from what is taken for granted in our industrial societies and bring into question their deepest and most unconscious cultural underpinnings. Indeed, going one step further than the eco-efficiency or "decoupling" policy, a more demanding ecological modernization approach would act also upon the "Stock/Throughput" ratio by encouraging more accumulation of durable goods and struggling against the "planned obsolescence" of many so-called "durable" goods. This means (Geiser 2001) extending the useful life of multi-use products<sup>1</sup> and designing products not only for upgrading and adaptation, but also for reconditioning and remanufacture, repair and reuse.

15 Service efficiency expresses the rate of service that is obtained from the consumer's stock of goods (durable and non-durable). One effective way to increase service efficiency is to substitute services for products, as in the above-mentioned example of the taxi vs. the individual car. Another strategy in this respect is to foster the sharing of products, as for instance car sharing. Where the use pattern of a product involves long periods of disuse or where the acquisition costs are high, products generally may be shared among multiple users. Examples are numerous (Geiser 2001, p324): ladders, lawnmowers, washing and drying machines in residential areas; tool and equipment rental stores that allow customers to share the use of hardware and avoid individual purchases; video rental stores that offer a wide choice of films to customers by sharing the services provided by the individual DVD machines, etc. The sharing of products can be organized in a commercial way. However, as we will see below, it is also a characteristic of non-market systems of provision, such as state-owned libraries or community-based exchange systems.

16 Finally, the Satisfaction/Service ratio expresses the fact that the ultimate goal of consumption is well-being, happiness or needs satisfaction. Clearly, some goods or services are more efficient than others in bringing satisfaction, or well-being. However important this question, we will concentrate here on the environmental consequences of consumption.

17 Combining Common's and Nørgård's analysis, and generalizing the latter, we propose to decompose formula (1) thus:

$$18 \quad S = (WB/C) * (C/EF)(2)$$

19 where C = Commodities and WB/C refers to the productivity of commodities in terms of well-being, while C/EF expresses the intensity of commodities in natural resources.

20 Formula (2) shows that sustainability can be improved by increasing (WB/C), by increasing (C/EF) or both - that is by decreasing the intensity<sup>2</sup> in commodities of well-being, by decreasing the intensity in resources of commodities or both.

21 Things can be disaggregated further. The term (WB/C) can be expressed as:

$$22 \quad (WB/Se) * (Se/C)$$

23 "Se" refers to the notion of service as used by Nørgård (as in the context of energy and not as used in the national accounting context). Indeed, what matters for the energy consumer is not energy as such (Kw/h), but the lighting, mechanical power, etc., that is brought about by energy. Similarly, what matters for the user of a TV set is not the TV-set as an object, but the services it provides in the form of TV programs. One way to define the notion of service in the need-satisfier framework that is advocated by Max-Neef (1991) is to define it as the interface between the satisfier and the need or as the "satisfying virtue" of the satisfier. WB/Se stands for the productivity

of the services in terms of well-being and (Se/C) for “consumption efficiency”, the productivity of commodities in producing services. The full formula then becomes:

$$24 \quad S = (WB/Se) * (Se/C) * (C/EF) \quad (3)$$

25 Formula 3 shows that there are three “pure” strategies for use in enhancing environmental sustainability:

1. Increasing the (WB/Se) ratio by decreasing Se, while maintaining or increasing WB. This amounts to partly disconnecting well-being from services. It could be called the *sufficiency* strategy.
2. Increasing the ratio (Se/C) by decreasing C. It could be called the *de-commoditization* of the services strategy.
3. Increasing the (C/EF) ratio by decreasing EF<sup>3</sup>. This strategy aims at decreasing the energy and materials content of commodities consumption. It is the well-known *eco-efficiency* strategy.

26 Before discussing them (albeit in a different order than above for discussion purposes), it is necessary to note that Formula 3 is not complete. It leaves out the ecological footprint of the consumption of non-commercial satisfiers. Indeed, the proposed decomposition makes a partition between two kinds of satisfiers, commodities and non-commodities, but takes into account only the environmental load of commodities, as if non-commodities are necessarily environmentally neutral. We will discuss this more thoroughly in the section on the de-commoditization strategy.

