

Political-administrative policies for sustainable household behaviour

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1 Introduction

A sustainable society will have to be accomplished not only through new production methods, but will also require different consumption patterns, if only because these are necessary to follow up on sustainable production. While influencing production processes to the extent needed is indeed a difficult task for any 'environmental governance' system, the complementary influencing of consumption processes poses even more difficult challenges. Consumers are everybody, in a role that is often regarded as belonging to the private sphere of life. 'Command and control' measures soon meet cultural and ethical barriers. Market incentives to consumers need corrections, so that 'prices tell the truth'. But with very open economies and strong ideologies in favour of freeing markets as much as possible from all government interference, price manipulation is far from a switch board freely at the disposal of environmental policy. Next, consumers are numerous, too numerous to deal with separately, too diverse to regard them as one 'target group'. There are organisations that strive to represent them in their role as consumers, but these organisations' membership is only a low percentage of consumers and they cannot conclude agreements binding anyone else than these organisation themselves. Of course there is representative democracy. Most consumers are voters. But this might illustrate the more how diverse consumers are, rather than show the way to a viable strategy of consumption oriented policies. This chapter deals with ways to face the challenge posed when trying to govern into the direction of a sustainable consumption. The central thesis will be that consumption, rather than a separate target group or issue, is a perspective on sustainability issues and hence a basis for a complementary policy strategy for environmental governance.

When aiming at 'sustainable consumption', the question soon arises what sustainability, or a sustainable society, really is. Since the term 'sustainable development' was launched by the Brundtland Commission (WCED, 1987) attempts have been made in many contexts to give more content to this term (among others, CLTM, 1995; Conrad, 1993, Klaassen and Opschoor, 1991, Lélé, 1991; Den Butter, Hofkes and Verbruggen, 1994; Noorman, Biesiot and Schoot Uiterkamp, 1996; Reijnders, 1996: 8). This multitude of attempts clearly shows how difficult it is to operationalise the concept of sustainability.

At any rate, the concept of sustainability obtains additional meaning if we use it in conjunction with the concept of environmental quality. One of the reasons that this concept is difficult to operationalise, in fact, is that we can imagine a sustainable society at different levels of environmental quality. Thus, a sustainable society may survive even at a low quality of the environment as long as it remains possible to withdraw essential resources from nature (the space station vision), while e.g. natural values are not present or hardly present at all. On the other hand, of course we can visualise a sustainable society where environmental quality remains equal to the environmental quality of our present society or is even considerably better (the Arcadian vision). Thus the operationalisation of sustainability as a policy objective is not a fact of physics, but inevitably calls for political choices as well.

Irrespective of how the sustainability concept is operationalised, the realisation of a sustainable society at any rate presupposes the making of new political choices. This eventually involves major adjustments even in a minimal variation. If we assume, for instance, that a society is sustainable if energy consumption by persons amounts to a maximum of 1,5 kW per annum, we have to make choices to get to this point. Usually these approaches are described in terms of policy instruments that can or should be launched.

Often a few groups of policy instruments are distinguished. The most familiar distinction is that between directives, incentives and communication. In the light of the challenge faced by society and the possible implications of this for everyday life (e.g. Stern and Gardner, 1981: 340-341), however, the distinction between directives, incentives, and communication is just like saying that metal, wooden and plastic implements are available for tending the garden. Such a distinction does not go into the questions of how much, what and how, which may be asked with regard to the intended social changes. This is what makes such typologies so unsatisfactory. It is a point of view that may be understandable if consumer policy is seen from the perspective of the policy instrumentarium itself. Just as a producer of garden implements would see a distinction into types of material as meaningful. However, a typology of policy instruments is hardly any help to us if we are looking for a policy strategy that can bring us closer to sustainable consumption.

One of the reasons for focusing precisely on consumers and consumption is that this is a target group that is very difficult to access for many government policies (NMP 2: 10-11). In fact, in many countries this target group is hardly steered directly by government policies, even though it often accounts for a large part of the total burden on the environment (Johnstone, 1995; RIVM, 1997). The relative inaccessibility of the target group 'households' greatly obstructs any direct application of 'environmental performance contracts' or 'negotiated quota' among consumers.

In this chapter we ask ourselves what characteristics of a policy strategy are necessary and possible to reduce the total burden on the environment by consumers in order to contribute to a sustainable society. For this purpose we try to find points of action for policy strategies. Here we shall not look at this from the perspective of government policy instruments as a sort of 'tool kit' from which to choose, but rather we will base ourselves on the behaviour of consumers and others who are involved in the purchase, the use and the disposal of consumer goods.

2 The role of consumption and consumers in burdening the environment

In visions of a sustainable society, the main focus often is on the role of the consumer. After all, does not the consumer reign supreme within a market economy? What the consumer wants is manufactured and offered for sale to precisely the extent that the consumer wishes to pay for it. Conversely, producers and suppliers who produce and offer something else soon dig their own graves. For them, the manufacturing and offering of goods that are not the consumer's first preference is 'unnatural behaviour', unless the government intervenes and imposes this 'unnatural behaviour' on everyone', so as not to disrupt internal competition. It seems quite logical, therefore, to begin the battle to achieve a sustainable society at the core, i.e. consumer preferences and behaviour.

At first sight this does indeed seem logical. However, a number of complications arise. One of the first is that the behaviour of consumers and that of others such as producers and shopkeepers is mutually interactive. However, we do not have to focus only on one party. By focusing policies only on the consumer, important opportunities for stimulating behaviour change fail to be utilised.

Here we are faced with the complication that consumers constitute a relatively 'inaccessible' target group: a target group with many members (everyone), who, moreover, are badly organised in their role of consumer and with who are difficult to consult and come to an agreement with.

Besides, also the logical alternative to consultation and agreements, i.e. the general directives imposed by the authorities, is not very useful in the case of consumers. Not in an ethical sense, because much of consumer behaviour belongs to the personal sphere, where the government can intervene only with great restraint. Not in a practical sense, because the behaviour of millions of individual actors is relatively difficult to enforce. In 1976, the Dutch Council for Public Health already wrote: "Regarding this group one may imagine that legal measures are taken to limit polluting behaviour. But to monitor the observance of these laws a very large and unaffordable apparatus would be required, where one might also wonder whether the effect will be in proportion to the effort" (Council for Public Health, 1976). Even legally speaking, major problems can arise. Consumer freedom is an important principle that has also been laid down, for instance, in the policies of the EC. Although the EU and the European Court recognise environmental considerations as a possible justification of limitations of consumer freedom, clear tensions remain (Reich, 1995). Also GATT rules can complicate policy at this point (Reijnders, 1996: 23-24). It is not surprising, therefore, that most environmental policies are aimed at *producers*. This also provides considerable opportunities to limit environmental burden caused by consumption.

This does not mean that the approach via the consumer in the interaction between production and consumption should be ignored. The focus of this chapter is on consumption. However, this is not considered separately from other processes. Here consumption does not appear to just be part of a chain of related processes, but appears itself to also consist of several different processes, each of which have their own environmental consequences and their own points of action for policy. To discuss the possibilities for influencing the total burden on the environment through consumption processes it is necessary, therefore, to 'unravel' these consumption processes.

What determines the environmental burden caused by consumption? Let us begin by stating that the total burden on the environment can be the consequence both of emissions and other wastes, and of the consumption of natural resources and energy. Energy consumption by private cars, water consumption by washing machines and air pollution by the central heating boiler are all part of the total burden on the environment by the consumer. How high this burden is per hour of consumption, however, is strongly dependent, in all three of these cases, on the characteristics of the product. Obviously these should be taken into account as well. This brings the producers back into the picture again.

