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1999

### **document version**

Publisher's PDF, also known as Version of record

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### **citation for published version (APA)**

van den Bergh, J. C. J. M., & Ferrer-i-Carbonell, A. (1999). *Economic theories of sustainable consumption*. (Research Memorandum; No. 1999-55). Faculty of Economics and Business Administration, Vrije Universiteit Amsterdam.

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# **SERIE** RESEARCH MEMORANDA

## **Economic Theories of Sustainable Consumption**

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Research Memorandum 1999-55

November 1999



# Economic Theories of Sustainable Consumption

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## **Abstract**

The term 'sustainable consumption' denotes the search for consumption patterns that reduce human pressure on the environment and nature. This search involves three levels of research. First, the relationship between consumption, lifestyles and environmental sustainability has to be clarified. A general scheme of relationships will be presented here. Second, a theoretical framework for studying economic behaviour, consisting of five elements, is proposed. Moreover, various theoretical models are discussed in this context. Finally, the policy relevance of specific theories of behaviour for sustainable consumption is considered. This gives rise to both traditional and innovative prescriptions.

**Keywords:** Consumer behaviour, economic growth, dematerialisation, 'Factor 4', rebound effects, recycling, endogenous preferences, lexicographic preferences, imitation, satisficing, habitual behaviour, life styles, needs, happiness, welfare.

## 1. Introduction

In searching for sustainable development the term 'sustainable consumption' has arisen. It reflects that all environmental and resource problems caused by humans are ultimately the result of consumption and life-styles - the important other determinant being population size. Consumption has a central place in economics, where it is regarded as the result of individual or household decision making under constraints. Here we intend to survey the potential contribution of economic theories to the understanding of policies enhancing 'sustainable consumption'.

Different perspectives on sustainable consumption are closely associated to those in the growth debate (van den Bergh and de Mooij 1999). Pessimists argue that physical and biological limits will hamper any further increase of material consumption. Optimists are confident that technical progress will allow us to overcome such limits. A more extreme view - as well as a widely held belief - is that growth in per capita income changes human preferences in favour of environmental quality. 'Environmental Kuznets curve' research (Ansuetegui *et al.* 1998; de Bruyn and Heintz 1999), which has tested this thesis, has shown that it does not hold in general, i.e. not for all environmental problems. Associated with the growth debate is the discussion about the GDP as a progress or welfare indicator. It has been criticized for implicitly assuming that basic human conditions, such as space, direct access to resources (nature, freshwater) and serenity, can be substituted by economic goods such as large apartments, fast cars and expensive holidays. Using the GDP as the single progress indicator implies that substitution of 'nature' by 'economy' is taken for granted and evaluated as "progress". This has, however, been questioned by many theoretical and empirical studies (e.g., Argyle 1999; Daly and Cobb 1989; Easterlin 1974; Jackson and Marks 1999; Lintott 1998; Max-Neef 1995; Scitovsky 1976). These seem to support the thesis that the trends in the level and composition of consumption in rich countries, including European ones, are unsustainable and not necessarily contributing to human progress.

Three main questions arise in the context of sustainable consumption. First, what is the relationship between consumption, lifestyles and environmental sustainability? Second, what theoretical economic perspectives on consumer behaviour are useful? And third, what kind of economic policies are suggested by the theories to realize sustainable consumption? These questions will be discussed in subsequent sections.

2. Sustainability and consumption

Before diving into theory it will be useful to say a few words about the precise interpretation of sustainability in relation to consumption. This section will be kept very short as related issues are discussed in more detail elsewhere in this volume.

‘Sustainable consumption’ is a term that follows the popular game of combining a particular word with ‘sustainable’, sometimes leading to an oxymoron. Examples are sustainable agriculture, sustainable city, sustainable growth, sustainable population, sustainable tourism and sustainable transport. Consumption of goods and services requires the direct and indirect use of materials, energy and use of space. ‘Sustainable consumption’ can, like ‘sustainable transport’ or ‘sustainable city’, only be assessed in a system wide context, i.e. taking into account production, trade, transport, population, resource extraction and waste management. Of course, if ‘sustainable’ is interpreted as merely ‘less pollutive’ or ‘less resource wasting’ the (un)sustainability of consumption can be much easier assessed.