### 3. The eco-efficiency strategy

27 If the three strategies have the potential to contribute to greater efficiency in the use of natural resources in the process of creating well-being, we limit the extension of the eco-efficiency strategy to those actions taken to decrease directly the intensity in raw materials of the production, use and disposal of *commodities*. These include non-renewable sources of energy. In fact, the concept of **eco-efficiency** has been put forward by the World Business Council for Sustainable Development (WBCSD) in its 1992 publication “Changing Course”. The WBCSD objective was (and still is) to produce and consume more goods and services, while using fewer resources and creating less waste and pollution.

28 According to the WBCSD, eco-efficiency is achieved by the delivery of ‘competitively priced goods and services that satisfy human needs and bring quality of life while progressively reducing the environmental impact of goods and intensity of resource use throughout the entire life-cycle to a level in line with the Earth's estimated carrying capacity.’

29 Eco-efficiency is what mottos such as “Factor 4”—which calls for halving the use of resources while doubling wealth (Von Weizsäcker, Lovins and Lovins 1998)—or “Factor 10” (a 90% reduction of resource uses) are about. It is claimed that the eco-efficiency strategy is compatible with capitalism, as indicated by the choice of the title, “Natural Capitalism” (Hawken, Lovins and Lovins 1999), for the book that was published one year after “Factor 4”, which was written by two of the former’s authors. Yet, the authors of “Natural Capitalism” criticized Factor 4 for focusing too narrowly on eco-efficiency, which they described as “only a small part of a richer and more complex web of ideas and solution” (Hawken, Lovins and Lovins 1999: Introduction p.x). They argued that, ‘Without a fundamental rethinking of the structure and the

reward system of commerce, narrowly focused eco-efficiency could be a disaster for the environment by overwhelming resource savings with even larger growth in the production of the wrong products, produced by the wrong process, from the wrong materials, in the wrong place, at the wrong scale, and delivered using the wrong business models' (idem, pp.x-xi).

30 "Natural capitalism", the three co-authors said, "is based on four strategies":

1. Radical resource productivity: as in former eco-efficiency, but on a larger scale;
2. Biomimicry: redesigning industrial systems by imitating the functioning of natural eco-systems organized as closed-loop systems in which materials are constantly reused;
3. Service and flow economy: changing the relationship between producer and consumer and shifting from an economy of goods and purchases to an economy of services and flows.
4. Investing in natural capital.

31 With the introduction of a strategy of "service and flow", natural capitalism adds to the agenda an important principle that was lacking in Factor 4. In some way, this strategy can be seen as a kind of embryo of a full-fledged "de-commoditization" strategy. However, let us repeat that the proposal doesn't constitute a departure from capitalism or "industrialism" (Dryzek 2005 [1997]), but its reorientation, notably by "making markets work" (the title of Chapter 13).

32 The "natural capitalism" concept has been warmly received by engineers and firm managers who are concerned with the environment or their firm's public image. The closed-loop model of the natural eco-systems is central to the "industrial ecology" concept. The idea of biomimicry is being pushed as far as possible today in "green chemistry and engineering" (Doble and Kruthiventi 2007) where former chemical process that needed high temperatures and pressures (and therefore consumed a great deal of energy) are being progressively replaced by bio-transformation and catalysis occurring at ambient temperature and pressure. Still more spectacular are recent innovations in chemistry that are based on an imitation of the way in which living organisms grow basic materials, such as teeth, hair, skin, shells, bones, tusks, etc.

33 One recent and popular expression of the eco-efficiency strategy is found in the "cradle-to-cradle" movement, which claims to go beyond eco-efficiency and 'leave aside the old model of product-and-waste, and its dour offspring "efficiency" and embrace the challenge of being not efficient, but effective with respect to a rich mix of considerations and desires' (McDonough and Braungart, 2002, p.72). The fundamental concept of "cradle-to-cradle" is the abolition of the very idea of "waste" by making the case that what was once a waste to dispose of in one way or another now becomes food for some living system. This shows that the idea of eco-efficiency has evolved since its adoption by the WBCSB. The level of demands has increased steadily, going from simple end-of-pipe solutions (if not mere "green washing"), to greening (eco-efficiency, product stewardship) and now beyond greening to "cradle-to-cradle" and eco-effectiveness, etc. Of course, it remains to be seen if actual practices have followed at the same pace.