Different products are produced by different producers with a different level of pollution, natural resource consumption and risk. Basically this environmental burden can be attributed to the consumer who, after all, buys the products. Arguing from this premise, this could also apply to the raw materials and energy with which the goods and services are produced. Or even to the environmental burden which accompanies the recovery and the transport of these raw materials and energy. In this way, all environmental burden can thus be attributed to consumption. We do not want to go that far in this chapter.

We draw the line at those aspects that directly determine the extent of environmental burden that occurs during and as a result of the consumption itself. This means that the quantity and characteristics of the consumed products are indeed a part of this, but not the indirect environmental burden that accompanies production or the stages preceding it. This also means that we will concentrate on matters about which the citizen in his role of consumer is able to make a conscious choice (Oosterhuis et al., 1996: 245). In the remainder of this section we will try to formulate as clearly as possible which choices are involved here.

This influence of consumer choices on the burden on the environment is realised through three types of decisions:

- (a) How much is consumed?
- (b) What is consumed?
- (c) How does consumption take place?

Regarding the first question we should think of the total extent of consumption. After all, not the whole income has to be consumed. Although we should note that when appeals are made to be frugal, it is sometimes forgotten that this usually results in only a temporary situation and that when the saved income is invested, this may even speed up economic growth and future consumption.

The second question refers both to the composition of consumption from various types of products and services and to the choice of a certain product with certain characteristics from similar products. The line between these two is not clearly drawn, though. When does a product with, for instance, excellent environmental qualities stop being a choice from similar products and become a different type of product, resulting in a shift in the composition of the consumption package from different products and services? For instance, is transport by means of electronic standard wagons linked to the main roads still the same 'product' as the private cars we know today?

The third question concerns the way in which consumption takes place. Thus, speed and driving habits while driving a car can affect environmental burden per driven mile (Blaas et al., 1992).

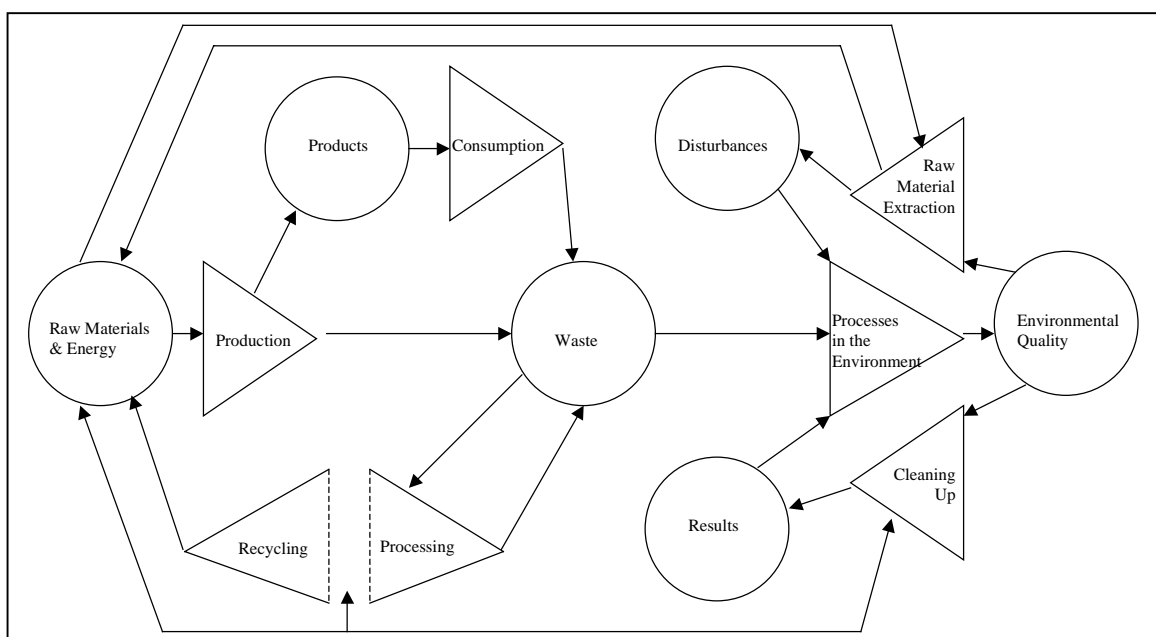
The answers to these three questions are related. Thus wealthier consumers will not only consume more, but also distribute consumption differently over the various goods and services than poorer people are likely to do. The nature of the goods and services consumed also determines to what extent the way this is done still affects environmental burden. The method of consumption no longer makes a difference in all these cases.

The consumption process is part of the economic system. In this system consumption is not just preceded by other processes, but also followed by processes, particularly surrounding waste processing. Figure 1 depicts the consumption process amidst other processes.

In addition to consumption in the strict sense, i.e. the use of goods and services, in a wider sense two processes can be attributed to the sphere of consumption that link the preceding and the subsequent process. They are the purchasing (and therefore also the selling) of goods and services and the disposing of (parts of) goods as waste products. These three sub-processes that are part of consumption can be seen as a differentiation at a lower level of abstraction of the consumption process, as depicted in our figure.

When differentiating between purchase, use and disposal, confusion may arise. After all, the car may be used when buying groceries in the supermarket. And the use of the car in turn requires the purchase of petrol. To separate waste products, a double waste reservoir can be bought with the use of the car. Et cetera. It is clear that these three sub-processes are difficult to separate if we see them as combinations of interrelated events or actions. Therefore we will distinguish them here in a different way, looking at the stages each individual product passes through. For instance, buying involves decisions on the quantity and nature of the goods and services to be used, not the way such a decision is taken or the use made of other goods and services during this process. In the above example, therefore, we will consider the use of a car as a separate decision regarding movement. Thus, the role of the ‘how much?’, ‘what?’ and ‘how?’ – aspects differs for each of the three consumption processes purchase, use and disposal.

Figure 1, The consumption process amidst other processes



These processes are also related to each other, and to the processes preceding or following them, in another way. Since products involve articles that themselves (physically) go from one (sub-)process to the other, the characteristics of the product, continue to influence the environmental burden this process entails, not just during consumption, but also up to and including the waste processing stages. The method of consumption and the way in which the product is disposed can also affect the waste processing process. In other words: one link of the chain influences the next. Conversely, the optimum waste processing method from the environmental point of view imposes conditions on (1) the way in which the waste is offered for processing and (2) sometimes also on the way in which the product was used. Whether the separation of waste materials, or more in general, an environmentally friendly form of waste processing is possible also depends on the properties of the products themselves. Thus it also depends on (3) purchasing behaviour, where the recyclability of the product may or may not be taken into account, and (4) on whether or not a manufacturer markets such products. Tromp (1995) indicates that the large-scale recycling of materials requires restructuring of the entire production and consumption system on the basis of less diverse and less complex types of materials. The fact that processes have an impact also on subsequent links of the chain means, in other words, that conversely later processes can also impose conditions on previous links.

The concept of 'chain control' or 'life cycle analysis' is often applied in environmental science without taking the role of the consumer into account. It is then only applied to the trajectory within the economic-ecological system of recovery of raw materials up to and including the final, ready-to-use product, after which an immediate switch is made to the possibilities for processing the product during the waste stage. This does not seem justified, however. Consumer decisions play an important role within this chain. This might still be forgotten when conceptualising the economy in terms of material flows, for instance when thinking about 'chain control'. If the same chain of the economic process is seen in a more usual way, i.e. in terms of money flows, it soon becomes obvious that in addition to decisions by producers, those taken by consumers are also essential.

Above we indicated that the role of the 'how much?', the 'what?' and the 'how?'-aspects of consumer decisions differ for each of the three consumption processes purchase, use and disposal. This yields a matrix that basically consists of nine cells. The importance of each of these nine cells for the burden on the environment varies between the different types of 'products', which are taken to include both goods and services. Naturally, the how much? -aspect is no longer applied to total consumption here, but to parts of it.