In order to analyse the causes and consequences of consumption one needs to develop a system of relevant relationships between determinants of consumption and environmental pressure. Figure 1 shows an example of such a system. Consumption is regarded to depend on the lifestyle, which has three types of determinants: objective and personal individual (or household) characteristics; the social context or environment; and technological characteristics of the available products. Note that the lists of items mentioned under each general determinant category in the figure are incomplete and merely illustrative.

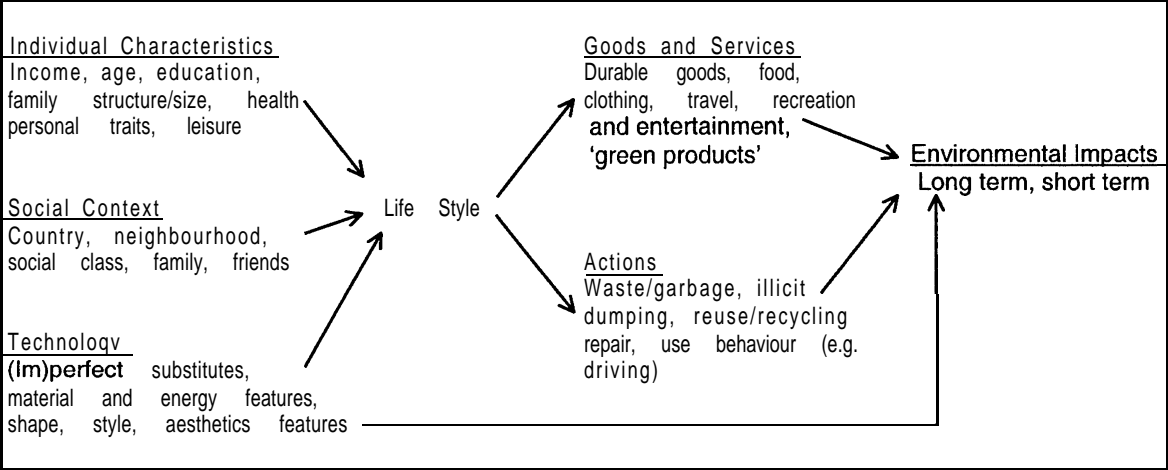


Figure 1. A framework for the study of sustainable consumption.

Each lifestyle can be generally associated with a certain mix of consumption goods. The classification of these is a bit arbitrary, and might be adapted for the purpose of environmental impact assessment. This could lead to a distinction on the basis of durability, 'greenness', energy-intensity, new versus second-hand products, etc. A detailed distinction used in a study by Jackson and Marks (1999) covers the following components of consumption: food, housing, fuel use, health care, clothing, maintenance, household appliances, communication, catering, books and newspapers, tobacco and alcohol, furniture, recreation and entertainment, travel and other. The environmental pressure can be assessed for each of these. A study of changes in consumption between 1954 and 1994 in the UK shows that the expenditures on 'household appliances' and 'recreation and entertainment' have increased almost fourfold, 'travel' threefold, and clothing twofold, while the average increase was about 100%.

Next, the scheme in Figure 1 shows an arrow from consumption categories to the environment. The environmental impact of consumption has been investigated in various studies. Energy requirements of durable goods have been studied in the Dutch HOMES' project (Noorman and Schoot Uiterkamp 1998; Biesiot and Noorman 1999). Environmental impacts of technology and lifestyles using 'structural economics', based on input-output analysis, are discussed in Duchin (1998). In order to understand sustainable consumption information about the buying behaviour or possession of goods may be insufficient. As shown in Figure 1 consumption also has a negative effect on the environment through 'actions' other than 'buying behaviour'. These include 'use behaviour' and 'waste behaviour'. The first of these denotes the intensity and way of using products, for instance, the style of driving a car. This has an effect on, among others, the energy consumption and life span of a product. The second activity covers repair, production of garbage (e.g., packaging material), illicit burning, dumping, reuse and recycling. The total environmental impact of consumption is thus regarded to be determined by the combination of buying, use and waste behaviour, in combination with the expenditures on the various goods and services, and the technological characteristics of the products. The latter comprises both production and waste features. The environmental-technological characteristics of the product can be regarded either as exogenous from the perspective of consumption analysis, or as another determinant of buying, use and waste behaviour (e.g., through cost effects). The second approach, although complicating predictions and frustrating environmental strategies like 'Factor 4', is probably more realistic. See Section 4 for further details.