34 The important thing is that, whatever their differences, all versions of the eco-efficiency strategy share the following characteristics:

35 Confidence in technological innovation as the main solution to un-sustainability;

36 Reliance on business as the principal actor of transformation. The emphasis is on firms designing new products, shifting to new production processes, and investing in R&D, etc., more than on the retailer or the consumer, let alone the citizen.

- 37 Trust in markets (if they are functioning well);
- 38 “Growthphilia”: there is nothing wrong with growth as such. Moreover, with  
“cradle-to-cradle”, growth is conducive to sustainability *per se*.
- 39 No special role is devoted to the state except for making markets function as they  
should (removing barriers to market efficiency) and providing the right incentives  
through taxes, and subsidies, etc.<sup>4</sup>
- 40 Unfortunately, the eco-efficiency strategy is hampered by some often unforeseen  
limits that are known as “rebound effects” (Herring and Sorrell 2009). Rebound effects  
account for the fact that eco-efficiency improvements do not necessarily lead to  
equivalent reductions in consumption of the resource concerned by firms and  
households and can even, in some circumstances, trigger an increase in use at the  
micro and/or macroeconomic level (the so-called ‘backfire’ effect). Indeed, more  
efficiency means lower costs. Hence lower market prices and lower market prices  
means increasing the effective demand for the good that benefited from the efficiency  
improvement or for other goods and services whose environmental load may  
sometimes be higher, thanks to the income saved in consuming the first good. Here is  
a familiar example. So far, all increases in the energy efficiency of car engines (mileage  
per gallon) have led to more mileage/car and/or to more holiday flights made  
affordable by efficiency improvements in air transport (more efficient engines and  
flight procedures) and thanks to the income not spent in fuelling the car (Schettkat  
2009, Small and Van Deder 2005).
- 41 To conclude, even if eco-efficiency improvements can bring a relative decoupling  
between growth in consumption and growth in environmental pressure by minimizing  
environmental inputs per unit of GDP, they will not necessarily translate to “absolute  
decoupling” (i.e., to decreasing absolute amounts of energy and raw materials  
consumed or pollutants emitted by a given economy) (Jackson 2009; Grosse 2010). In  
other words, if eco-efficiency can reduce the environmental load per unit of  
consumption, it will not be sufficient to reduce the total ecological footprint of an  
economy. However, in many cases (notably in GHG emissions), it is the absolute  
amount of pollution that we want to address.
- 42 At first sight, one could assume that adequate taxation is all that we need to  
neutralize the income and price effects that are triggered by improved eco-efficiency.  
However, compensating by taxation for the cost-saving effects of better technologies  
will not suffice if the additional revenue from the taxation returns to the market sphere  
as additional consumption of commodities by the public or private sector (after re-  
distribution). Definitive rationing under a state authority, as was undertaken on a wide  
scale in the UK during the Second World War, is probably the most effective way to  
contain consumption growth. However, what is possible under the very special  
circumstances of war is probably not doable in normal times. Then, sufficiency is the  
only non-authoritarian alternative to rationing.

## 4. The sufficiency strategy

- 43 Sufficiency as a sustainability principle, together with efficiency and equity, has been  
advocated by H. Daly (1996), and more recently by T. Princen (2003, 2005). Princen  
presents it as a very simple, common-sense idea: ‘Sufficiency as an idea is  
straightforward, indeed simple and intuitive, arguably “rational.” It is the sense that, as  
one does more and more of an activity, there can be enough and then there can be too  
much. I eat because I’m hungry, but at some point I ‘m satiated. If I keep eating, I

become bloated. I go for a walk because it feels good - because I enjoy the movement, the fresh air, and the scenery, but if my physical exertion begins to override my pleasure, I've had enough. If I keep walking to the point where all my attention is on my aching feet and tired legs, I've had too much. I can sense the excess (Princen 2003: 43).

44 So, the logic of sufficiency consists of consuming the right quantity of material goods and services, a quantity that is just necessary and sufficient for optimal health, well-being and happiness, escaping both the Charybdis of underconsumption (poverty) and the Scylla of overconsumption.

45 This translates into two attitudes:

46 Striving to get the maximum wellbeing from each unit of material service consumed. This is actually a kind of efficiency at a consumption behaviour level as it comes to optimizing the well-being/consumption ratio at an individual level. This asks for more reflexivity from the part of the consumer who is, therefore, driven to become genuinely "sovereign" and really "mindful" of his consuming practices.