Here we distinguish five categories of products:

1. Durables whose use is environmentally polluting (such as cars, washing machines, central heating);
2. Durables whose use is (more or less) environmentally neutral (such as furniture, clothes, cutlery);
3. Consumables (such as food, supermarket groceries in general);
4. Services that are hardly environmentally polluting in themselves (such as theatre, banks, education);
5. Services that are environmentally polluting in themselves (such as air travel).

In the first category, the environmentally relevant decisions can be found both during the purchase and the disposal of these articles. When purchasing, the main aspects are the how much? and the what? –aspects. (How many cars are bought and what type of car is chosen?) During use, the aspects involved are the how much? and the how? -aspects. (How many miles are travelled by car and what style of driving is used). After all, the what? aspect was already given through the purchase. Actually, this does not apply to the how much? aspect. Cars and central heating can be used to a greater or lesser extent. During disposal, finally, the how? aspect in particular affects the extent of environmental damage (Does one take one's disposed car to a car wrecking company or does one dispose of it into the canal). The how much? and the what? aspects have already been largely determined by decisions during purchase.

In the second category, the environmentally relevant decisions are taken mainly during purchase and disposal. For the rest, the importance of the three aspects is distributed similarly as in the first category.

In the third category (consumables) probably most of the aspects are of importance. Compared to the aspects emphasised in the first category, the quantity of use is eliminated as an environmentally relevant decision (determined by purchase).¹ During purchase, at any rate the quantity and the nature of the products count. Whether the way in which (how?) the purchase takes place is also of importance, again depends of what is attributed to this category.²

In the fourth category, the difference between purchase and use is not very important, while there is no question of disposing of these articles as waste (leaving aside as irrelevant the throwing away of a museum ticket). Thus really only the decision regarding purchase remains. In this kind of services, there hardly seems to be any question of environmental burden. Here we should realise, of course, that it is quite possible that their use entails the use of other products that *are* environmentally polluting (such as taking the car to go to the hairdresser) or is instrumental to the purchase of environmentally polluting products or services (the use of the services of a travel bureau to book a flight).

In the fifth category, the quantity and nature of the purchased services is of importance, on the other hand. Thus one can take a vacation by plane not at all, once a year or several times a year. In addition there is the choice between types of services that are in themselves environmentally polluting. Thus one can take a vacation by plane, by bus or by train. The distinction between products and services in this respect becomes clear if we take the use of a taxi as an example. The use of a taxi is the purchase (and consequently the use) of a service, while if one travels the same trajectory with one's own car, this would involve the use of a previously purchased product.

All these consumer decisions within different sub-processes, over different products and over different aspects are interrelated. Yet it is important to see them not just as a single whole, but to try to unravel the various threads of this complex. This unfolds a whole range of possibilities for influencing consumer behaviour, which is not visible if we look only at the strategies and instruments that are available to the authorities. It also warns for a to one-sighted approach of a certain policy goal.

¹ Self-compostation, or the reuse of products in other ways, can be seen as a way of disposing of these products (how?), but also as a way of limiting the quantity offered as waste outside the household. This should be distinguished from the way in which the waste is offered, e.g. separated or non-separated form.

² Of course it makes a difference whether shopping is done by car at a shopping mall in the outskirts or at the corner grocery store. But we previously allocated this to the use of the car. On the other hand, it is doubtful whether all how? aspects of the purchasing behaviour of these categories of products may be allocated to other categories in the same way.

Let us take the example of the introduction of more energy-efficient household appliances, like a washing machine that consumes less energy than usual or an energy saving light bulb. As such washing machines or light bulbs belong to the first category. The introduction of them has to do first of all with the 'what (type)?' question of the purchasing process. But that might be a too narrow viewpoint. Sometimes the 'what' and the 'how much' questions of the purchasing process are not independent. The number of light points around house is steadily increasing. A partial explanation is that energy efficient light bulbs -- that are often used for this kind of lighting -- made people feel more comfortable with this expansion. Maybe the initial introduction of the bulbs in a form that is not very apt for fashionable armature was a mistake. The 'how much' question can also be applied to washing machines as making private one household machines more efficient can preclude a scenario in which collective washing (with possibly directly heated water in stead of electrically heated water) could grow to a more important substitute.

Also the amount of use (the 'how much' question of the use process) might not be independent. The frequency in which clothing is washed has increased enormously sometimes to the point that washing clothes after each use as a habit replaced any form of deliberate choice. These kinds of changes can 'eat away' all environmental progress that improved appliances are promising. In some cases also the waste characteristics of more efficient products are different from the standard ones. Take the example of rechargeable batteries, that produce less, but more harmful waste, especially since the recycling of them succeeds in practice only partially. A successful introduction of these might make only sense from an environmental viewpoint in case waste management succeeds in enlarging recycling rates. These examples all show the importance of unravelling the various threads of types of products, consumers processes and the questions at hand there.

3 Possibilities to influence the environmental behaviour of consumers

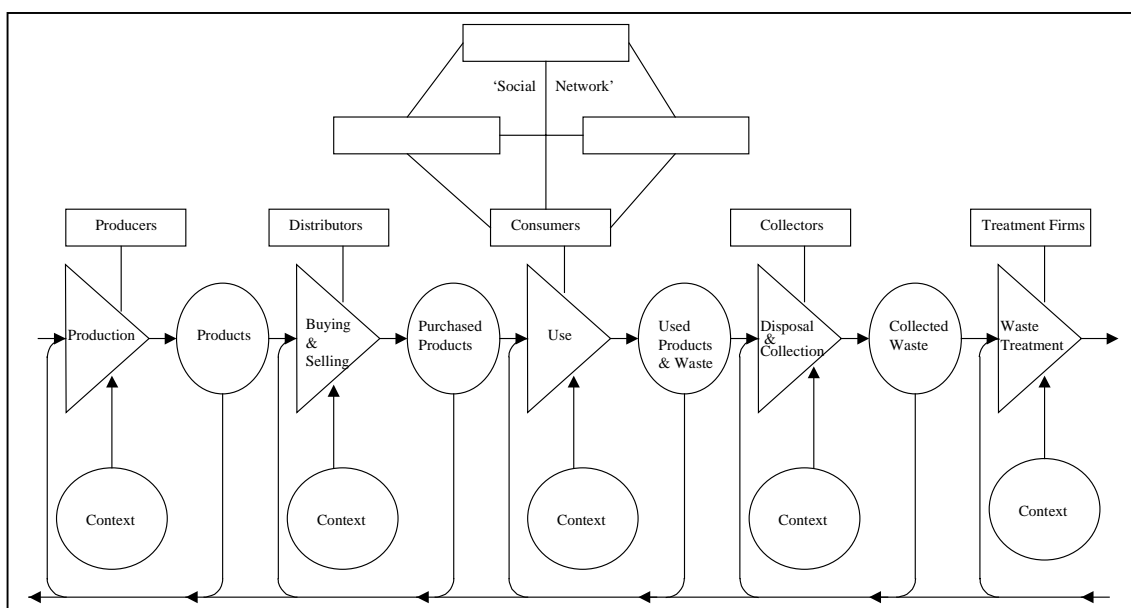
One of the next steps to obtain some insight into the various possibilities to influence consumer behaviour is to depict the factors that determine consumer behaviour. Here we are not so much interested in a (statistical) explanation *per se*, but rather in finding points of action for such influencing. Scott Geller, Winett and Everett (1982) state that many studies on environmental behaviour tend to ignore this point: "It is noteworthy that several psychology-based studies have correlated individuals' actions, demographic characteristics, personality traits, or value systems with individuals' awareness or concern for environmental protection. Although such attitude-behaviour, correlational studies are probably more numerous than those aimed at finding strategies for directly influencing environment-related behaviours, we seriously doubt that this correlational research will have any practical significance for energy conservation or environmental protection." Instead they state: "The general approach is to define specifically and objectively the target behaviours which need to be changed and then manipulate environmental stimuli or events *preceding* and/or *following* the target behaviours in order to effect behaviour change in desired directions." (pp. 16-17)

For the purpose of our analysis, therefore, we shall return to the input-output process model of the previous section. An adapted model is given in Figure 2. Here the consumption process is divided into the purchase and the use of the product and the disposal of waste. In addition the actors are schematically depicted by rectangles. Finally, we indicate that the processes are influenced not only by the product and the actors, but also by the remaining circumstances. What is not depicted in the diagram but has already been discussed in the previous section, is the fact that every process entails certain forms of environmental burden.