### 3. A theoretical framework for sustainable consumption

In studying consumer behaviour and providing for a complete perspective on the limits and opportunities for sustainable consumption at least five levels of behaviour need to be considered:

1. **Preferences:** This may be regarded as changes in life styles, due to fashion, income change, availability of new products (i.e. technological change), relative preferences (social environment), influence by other cultures, and mass media influences. Preferences are nowadays very much shaped by commercial television, radio and magazines, as well as by the social interaction with individuals that all buy and consume new goods at a high rate. Some have referred to this as the “**affluenza virus**”. Changing preferences is further discussed below.
2. **Goals:** Different theories of consumer behaviour have been discussed in the literature (see van den Bergh *et al.* 1998; Earl 1988; Gintis 1998; Hodgson 1988): The traditional economic model is based on maximizing utility. Other theories include ‘satisficing’ (Simon 1957), imitation, habitual or routine behaviour (Hodgson 1988), social or group behaviour, citizen/consumer dichotomy (Sagoff 1988), needs satisfaction, various approaches to behaviour under uncertainty (e.g., Roe 1996; see van den Bergh *et al.* 1998). Ackerman (1997) argues that recycling does not follow from utility maximization but from some type of altruism. Some of these theories are discussed below.
3. **Constraints:** Standard economics focuses on income or budget constraints as a determinant of consumer behaviour. Other constraints are cultural/social or institutional: working hours, shopping hours, social norms, family contacts, policies, standards, laws, etc. (see, e.g., Røpke 1999). In addition, time budgets can exist for each type of activity (e.g., travel, holidays, cleaning, shopping, etc.).
4. **Decisions based on given preferences, goals and constraints:** Standard economics can trace the impact of changing prices and income on buying behaviour. Based on these insights, consumer oriented policies or producer oriented policies (polluter pays) can be designed (Baumol and Oates 1988). Environmental tax policies not only change prices but also incomes, which subsequently will affect behaviour. The alternative theories mentioned under 2 do not always give so clear-cut results and cannot always be applied or quantified, and have for these reasons been less popular.
5. **Typology of decisions relevant for environment impact assessment:** These include buying (or investment, including saving and borrowing money), use, reuse, recycling, repair, illegal dumping, waste treatment, etc. Such a disaggregate approach to consumer decisions has not



received so much attention in the economic literature. The various decisions or activities by a consumer are interdependent should ideally be analysed in a single coherent framework (e.g., Fullerton and Kinnaman 1995). Again, alternative behavioural models can be applied, notably habitual behaviour and imitation in the case of other than 'main' activities.

All five levels are part of 'consumer behaviour'. Each level can be associated with certain policy implications. Specific sciences will be interested in specific changes. For instance, traditional economics largely ignores changes on the first level (Deaton and Muellbauer, 1980), whereas psychology and marketing (managerial economics) will be particularly interested in these changes.

The dominant neoclassical tradition in economics has assumed the behaviour of individuals to be reducible to maximization of utility. It regards choices as easily predictable on the basis of price and income information since individuals are assumed to have invariant preferences, i.e. they show consistent behaviour in different situations and periods (for more details, see van den Bergh *et al.* 1998). The implication is that policy makers can modify consumers' demand in any desired direction by influencing prices or income (level 4 changes). This explains the optimistic attitude towards price-based instruments in environmental economics (Baumol and Oates, 1988). Deleting the behavioural assumptions of standard economics means that less importance will be given to such price-based instruments. This is related to the fact that the notion of economic efficiency loses significance if other than utility maximizing theories are adopted.

On level 1 the notion of 'consumer sovereignty' is important, which has been taken as a starting point by standard economics. **It** is needed to formulate the utility **maximizing model**. Norton *et al.* (1998) distinguish between 4 degrees of consumer sovereignty: (a) unchanging preferences; (b) given preferences (disciplinary boundaries); (c) critique on and policy aimed at preferences are inconsistent with democratic principles; and (d) democratically decided policies aimed at changing preferences. The latter is consistent with an approach that , allows for 'endogenously changing preferences' as the focal point of environmental policy (level 1). Norton *et al.* (1998) argue that fear of a 'totalitarian government' from following preference changing policies is unnecessary for several reasons: preferences are already unconsciously manipulated by all sorts of other policies; they are influenced purposefully 'behind the scenes' by all sorts of stakeholders; and commercial companies have since long influenced preferences via the media, out of pure profit motivation. Most importantly perhaps, preference-influencing environmental

policies may be based on democratic decisions. The main question is then how preferences change. Economists know little about this. This indicates the need for multidisciplinary research, involving in any case psychologists, sociologists and economists.