47 Minimizing the role of material services in the definition and production of wellbeing (cultural dematerialization)

48 For the affluent consumer, sufficiency means necessarily "downsizing" one's consumption and living standards. Because the present high level of consumption in western societies (and more and more in non-western societies as well) could not occur without a socio-cultural conception of wellbeing and happiness that fosters the pursuit of "materialistic" values ('indulgence', 'pleasure', 'comfort') more than non-materialist values of self-control, spirituality, simplicity, etc., it follows that "... interventions aimed at reducing consumption will be most effective if they bring about higher-level changes in the socio-economic-cognitive system - i.e., by changing cultural values or worldviews" (Brown and Cameron, 2000, p.34).

49 So far, only a small (but growing) minority<sup>5</sup> of members of industrialized societies really endorse the sufficiency principle. It is advocated mainly by small groups of activists in the name of "de-growth"<sup>6</sup> or voluntary simplicity. Obviously, the sober lifestyle adopted by many environmental and de-growth activists is first of all a manifestation of their concern for the great majority of non-consumers in the world and for the wellbeing of future generations, so that their consumption patterns can be truly characterized as "responsible" if not purely "altruistic". However, sufficiency can be pursued for various reasons, not all of which are necessarily altruistic. Downsizing or relocating consumers can also be motivated by purely selfish reasons, such as improving one's health, avoiding stress, the nostalgia for a "good old time" and so on (Zavestoski 2001). In between, we find the "alternative hedonism" that is advocated by Elizabeth Soper (2007) as a kind of republicanism in consumption.

50 Besides its role in counteracting eco-efficiency rebound effects, there is another compelling environmental reason that favours a sufficiency strategy. Not all resources can benefit from eco-efficiency improvements. Some can be protected only by restricting harvesting, extraction or final consumption. For example, no eco-efficiency improvement in production processes (or in consumption practices) can ensure that fewer fishes are going to be harvested in the seas and oceans or fewer trees timbered in the forests. On the contrary, these are domains that are technological innovations that are run in the opposite direction, towards more and more harvesting. Only a restriction in consumption by way of rationing (harvesting quotas), such as heavy taxation on end-products (provided that the tax revenues will not find their way back into the overall consumption process) or voluntary abstinence can protect these kinds of resources. There are historical examples of such voluntary restrictions - at least at the collective level. Diamond (2005) reports the interesting case of Trobriand islanders



who decided around 1600 to stop consuming (and, therefore, raising) pigs in order to protect the ecosystems of their island, which was severely hampered by their proliferation.

51 Unfortunately, like efficiency, sufficiency can trigger rebound effects as Blake Alcott (2008) showed. To illustrate the logic of sufficiency-induced rebound effects, just imagine what would happen if affluent consumers were to significantly reduce their consumption of meat. The interplay of supply and demand at the global level would lead to a decrease in world prices of meat (and also, probably of crops), making its production affordable for customers in underdeveloped and emerging countries who hitherto had been unable to afford it, at least at the collective level. A new, supply-demand equilibrium would soon be reached at lower prices, but at practically the same consumed quantities. Even if such a result is fortunate from a global justice point of view, nothing will be gained for the environment if additional measures are not taken. The same reasoning can be applied to other important resources, such as energy. It is here that de-commoditization comes into play.

## 5. The de-commoditization (or de-commodification) strategy

52 Eco-efficiency and sufficiency boil down to “doing without” or “doing with less” policies. In regards to consumption, especially from a Western country perspective, this makes sense in view of the environmental burden of our consumption patterns. However, there is more in sustainable development than dematerialization and detoxification (i.e., “refraining from”). Sustainable development is best understood as a process of active, adaptive management of complex social-ecosystems. As such, it needs much more sophisticated concepts and scientific models than what underpins the dematerialization and detoxification policies. For example, the general framework proposed by Ostrom (2007, 2009) as scientific underpinning for sustainable development conceptualizes social-ecological systems through seven categories of variables. They are resource systems, resource units, governance systems, users, interactions, outcomes, and related eco-systems. The “user” set is composed of seven variables, including number of users, socio-economical attributes of users, history of use, location, norms, social capital, and so on. The “governance system” refers to institutions, such as government, NGOs, property rights, collective choice rules, and constitutional rules, etc. Such a perspective is less interested in the properties of the consumed commodities than by the general context of their use and, in particular, the institutional rules that drive producers’ and consumers’ behaviour. Allen, Tainter & Hoekstra (2003, 14), who advocate a particular, hierarchical system approach of the adaptive management conception of SD, state,