Much of the (social-psychological) literature on the influencing of consumer behaviour is based on a simple diagram, i.e. that of the interaction between person, environment and behaviour (Midden and Bartels, 1994, 10-13, based on, among others, Bandera, 1978 and Peter & Olson, 1987). In this 'triad' policy instruments constitute influences that always directly or indirectly influence not just one but always all three of these aspects. It is recognised, though, that behaviour itself can really never be a direct subject of steering, but should always be influenced indirectly, through the individual or the circumstances. We recognise the value of thinking in terms of interactions, but see the division into 'person' and 'environment' as too simple to really be of any help in depicting the factors that influence consumer behaviour. 'The environment' has too many individually relevant aspects for us to do so.

Another common approach to the influencing of consumer behaviour is the (micro-)economic one. Here the focus is on individual benefit on the one hand and the price of alternative consumption options on the other hand. However, also this approach ignores many relevant aspects (Spaargaren, 1991: 41-42), although some forms of game theory are based on a view of humanity with a less limited definition (Pellikaan, 1996).

Figure 2, Diagram of consumption processes and the factors that influence this



On the basis of the above figure we wish to apply some more detail, therefore, looking at the behavioural preferences of persons as being dependent both on motives and on resources (Klok, 1995: 22). Here both motives and resources are seen in a wider sense than is usually the case in the economic literature on consumer behaviour (Bressers, 1994: 244-245). Basically, the choices made by consumers can change both due to a change in motives and due to a change in resources. The fact that much of consumer behaviour can be characterised as force of habit does not contradict this. Habits can be seen as a (powerful) motive. They are based partly on the need to be able to perform a large part of one's behaviour without paying too much attention to it, i.e. they are in fact based on the limited availability of the information(-processing capacity) resource. Through the influencing of these motives and resources, therefore, habitual behaviour can be made the behaviour of choice – even if only temporarily – and thus be made susceptible to the influence of other motives and resources.

Motives may be based on needs, but also on standards and values. It appears, however, that groups of consumers that differ considerably and consistently in their standards and values regarding environmentally friendly consumption, nevertheless differ hardly at all where their behaviour is concerned (De Bruin et al., 1993). Besides, even among environmentally conscious people environmental considerations are always secondary motives: a certain form of transport is chosen not because of the environment, but to go somewhere else, etceteras (Bressers, 1993). It has long been known, therefore, that the relation between attitudes and behaviour is far from unambiguous (Deutscher, 1966). Behaviour is strongly dependent not only on motives, but also on the resources of the people. Part of these resources are linked to the individual, such as the knowledge and experience a person has and the amount of money he has at his disposal. Other resources are process-linked and are part of a person's environment, i.e. of the circumstances under which the process takes place, such as the rights that consumers have when purchasing a product.

A person's environment can be divided into the social and the physical environment. In this context, part of an individual's social environment are all those who serve as a frame of reference for his own behaviour. Our figure depicts this social environment of the consumers by showing the network of other actors to whom the consumers are linked. To the physical or inanimate environment we attribute not only the 'hard' infrastructure of the three sub-processes of consumption, such as the shopping mall or the kitchen, but also the 'soft' infrastructure, such as the prevailing rights and duties. This environment is different for each of the three sub-processes. A special part of the environment is the input of the process: the product to be purchased or used or the remaining waste one wishes to dispose of, as well as their properties. The properties during use or disposal are usually already given at the time of purchasing. For this reason the product and its properties yield only one new factor.

Summarising, we have now distinguished the following factors that influence environmental effects of consumer behaviour: (1) the persons, i.e. the consumers themselves, (2) their social environment, (3) the circumstances of the purchasing process, (4) the circumstances of the use process, (5) the circumstances of the waste disposal process, and (6) the products that are being supplied and their properties.

- (1) Even if we are aware of the factors that determine consumer behaviour, this does not yet provide any certain points of action for steering by the government. This is the case, for instance, if the target group itself is relatively inaccessible, as in the case of consumers and the households of which they are part. Target groups that are difficult

to access can be approached directly only to a very limited extent by means of policy measures.

A number of possible policy measures is already eliminated beforehand where this target group is concerned. Thus it is impossible for policy makers to enter into a covenant with the target group 'households'. Firstly, the number of households is too large to be able to negotiate with the whole target group. Secondly, households are usually not organised as a target group. They have no representative body. Households are represented as such when specific aspects of their behaviour are involved. Thus, Dutch households are represented in their capacity of consumers by the Dutch Consumers' Union, in their capacity of car-drivers by the General Dutch Motorists Association and as members of the Dutch population by the 'Second Chamber' of the Dutch Parliament.

It is not just a policy instrument such as a covenant that cannot be applied to a fairly inaccessible target group such as households; also permitting and other instruments that require an individual approach to the target group members or negotiations with the target group are not suitable here. Thus, the relative inaccessibility of the target group 'households' largely hampers any direct application of 'environmental performance contracts' or 'negotiated quota' with consumers. This only applies, however, to those forms of these instruments that are aimed *directly* at this hard-to-access target group. Of course, per sub-sector, e.g. agriculture, provisions, transport etceteras, the authorities may set objectives – whether or not in consultation with non-government organisations from these sectors – with regard to the maximum desired extent of certain emissions and the desired use of materials, energy carriers, water and space. Insofar as a contribution on the part of consumers is required for this, this should be steered individually, however. Thus, direct steering of the target group 'consumers' offers few if any possibilities. Therefore, below we shall focus on the possibilities for steering this group *indirectly*.

- (2) A possibility to provide government steering in the case of a target group that is difficult to access is the steering of a more accessible target group that in its turn is able to directly steer the intended (difficult-to-access) target group. Here we assume that although a target group may be difficult to access for the policy-makers, it does not have to be difficult to access for others. The motives and individually linked resources of the consumers can be influenced by their social environment. The social environment of consumers consists primarily of the household of which they are a part. Because this hardly makes any difference to the accessibility of the target group, we shall now take a look at its further social environment.

This 'further social environment' is located at various levels surrounding the individual or household in question. At the micro-level, it involves people with whom there are direct and mutual contacts, such as family, friends and neighbours. Examples of policies aimed at this factor are neighbourhood projects where energy consumption is jointly monitored.

At the meso-level it involves organisations to which the consumers belong. Such organisations may be relevant if they represent a major interest for the consumer, as is usually the case for the institution where one works or goes to school, or in the case of self-chosen organisations such as associations and social institutions with a relevant objective, such as nature protection societies or automobile associations. Policies aimed at this factor supply resources to such organisations, for instance, to enlighten and/or influence their members where their choices as consumers are concerned.

At the macro-level this involves public debate and the (im)PLICIT messages from commercials, journalists and celebrities as they are transmitted by the media. This factor is most commonly used in the form of televised messages (in the Netherlands the so-called 'PO Box 51' messages), where celebrities are actually also quite often used in order to make maximum use of the tendency on the part of individuals to follow behaviour.