On level 2 various theories are available. A few examples can make clear the usefulness of adopting a pluralistic perspective. It is possible to assume that there is a very strict limit to what can be substituted in consumption: people have many basic needs, such as food, shelter, company, respect and freedom. These cannot be traded-off against luxurious material consumption. This relates to the economic and psychological concept of lexicographic preferences, which denotes that individuals first will satisfy a 'lower' need (satisfying hunger) before becoming interested in 'higher' needs (recreation) (Maslow 1970). Moreover, they will have limited desires and needs, i.e. saturation occurs at certain levels of consumption. According to this view, growth of material consumption, notably in urban and polluted environments, is regarded as no more than imperfect compensation for loss of basic need satisfaction such as social relations, serenity, space and direct access to nature. Lexicographic preferences' theory was first introduced by Menger (cf. Georgescu-Koegen, 1968) and described by Lutz and Lux (1979, p. 322) "... as the most basic and the most relevant model of human choice and behavior ...". The theory suggests that growth of income and material consumption can never act as a substitute for lost environmental, social and other nonmarket services. Material wealth is most important for the quality of life when basic needs are not yet covered but loses importance beyond that. Basic needs such as shelter or food are material by definition while higher needs such as self-esteem or belonging depend mainly on the quality of social relationships.

From the perspective of 'satisficing' and routine-like behavioural models, responses to environmental regulation will not be as evident as in the case of maximizing behaviour. Transaction costs are present everywhere, and imply that 'satisficing' may be more adequate than optimizing behaviour, as the latter would involve an infinite regression of searching and checking whether all the relevant information has been acquired and used. Both habitual behaviour and 'satisficing' can explain the "energy gap", i.e. the unreaped economic benefits associated with potential energy conservation. van Raaij (1988) discusses this issue in the context of models of consumer behaviour that take account of issues like visibility, demonstration value, environmental concern, relational knowledge (information), habits and socio-demographic determinants.

Girardian economics focuses on problems of addressing pervasive uncertainty, based on human desires being unstable, humans being ignorant, and events being unpredictable. Market

signals (prices, interest rates) provide uncertain clues for decision making, although prices may be regarded as an indication of quality in highly uncertain markets. Desire and behaviour become mimetic, examples of which are panic selling, spiralling inflation and speculation. Another implication of uncertainty is the desire for wealth, as an explicit goal and means to reach self-sufficiency. Wealth allows to avoid having to imitate others and to be safe in the face of surprises. This goal of wealth leads to envy (see Roe, 1996).

The standard economic theory has been criticized extensively for insufficiently addressing social context of individual behaviour (see van den Bergh et al. 1998). One suggestion is that consumers get satisfaction not only from goods themselves but also from the social context, which has been referred to as 'nonfunctional demand' (Leibenstein 1950) and 'positional goods' (Hirsch 1977). Such effects imply that environmental policy may have counter-intuitive effects on the consumption of certain status goods.

One step further is further is to assume that welfare is relative, i.e. individual welfare can never be assessed independently from the welfare of other individuals in the relevant social environment - the tribe, village, region, country, and (due to 'globalization') the entire world. For example, poverty is both an absolute and relative concept: the 'needs' concept refers to its absolute dimension; the relative dimension is related to the fact that people are likely to be unhappy as a result of not being able to afford goods that most other individuals in their relevant social environment consume.

#### **4. Some policy implications**

The mainstream economic view on policy for sustainability is that all external costs of decisions by producers and consumers are charged to those decisions (Baumol and Oates 1988). More precisely, optimal ('first-best') policy should aim for realizing the optimal price in the (hypothetical) social optimum defined as the situation in which all externalities are accounted for. In order to arrange environmental sustainability, the external costs should cover not only present externalities but also all future externalities. Since it is impossible to obtain all the necessary information for calculating these externalities (by a planner or market) the ideal policy will resemble a '**fata Morgana**'. Tradable permits, although in standard economics regarded as a 'second-best' instrument, are perhaps more suitable in the context of sustainability goals. Many scientists feel comfortable with physical and biological limits associated with environmental sustainability. Economics shows that these can subsequently be linked to marginal prices, based

on markets in which permits to pollute or use resources are traded to the amount of the respective system wide limit.