53 ‘We will achieve sustainability when it becomes a transparent outcome of managing the *contexts* of production and consumption rather than consumption itself (Allen, Tainter & Hoekstra 2003, 14). A fundamental assumption of hierarchical system theory (Allen 2009; Norton 2005) is that any system can be controlled only from the level above it, its context, and that the context of mass consumption is the consumer society and the domination of markets which characterizes it.

54 The de-commoditization strategy consists of acting one level up on the institutional context of consumption in Western, consumer societies. Thus, while the eco-efficiency strategy targets the product and the sufficiency strategy targets the person (the consumer as decision-maker), the de-commoditization strategy targets the institutional

context in which consumption takes place. De-commoditization is the reverse of the ‘tendency to preferentially develop things most suited to functioning as commodities – things with qualities that facilitate buying and selling – as the answer to each and every type of human want and need’ (Manno, 2002:70). It aims at decreasing the influence of commodities and, more generally, of the market institution in the way in which people satisfy their needs and desires. It seeks to limit what Hirsch (1977) called the “commercial bias” or “commercialization effect”, the fact that ‘an excessive proportion of individual activity is channelled through the market so that the commercialized sector of our lives is unduly large’ (Hirsch 1977, p.84).

55 There is no clear-cut criterion that allows one to distinguish commodities from non-commodities. Manno (2002) shows that all goods and services can be ranked on a scale of “commodity potential”, a measure of the degree to which they have qualities that are associated with, and define, a commodity. Goods that have “High Commodity Potential” (HCP) are generally those that are the most alienable, excludable, standardized, uniform, adaptable, depersonalized, anonymous, mobile, transferable, international, and context-independent, etc. On the contrary, goods and services that have low commodity potential are openly accessible or difficult to price, context-dependent, embedded, personalized, and localized, etc. In order to illustrate the distinction, Manno considers how children satisfy their needs to play. At the most commercial end of the scale, the need can be satisfied with mass-marketed toys, such as Barbie dolls, which are inexpensive and marketed worldwide, but the production and distribution of which are energy-intensive and wasteful. In the middle of the scale, one finds locally produced, handcrafted toys, dolls and games that are usually made from renewable materials and that have local or culturally idiosyncratic designs. Finally, at the far-end of the commodity-potential scale are activities and games that don’t require commercial objects.

56 There is another crucial difference between the two kinds of goods and services. HCP goods and services are uniquely demand-oriented. This means that, if the corresponding needs are missing, they are created by marketing and advertising. On the other hand, “Low Commodity Potential” (LCD) goods and services are needs-oriented, rather than demand-oriented. If there is no demand because of poverty and destitution, there is a moral (and policy) duty to compensate directly or indirectly the lack of resources in order to meet the need. Therefore, while the poor can be excluded from the consumption of HCP goods and services, this is less often the case with LCP goods and services.

57 According to Harvey et al. (2001, p.4) : “... a useful distinction can be made between demand and consumption, processes now too frequently conflated. Demand signifies the concerns of suppliers in markets and thereby concentrates on the possibilities and terms of commodity exchange. Consumption refers to a much broader set of social practices whereby people utilize services and products that are only sometimes acquired by purchase in a market and which are deployed in the context of social values that transcend the confines of instrumental and rational calculation”.

58 Decoupling consumption from demand and limiting the influence of markets amounts to increasing the influence of others systems or organizations through which we satisfy our needs and aspirations, that is, others “modes of provision”. There is nothing new in such a process. As Warde (1997, p154) observed, “The history of consumption might be written as a process whereby activities shift between spheres – from the household to the market, and sometimes back again, from the market to the state, and sometimes back again”.