One possible positive environmental aspect that utilises the options (resources) of the consumers rather than trying to influence their motives, is the presence of like-minded others within the consumer's social environment, together with whom an article can be purchased or used (Oosterhuis et al., 1996: 267-270). This can make bio-dynamic foods better affordable, for instance, makes it possible to jointly purchase cars and other lasting consumer goods or share their use. The existence of 'local exchange trading systems' (LETS) also belongs to this category. Generally speaking, this involves only a small part of society. But there are exceptions. Thus car-pooling is common practice, for instance, and it has a considerable impact on the environment.

- (3) Much of environmental burden during consumption depends on the how much- and what-choices made by the consumer when purchasing products and services. We will discuss the properties of the products themselves later. Here we are interested in the circumstances under which their choice and purchase takes place. An important aspect of this is the information given at the time of purchase. This is partly a matter of the salesmen as actors within the process (e.g. Scott Geller et al., 1993). But we can also think of more structural ways to influence information during purchase. Here we refer to matters such as the product range e.g. in shops, and the way in which the products on offer are presented and the information provided with them. We may think, for instance, of the inclusion of environmental criteria in the tests of Consumer Organisations, so that they are also incorporated into the final score.

Such a form of steering is seen, for example, in the case of the labelling of household appliances. Although the government focuses on the manufacturers and importers of such appliances and obliges them to provide their products with a label giving information on energy consumption, the government aims to influence behaviour by households in such a way as to take energy consumption by household appliances into account during their purchase and choose energy-saving appliances as a result.³

Improved products may be important in order to reduce environmental burden by consumers, as we will see. An adequate introduction of the new possibilities is essential here, however. Thus the introduction of new equipment may stagnate due to lack of knowledge on the part of the electricians. Such an obstacle was seen during the introduction of HR-boilers in the Netherlands. Only a few electricians proved to be capable of installing these electronics, because they were used to working with electrical instead of electronic devices (Brezet, 1994). Such a circumstance during selection and purchase may constitute a major obstacle.

³ Since the labels are attached to the appliance and are provided by the manufacturer, it is possible to disagree on whether this is an example of a condition during purchase or a product characteristic.

When for the good of the environment attention is paid simultaneously to all aspects that are of influence during purchase (the seven p's: in addition to product and price, also place, promotion, personnel, presentation and process), the term 'environmental marketing' is sometimes used (Ester and Mandemaker, 1994). Thus 'environmental marketing' is a strategy whereby attention for the various points of action is combined in order to arrive at a more integrated strategy. The best strategy will not be the same for all types of consumers. Therefore it can be important to distinguish various specific groups within the target group 'consumers', e.g. those who consume relatively high amounts of energy (Craig and McCann, 1979). The approach can then be adjusted to them specifically.

- (4) Conditions during use can largely determine the 'how much' and 'how' of such use. A clear example is road infrastructure, which has a major influence on car use. Policies to reduce e.g. the number of parking spaces in the inner cities are examples of the use of this factor. The same applies to the construction of car pooling spaces where people can easily change cars from their own vehicle to ride together with others, or to separate highway lanes for vehicles where there are more than one or two persons occupants.

Also in other behaviour, a large part of environmental consequences is determined by the physical environment. Thus we see, for instance, that the extent to which gas and electricity are used every day (in utility construction) depends on the energy infrastructure of the buildings in question: their physical construction and technical installation. Thus, technical optimisation offers the best possibilities to accomplish a further reduction of energy consumption (Bosveld, 1995). The situation will probably not be very different for private houses. A draughty, badly insulated house will greatly stimulate the use of central heating.

- (5) Conditions that affect the choice of how waste is disposed of include e.g. the presence of glass containers, paper bins and so on, into which waste materials can be deposited separately. Also the availability of a compostable waste bin offers the consumer the possibility of separating waste materials.

Another example that we find in the options that are available to the target group, is that when households have the possibility of offering their disposed products (appliances) for reuse or recycling, this becomes one of the options when such a product is disposed, as opposed to the situation where this is not a possibility.

- (6) As a sixth category of factors that influence consumer behaviour and thus offer points of action for policy, the products themselves and their properties are of importance. If we look at the integral life cycle of a product, we see that this provides many points of action, only a few of which lie in the choices made by the consumer. In the rest of the chain we find points of action that lie in the design of the product, among other things. Sometimes use is made of Life Cycle Analyses (LCA's) for optimisation (Cramer, 1993). Various policy options aimed at producers that are also used by the government to reduce pollution during production can also be used to urge them towards more environmentally friendly products (viz. Reijnders, 1996: 15-24; Oosterhuis et al., 1996). Technical adaptations of electrical appliances such that they become more energy-efficient result in less detrimental environmental effects during the use of such appliances. A change in behaviour is not the issue here, although of course a simultaneous change in behaviour can enhance or weaken this effect. Of course we can also imagine that other products do indeed impose demands on the behaviour of those who use them. In such cases, an integrated analysis of the

technical and behavioural aspects is an obvious choice (Johnson and Scott Geller, 1980).

In the previous section we distinguished five different types of goods and services. For each of these types there are different possibilities to reduce the environmental burden that the consumption of these articles entails by changing their properties. Thus, in addition to good insulation of a house, a well-regulated central heating system that e.g. even recovers the heat from ventilating air may contribute greatly to the reduction of energy consumption by central heating.

Part of these properties concern the environmental burden that was involved in the production of these goods, part concerns the environmental burden involved in their use and the possibilities to offer and process waste in an environmentally friendly way. Government policies that steer consumer behaviour via these properties will focus on the innovation and dissemination of new technologies in products and production methods. Often examples are given of 'technology forcing' as a way to force such breakthroughs. This means that regulations or charges impose greater requirements than are technically feasible at the current state of the technology, in hopes of forcing technological development in this way. In fact, of course, the whole range of possibilities within technology policy is available here (Cramer, 1993). A special form is one where use is made of information on the environmental achievements of firms to the consumers as a way of influencing investors and thus exerting indirect pressure on the producers. This appears to work under certain conditions (Lanoie et al., 1997).

Other properties determine the appeal of the product for the consumer in relation to the use he wishes to make of it or the price of the product. These properties are of importance to the choices that consumers make when purchasing the products. One of the main possibilities to influence policy here is the price. Examples are the charge on petrol and energy charge for small-scale users that were introduced in the Netherlands. In the United Kingdom a VAT-charge was introduced on the household consumption of energy that did not exist previously. Actually, this charge appears to have been too low to have any real effect (Johnstone, 1995). Also many other ideas related to the 'greening' of the tax system have an impact on consumer behaviour through this factor. In addition, many countries have possibilities for subsidising some low-energy or energy-efficient devices.

As we have seen above, we do not necessarily have to steer target groups (that are difficult to access) directly, but we can also do this indirectly. This is because behaviour can partly be explained from the social and physical environment and the options available to the target group (products and services). The issue here is not just the choices made implicitly or explicitly by households regarding their own behaviour, but also the options that are available to them due to e.g. the physical environment of their behaviour (built-in consequences of behaviour, as in the case of the technical adaptation of equipment). We should realise, therefore, that this offers a real possibility to steer the environmental effects of the behaviour of target groups that are difficult to access. By e.g. influencing the range of products on offer and steering the choice of products by providing information during their purchase, it is possible to steer relatively inaccessible target groups without having to approach them directly.