Lexicographic preferences can be related to the notion of strong sustainability, where complementarity, uniqueness and non-substitutability of life support functions, climate regulation, and nature in general are emphasized. Consequently, policies that try to make trade-offs in an environmental context based on individual preferences may find that individuals are unwilling to make such trade-offs (Stern, 1997). This provides support for tradable permit as an instrument for sustainability.

The notion of 'relative welfare' introduces additional uncertainty about traditional environmental policy suggestions. For instance, efficiency will then become dependent on equity (Martinez-Alier and M. O'Connor 1998). This means that any environmental policy aimed only at efficiency can still not neglect impacts on income or welfare distribution.

A practical and nowadays popular approach to environmental policy is the strategy of 'Factor 4'. It represents a technological perspective on reducing environmental pressure by striving for technological alternatives, to existing products and processes, that are more material and energy efficient (Weizsäcker et al. 1997). Economists have argued that a distinction should be made between direct and indirect effects, or gross and net gains. The term 'rebound effects' is often mentioned in this context, referring to both behavioural and macroeconomic (economy wide) effects. For instance, more energy efficient combustion engine cars will reduce the fuel costs of driving, as a result of which people will ultimately drive more kilometres (behavioural response). Moreover, the macroeconomic effect is that due to less total demand for fuel its price falls so that the cost of driving will go further down, enforcing the behavioural response. For more discussion of 'Factor 4' see the contributions in this volume by N. Myers, A. Jordan and T. O'Riordan.

For many people sustainable consumption has a strongly ethical or normative connotation, denoting that we should completely change our life styles and preferences. In order to realize this, specific types of policies might be implemented ranging from education and other 'moral suasion instruments' to very restrictive measures such as a ban on certain types of commercial advertisement. One specific view is that the 'western life style' should be redefined, so as to reduce material consumption and give more importance to social relations and spare time. The latter would not only reduce human impacts on the environment but possibly also improve human satisfaction. For this purpose utopian, planning or blueprinting views are proposed that focus on simpler lifestyles or incorporate elements of countryside life, compact or

garden cities, and technologically advanced means of transport. These typically differ from economic policy views that are based on markets, freedom of individual decision making and prices as incentives. The problems for analysts created by utopian approaches is twofold. First, they represent such drastic changes relative to the current socio-economic-environmental system that it is unclear how and whether the desired system can be realized. Second, for the same reason it is virtually impossible to say anything sensible about the economic implications. Evolutionary models of change rather than our present static type of analysis are needed to understand historical, path-dependent development, lock-in of present technologies and spatial constellations, and adaptive change to more desirable social systems (Gowdy and van den Bergh 1998).

## **5. Prospects**

Various theoretical economic models of consumer behaviour need to be adapted to an environmental context, taking into account social context, endogenous preferences, and actions like buying goods, using them, repair, reuse, and waste treatment. Standard economic theory mainly focuses on consumption as a determinant of utility and not as part of a biological (eating, shelter), learned (fashion, imitation), social (belonging, relative welfare) or cultural activity (shopping as a leisure activity). Alternative theories of individual behaviour offer interesting views on the motivations of behaviour: 'satisficing', habitual behaviour, avoiding risk, lexicographic preferences, changing preferences, household decision making, and social context of consumption. It seems too ambitious to strive for a general theory. Instead, we plea for a pluralistic approach that recognizes the value of different theories. Each can serve to illustrate particular characteristics of consumer behaviour in reality. Different theories emphasize specific policy measures as most useful to realize sustainable consumption. For instance, standard economic theory focuses on correct relative prices of less and more dirty goods and services; sustainability seems to point at tradable permits as a more attractive instrument; relative preference theories focus on stopping the 'rat race of consumerism' via education and public information; and endogenous preference theories imply instruments like moral suasion and restricting commercial advertisement. It is a challenge to combine these various theoretical insights to arrive at an effective policy package for sustainable consumption.

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