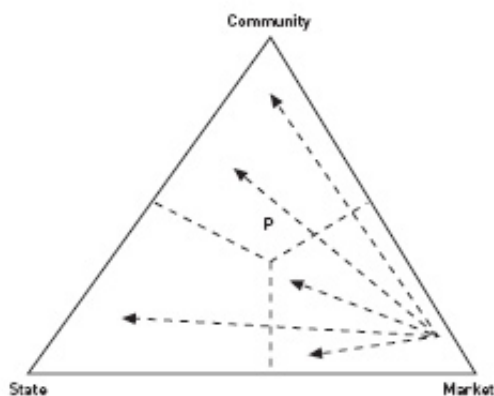
59 Table 1 shows what distinguishes these different “modes of provision”.

**Table 1. A typology of modes of provision.**

Mode of provision	Manner of obtaining service	Who does the work	Who pays (if anyone)	Principle by which service is obtained
Market	Commercial purchase	Paid employees	Consumer	Market exchange
State	Claim to entitlement	Paid employees	State (tax payer)	Citizenship right
Communal (cooperatives LET)	Personal interconnections	Neighbours or acquaintances	No money involved	Reciprocal obligations
Domestic	Household Do-it-yourself	Members of household	No money involved	Family obligation

Source: Harvey et al. (2001)

60 If we group the domestic and communal modes of provision under the general heading of “communal sphere”, we can illustrate the de-marketization (or de-commoditization) strategy with the help of an equilateral triangle as in Figure 1.

**Figure 1. The modes of provision triangle**

61 Let us call “consumption pattern”, the proportion of energy and material services consumed by households (share of households’ time-and-money budgets) respectively in the form of commercial commodities, public good services and goods and communal services and goods. Every consumption pattern can be represented by a point in an equilateral triangle, with the distances between each point and the middle of the three sides of the triangle expressing the proportions of consumption occurring under the market, state and communal mode of provision.

62 Points situated at the apexes are pure state, market or communal consumption patterns. All other involve market, state and community components, although in very different proportions. Point P represents a pure mix of 1/3 market-based, 1/3 state-based and 1/3 community-based satisfiers<sup>7</sup>. One calls “modal split” the most frequent consumption pattern in a given society (Gershuny 1983). In affluent, consumer societies, the great majority of consumption (hence of the modal split) is concentrated in the bottom right area.

63 What role can de-commoditization play in the transition to environmentally sustainable consumption? We have no definitive and firmly established response to this difficult question, but will put forward four arguments, the main function of which is to trigger debate:

1. The dramatic rise in private consumption that followed World War II was the outcome of a process of commoditization that began with the industrial revolution. Remember Marx's analysis of the commodity cycle in book 1 of *Das Kapital* and Polanyi's concept of the "grand transformation" – which accelerated tremendously during the "fordist" stage of development of capitalism and eventually climaxed during the transformation of the "society of producers" into "consumer society" at the post-fordist, post-modern stage of capitalism (Slater 1997, Harvey 1990). It is the main factor responsible for the actual level of consumption, and hence of the size of our economies, which is the main factor of unsustainability.
2. De-commoditization, whether one is favour of state monopolies or of community-based systems, reduces the main incentive to produce ever growing quantities of goods and services - the search for profit. Thus, it breaks the cycle of profits-investments-commodities-profits that generates economic growth.
3. Insofar as de-commoditization leads to the re-localization of sectors of the economy, it insulates them from world markets and limits the scope of efficiency and sufficiency rebound-effects.
4. Consumption takes time in general (Steedman 2001), but consumption in the communal or public sector is, generally, more time-intensive (less efficient) than in the market sector. Indeed, one of the main matters of concern of marketing is to shorten as far as possible the cycle of consumption (buy-use-discard-buy again) so that more commodities can be sold. De-commoditized consumption, in general, takes more time per unit consumed than commodities consumption. Because the total time cannot be extended, de-commoditized consumption implies that eventually fewer units are consumed or less time is spent at work. In the latter case, earnings are necessarily reduced and, therefore, final consumption as well. Furthermore, eco-efficiency improvements in de-commoditized communal activities are generally reached at the expense of higher labour intensity of production (think of organic farming or commuting by bicycle) and consumption that again reduce the time available for extra consumption.
5. Sharing ladders, lawnmowers, washing and drying machines, tools and equipment, and books and videos, etc., as advocated by Geiser (2001) is plain de-commoditization. It allows the satisfaction of the same quantity of needs (or almost the same) with less production. This is exactly what is going on in LETS and others community-based modes of provision. Empirical surveys show that they are actually both more eco-efficient and sufficiency-prone than commercial markets. The sustainability potential of LETS (Local Exchange and Trade Systems) has been analyzed by Seyfang (2001) and Briceno and Stagl (2006). As a matter of fact, it appears that LETS activities really contribute to lessening the ecological footprint of consumption by relocating the economy, decreasing transportation costs and pollution and fostering sharing, pooling, reusing, recycling and repairing<sup>8</sup>. Moreover "they promote and develop new skills and self reliance and are thus effective in meeting many needs of a humanistic and social nature that have been neglected in the mainstream economy" (Briceno and Stagl 2006).