We should realise, however, that creating certain possibilities and social and physical circumstances of behaviour is not just determined by government steering in these fields. Some relatively autonomous developments that also have an influence are, for instance, social trends such as a growth in mobility and an increase in welfare (Uusitalo, 1983) and new technologies. Social trends emerge, for instance, because oth-

ers in the consumer's social environment influence this consumer's behaviour. Also the development of new technologies takes place more or less autonomously. Although the government has only limited control over technological developments, government steering is certainly capable of stimulating developments in certain fields. Thus the stimulation of an integral life cycle approach may be reason for manufacturers to develop new technologies. The Dutch Decree pertaining to the disposal of household appliances states, for instance, that manufacturers of appliances are responsible for their products also during the waste processing stage. In view of this responsibility, producers are beginning to pay attention to product design and the possible reuse of raw materials (Ligteringen, 1997). In Australia, manufacturers of household appliances were stimulated to develop new technologies because the introduction of labelling proved to strongly stimulate the sale of energy-efficient appliances (Kraemer, 1995). Also, government services themselves may act as 'environmentally conscious buyers' in order to stimulate the supply of environmentally friendly products even if the ordinary consumer does not (yet) ask for them (Reijnders, 1996: 15).

The possibilities to provide some steering in technological developments are not restricted only to government policies. Also the *use* of technologies can stimulate demand for certain new developments. This constitutes the opposite of the relation that we found earlier: the environmental consequences of behaviour are partly determined by the physical circumstances, such as the energy-efficient properties of the electrical appliance being used. In this way we can certainly speak of the interaction between behaviour and environment that we found previously.

Above we already stated that it is difficult for the government to steer the environmental consequences of the behaviour of a relatively inaccessible target group such as Dutch households. If we look at developments in the environmental consequences of the behaviour in Dutch households, however, we find that such behaviour has over time been influenced by government policies in many different fields (Ligteringen, 1996). It appears that environmental behaviour in households can be largely explained from the negative (side) effects of policies in other fields than those policies that were intended to influence this behaviour.

In addition to the need to adjust policies within a certain policy field, we are also faced here with the need to adjust policies in different fields. In this context Knoepfel (1995) speaks of 'intra- and inter-policy co-operation'. Naturally, much resistance will have to be overcome here from other policy fields, all of which also have their own – partly conflicting – objectives and institutional power bases within and without the government organisation.

If we come back to the example of the introduction of more energy-efficient household appliances, all the above points at the possibilities to not only influence directly the motives of consumers to use less energy, for instance when washing clothes, but also for instance (1) to include this issue in community energy guarding projects, to stimulate schools to educate on the issue (and maybe discourage the wearing of light coloured clothing that most young children are unable to keep clean for longer than an hour), to discuss the issue in magazines and television programmes that might be of importance as a wider reference group to the consumer, and to encourage shared use of better machines, (2) to negotiate with the distributors about the degree to which and the way they present these appliances in their shops and advertisements, to stimulate consumer organisations to include data and advice on energy efficiency in their tests, to negotiate or compel producers to provide clear information about the degree of energy efficiency

with the products and organise a system of uniform and clear labelling, to accommodate the introduction process in case it takes an innovation of the installers – which in this example would typically be the case when electronic heating would be replaced by warm water installations, to negotiate joint efforts with producers and distributors for integral ‘environmental marketing’ of the products, (3) to investigate possible barriers to use innovations like warm water equipment that stem from the usual or even prescribed installations in houses and if necessary adjust them, (4) to negotiate, compel or facilitate directly with the producers a permanent product innovation in the sphere of making washing machines more energy efficient, where government could also contribute through promising temporary price subsidies, to stimulate in-built devices that make unnecessary energy consumption less standard (why having an ‘energy saving button’ and why not an ‘extra energy intensive programme’ button?).

Measures of the above that prove to be successful can often also be expected to stimulate willingness to adjust to the other measures named. If demand sores, innovation gets for instance its probably best possible form of stimulation. On the other hand government should be aware of the detrimental effects some of its other policies might have for all gains reached in this way. For instance various policies greatly stimulate or facilitate the increase of the number of -- ever smaller -- households. Of course not only for the reason of energy consumption when washing clothes, but for a vast array of related environmental burdening as an effect of this development, one might question some of these policies that have this development as their side-effect.

The above survey of possibilities shows that there is definitely a basis for a successful environmental policy aimed at consumers that can contribute to the realisation of a sustainable society. Many of the measures that can be derived from the system given above are jointly effective and implementable. However, many of them have considerable side effects if used to a considerable extent as well. Although a measure can prove to be largely implementable and effective, this does not yet guarantee its career as a policy instrument. In addition to implementability and effectiveness, after all, there are all sorts of other matters that make it unlikely that measures that seem implementable and effective are actually chosen in the policy process. A sufficient level of feasibility of an effective and implementable measure is essential, therefore, to enable its introduction into government policy. Thus the greatest bottleneck for a successful policy with regard to environmental burden by consumers appears to be the political feasibility of the measures taken. Therefore we will focus on this in our next section.

4 The feasibility of environmental consumers’ policy

In a rational choice model, the feasibility of a policy should depend on the extent to which its instruments deal with the problem. This assumes that policies that deal with the problem in a substantial way are highly feasible ones. However, in practice we often see the opposite: policies that seem highly effective as a solution to the problem are not assimilated in public policy. Instead, policies are assimilated that seem to be less effective. Particularly during the last decade, public policy analysts have emphasised that policy formulation has a rationality of its own which accounts for this phenomenon (Gustafsson and Richardson, 1979). These studies take several factors into account (see e.g. De Savornin Lohman, 1994; Larrue, 1995; Liberatore, 1995). Other studies stress the relevance of the relationship between the actors in the formulation process in explaining the selection of policy instruments during the policy formulation process (Bressers & Ringeling, 1989; Scharpf, 1989; Linder & Peters, 1989; Majone, 1992;

Sabatier and Jenkins-Smith, 1993). These studies look at the important role of policy networks, the environment of the formulation process and the relations between the actors. The feasibility of a certain policy largely depends on the way in which the policy formulation process develops, which in turn consists of the (inter)actions of the various actors involved and the present circumstances.

The system of actors that have a pattern of interaction aimed at a certain policy issue is called the 'relevant policy network'. Because the network setting (among other things) seems to be an important factor in explaining the formulation of the policy (see also Koppenjan, Ringeling & Te Velde, 1987; Sabatier, 1991; Bressers, 1993 & 1998; Bagchus, De Bruijn & Ringeling, 1994), we will concentrate here on the network of actors to explain the selection of certain (types of) policies. In the rest of this chapter we will very concisely present a model that describes characteristics of the networks that are involved in policy selection processes and the resulting characteristics of the policies that are most likely to be chosen.

As a part of the network characteristics, we find that four factors play an important role in policy formulation: the extent to which the actors motives converge or diverge, the equality of the distribution of resources among the actors, the intensity of interactions, and (of particular importance within the context of this chapter) the accessibility of the target group.

First we shall assume that the actors' motives play an important role within the policy formulation process. With regard to motives we aim at a variable on the network level. That is why we are ultimately not interested in which motive is held by which actor, but rather in the actors' motives in relation to each other. At the network level, motives can generally be placed either on the same line (converging motives) or on different lines (diverging motives). However, in order to analyse motives on the network level we first need to gather information at the actor level. The alignment of motives in relation to each other can only be derived after the motives of the individual actors have been related to each other.

A second network characteristic that is assumed to play a major role in policy-making is the distribution of resources. Here too we focus on the distribution of resources at the network level. Resources can be distributed evenly or unevenly. In case of an uneven distribution of resources, one of the actors within the network holds resources that give him a dominant role in relation to the other actors in the network. This dominant role enables the actor to impose his wishes on the other actors. The background of such an availability of resources to a specific actor can be found in either quantitative or qualitative aspects. On the one hand, an actor may owe his dominance to a relatively large amount (quantity) of a specific resource, for example extensive economic interests for a specific region, as is seen in the case of large corporations and employers' associations. For instance, multinational corporations have sometimes threatened to go abroad if the government continues to be uncooperative. On the other hand, an actor's dominance can be due to the availability of some crucial resource (quality), whatever the amount available is. An example is seen in authorities. Public organisations often have authorities that enable them to pressurise target groups. For instance, the Ministry of Environmental Affairs claimed that the producers of large household appliances would be faced with legal measures that would make producers fully responsible for these products during the waste disposal stage of the product. This measure would be taken unless producers would 'voluntarily' come to an agreement with the government.

On the other hand, resources may also be distributed in such a way that none of the actors is able to play a dominant role within the network. In this situation actors are mutually dependent on each other. Resources are evenly distributed among the actors

(the quantitative aspect) and/or none of the actors has a crucial resource at his disposal to maintain a dominant position in the end.

Thirdly, we assume that the intensity of interactions between network actors plays a role during the policy formulation process. Just as the distribution of motives and the distribution of resources, the intensity of interactions can be seen as a variable at the network level. A policy formulation network can be characterised either by intensive interaction among the actors or by less intensive interaction among the actors. Intensive interaction may be defined by its frequency, but also by the way of interacting. Correspondence by means of official letters seems to be a less intensive form of interaction than face-to-face contact.

In addition to these three network characteristics, another factor is also assumed to play a major role during the policy formulation process. This factor may be defined either as a characteristic of the problem situation or a characteristic of one of the actors within the policy network: the accessibility of the target group. The accessibility of the target group can be determined by its level of organisation and by the number of members of that group. In general, target groups that are hardly organised as such may be difficult to get access to. This also applies to target groups that have a great many members. Here we distinguish between easily accessible target groups and relatively inaccessible target groups.

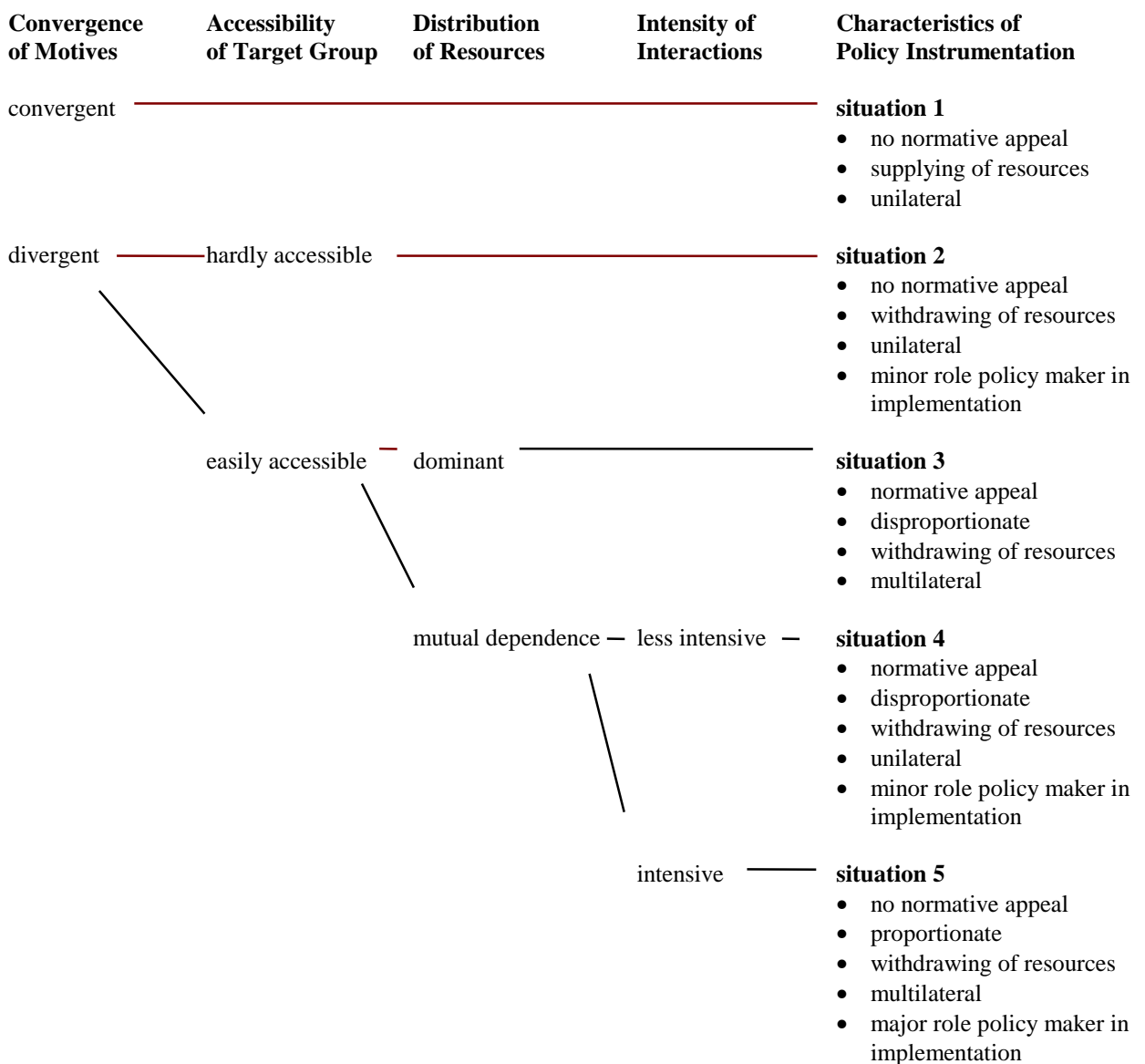
According to the network-instrumentation model, a combination of the above-mentioned network characteristics is supposed to contribute to a certain type of policy instrumentation. The types of policies we distinguish are based on the characteristics of instruments and other policy aspects recognised by Bressers (1998 & 1993). These types of policies consist of combinations of certain characteristics. The following characteristics are distinguished:

1. *A normative appeal to the obedience of the target group*; The difference between an economic and a judicial policy strategy can be defined by the presence of a normative appeal to the obedience of the target group. Economic policy strategies generally do not include a normative appeal to the target group behaviour, whereas judicial policy strategies in general do include such an appeal. We need to be aware of the fact that here we do not refer to an appeal to some kind of altruistic attitude on the part of the target group, but an appeal to obey the given rules.
2. *The proportion between the target group's behaviour and the government reaction to this*;
The proportion of the target group's behaviour and government reaction to this is aimed at the extent to which the dimension or intensity of the governmental reaction fluctuates proportionally to the dimension or intensity of the target group's behaviour. Regulations generally indicate one specific norm level. Financial incentives often increase proportionally to an increase in the dimension or intensity of the behaviour. A policy strategy may be either proportionate or disproportionate.
3. *Providing or withdrawal of resources to/from the target group*; The provision or withdrawal of resources compares to extending or limiting the target group's possibilities. 'Extending' is defined as making possible options more attractive by donating resources, whereas 'limiting' involves the opposite.
4. *Unilateral or multilateral formulation process*; If the policy strategy is based on an agreement between (members of) the target group, the implementing organisation and possibly other actors, we speak of 'multilateral' policy instrumentation. An example of this is a covenant. However, where the policy is imposed upon the target group without it being consulted, we speak of unilateral (one-sided) policy instrumentation.

5. *The role of the policy-maker during the policy implementation.* In stating the role of the policy-maker during the policy implementation phase, we look at the decision of the policy-maker in a specific situation regarding his own role in the implementation process. Policy-makers can allot a minor or major role to themselves.

Figure 3 gives an impression of the network-instrumentation model, defining the relations between the relevant network and situation characteristics on the one hand and the characteristics that are likely to emerge in the selected policy instrumentation on the other hand. Of course we are aware that this presentation lacks a discussion of the premises and deductions that led to the relations hypothesised in this scheme. See for this Ligteringen (1999).