64 To conclude, de-commoditization gives more importance to the public (especially, local authorities) and the communal sectors (families, neighbourhoods, and communities) in providing for more needs and wants satisfaction, and, moreover, definition. However, de-commoditization is not a yes-or-no process. It refers to a full

range of transformations, from the least disruptive to the most radical. In the food consumption sector, for example, it can mean Community Supported Agriculture, local products in conventional shops, farmers' market, farm food outlets or box schemes (Terragni, Torjusen and VittersØ, 2009).

## 6. Conclusions

65 Until recently, the ecological modernization approach to consumption with its emphasis on technology and efficiency improvements has been the dominant topic in sustainable development. However, there is growing scepticism about the capability of the ecological modernization approach to produce sustainable development. Many scholars are convinced that the transition to sustainable patterns of consumption will need much wider and deeper transformations than what the advocates of ecological modernization or transition management approaches are generally ready to consider. There is a gradually emerging consensus that transition towards sustainability will need innovations and changes at three different levels:

- at the technological level where products and services with a lighter ecological footprint must replace less eco-efficient ones;
- at the institutional level where non-market based modes of provision can be promoted alongside market-based ones;
- at the cultural level where less materialistic values and lifestyles should be developed and fostered without a loss in the welfare of people.

66 In other words, effective transitions to sustainable consumption will probably involve mixed strategies that, acting on the three levers identified above, with the mix differing according to the consumption sector or domain (food, mobility, housing, leisure...) and the culture and current consumption level of each society. In any case, consumers from rich, Western, industrialized countries will have to learn to consume less (sufficiency) with more efficiency and also differently (de-commoditization).

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## Notes

1 On the contrary, one-use products are those that are totally exhausted (except for waste and pollution) in the act of consumption, like food, fuel, drugs, etc.

2 The intensity in resource R of production P is the inverse of the productivity of the resource R in production P. In others words, productivity is measured by the ratio P/R and intensity by the ratio R/P. The more productive something is, the less intensive it is, and vice versa.

3 Note that Nørgård's last two ratios are aggregated in our (C/EF) formulation. This means that we don't distinguish between Nørgård's maintenance efficiency and throughput efficiency.

4 Actually, the role given to the state varies according to the version of the eco-efficiency discourse. It can be as minimal as just guaranteeing optimal functioning of markets or a bit more active by engaging in "smart regulation" (Jänicke 2008). It is in the "transition management" approach to ecological modernization, that government has its most important role, but in a context of general "reflexive governance".

5 Schor (1998) estimates the percentage of "downshifters" in the USA at about 20%, which is not so low.

6 Note that many de-growth activists and theorists object fiercely to sustainable development, which they consider to be still addicted to economic growth.

7 The idea of using an equilateral triangle in this context comes from Boulding (1970). Note

that the same triangle can be used to illustrate entire societies (Kolm 1984), schemes of repartition of individuals, and activities (Van Parijs 1991), etc.

8 Seyfang's (2001) survey of the Kwin LETS gave the following information: 91% of participants agreed that development should involve less consumption, but a greater quality of life. 77% felt that LETS was a greener economy than the mainstream economy. 40% felt their quality of life had increased with LETS and 31% felt more able to live a greener lifestyle. 23% claimed to have been more environmentally aware of their localities through LETS. 45% of the members bought recycled or second-hand equipment from within the scheme, 25% directly reduced consumption and 37% of traders obtained property repairs. From another LETS, Seyfang reports that 31% of the members purchased maintenance and repair work, making it the third largest good or service bought.

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