Figure 3, The network-instrumentation model



A closer look at the network-instrumentation model shows that most types of instruments are unsuitable for application to a target group that is difficult to access. Dealing

directly with such a relatively inaccessible target group means, according to the model, that only two situations may be feasible (situations 1 and 2). Both situations suggest leaving out a normative appeal to the target group's obedience. Moreover, the model suggests a unilateral policy. Both these policy characteristics are likely to emerge in cases of relatively inaccessible target groups. Firstly, a normative appeal to the obedience of such a target group may be difficult to enforce precisely because of its lack of accessibility. Secondly, a bi- or multilateral policy may also be difficult to realise. Consulting with a relatively inaccessible target group and negotiating with such a target group is virtually impossible. This is why we expect policies aimed at such a target group to be unilateral ones and, moreover, to be characterised by a lack of normative appeal to the target group's obedience.

Typical forms of such policies in the sphere of environmental behaviour by consumers are information campaigns and subsidies in the case of convergence of motives, and pricing measures in the case of divergent motives. With pricing measures, however, an additional problem has to be taken into account. On the subject of environmental behaviour, the motives of policy-makers and the target group – i.e. consumers – may differ. But while the same people not only act as consumers but in vast numbers also as voters, policy makers usually have a powerful additional motive that is in line with the target group preferences: not to create too much opposition. This makes situation 1 often more appropriate than situation 2.

This analysis once again points to the importance of a policy strategy that is not only directed at influencing consumers directly, but takes a much wider range of possibilities for influencing consumer behaviour into account. This is good not only for the effectiveness of the policy, but is also important to make a wider range of policy strategies politically feasible.

5 Conclusion

In this chapter we explored the possibilities that may lead us to a sustainable society, looking at them from the perspective of the consumer. In order to find these possibilities we have tried to unravel consumer behaviour and the characteristics of certain types of products. In doing so, we distinguished 5 types of products with their specific issues related to the purchase, use and disposal of the products. We based ourselves on the factors that influence consumer behaviour. We distinguished (1) the individuals/consumers, (2) their social environment, (3) the circumstances during purchase of the product, (4) the circumstances during use of the product, (5) the circumstances during disposal of the product, and (6) the products supplied and their characteristics.

There appear to be few serious options for influencing consumer behaviour directly (through factor (1) individuals/consumers). Indirect influencing offers more possibilities for having an impact on consumer behaviour (through factors (2) to (6)).

All in all, the following elements seem essential to a strategy to achieve sustainable consumption:

- ❖ The environmental burden caused by consumer behaviour provides a perspective on environmental problems rather than involving separate problems created by one individual target group;
- ❖ Paying attention primarily to factors that affect environmental burden due to consumer behaviour, and paying attention to the government's 'tool-kit' only where this is related to this primary point of attention;

- ❖ Paying attention to the ‘life cycle’ of consumer behaviour: the process in one part of the cycle is affected by previous processes and subsequently affects the following processes – conversely, previous processes will be affected by future processes through anticipation;
- ❖ Paying attention primarily to the consumers environment and paying only secondary attention to exerting a direct influence on the motives of consumers (through various forms of persuasive enlightenment);
- ❖ Paying attention to the strengthening and weakening effect of incentives on factors that simultaneously influence consumer behaviour;
- ❖ Paying attention to the various problems and possibilities created by the differences between types of products and services;
- ❖ Paying attention to policy options for the adjustment of other policies that up to that point had a negative effect on the environmental behaviour of consumers;
- ❖ Within the context of the political feasibility of policy strategies to directly influence consumer behaviour: paying special attention to policy strategies that are unilateral and do not make any normative appeal to the obedience of the target group;
- ❖ In general: paying attention to insights into political feasibility not just as restrictions, but also as insights that may lead us towards more feasible strategies.

In conclusion, we may say that on the way to sustainable consumption we encounter more than just consumers. More specifically, if we only come across consumers, this may mean that we are taking the wrong approach. Taking a good look at the producers, the social environment of the consumer and the facilities used by the consumer during his purchase, use and disposal of products seems well worth the effort in order to facilitate the development of effective, implementable and feasible policy options.

The points mentioned not only pose challenges to policy makers, but also re-state and broaden the research programme on this issue. Social and natural scientists must join forces in studies that help create a consumption oriented policy strategy that complements the other aspects of environmental governance.

References

- Bagchus, R., J.A. de Bruijn & A.B. Ringeling (1994), Beleidsinstrumenten (policy instruments), in: A.J.G.M. Bekke, J.L.M. Hakvoort & J.M. de Heer, *Departementen in beweging*, Den Haag: VUGA, 1994, pp. 223-245
- Bandura, A. (1978), The self system in reciprocal determinism, in: *American Psychologist*, April 1978, p. 346.
- Blaas, E.W., J.M. Vleugel, E. Louw, T. Rooijers (1992), *Autobezit, autogebruik en rijgedrag* (Car-ownership, car-usage and driving behaviour), Delft: Delftse universitaire pers.
- Bosveld, D.J. (1995), *Een koude herfst? Een bestuurskundig onderzoek naar energiebesparingsbeleid in vijf verzorgingstehuizen voor bejaarden* (A cold Autumn? A public administrative research on energy saving policy in five nursing homes for the elderly), Enschede: CSTM, University of Twente.
- Brezet, J.C. (1994), *Van prototype tot standaard, de diffusie van energiebesparende technologie: Een onderzoek naar het diffusieproces van Hoog Rendement CV-ketels in de particuliere huishoudelijke sector in Nederland over de periode 1981-1992* (From prototype to standard, the diffusion of energy saving technology: a research on the diffusion process of High Return Central Heating Appliances in the private household sector in the Netherlands during 1981-1992), Rotterdam.

- Bressers, Hans (1993), Overheidsbeïnvloeding van consumptiepatronen (Government influence on consumption patterns), in: Pieter van Driel (ed.), *Milieubehoud en consumptiepatronen*, Amsterdam: WBS, pp. 43-54.
- Bressers, J.Th.A. (1994), De effectiviteit van instrumenten voor milieubeleid (The effectiveness of environmental policy instruments), in: C.J.H. Midden, en G.C. Bartels (red.), *Consument en milieu*, Houten/Zaventem: Bohn Stafleu Van Lochum, pp. 241-260.
- Bressers, Hans Th.A. (1998), The choice of policy instruments in policy networks, in: B Guy Peters and Frans K.M. van Nispen (Eds.), *Public Policy Instruments*, Cheltenham: Edward Elgar; earlier published in Dutch (1993): Beleidsnetwerken en instrumentenkeuze, in: *Beleidswetenschap*, Vol. 7, No. 4, pp. 309-330.
- Bressers, J.Th.A., and A.B. Ringeling (1989), Beleidsinstrumenten in drie arena's (Policy instruments in three arenas), in: *Beleidswetenschap*, Vol. 3, No. 1, pp. 3-24
- Bruin, P.A.F. de, R.J.T. Custers and A.H. Scholten (1993), *Voorwaarden voor consumptieverandering: Een oriëntatie op normen en waarden* (Conditions for consumption change: an orientation on norms and values), Den Haag: SWOKA.
- Butter, F.A.G. den, M.W. Hofkes and H. Verbruggen (1994), Hoe meten we duurzaamheid? (How to measure sustainability?), in: *Economisch Statistische Berichten*, July 13 1994.
- Conrad, J. (1993), *Social significance, preconditions and operationalization of the concept sustainable development*, paper for the international symposium "Sustainable development - where do we stand", Graz 13-14 July 1993.
- Council for Public Health (1976), *Milieubewust gedrag, milieubewust beleid, uitgangspunten voor milieuvoorlichting* (Environmental behaviour, environmental policy, basis for environmental information), Den Haag: Staatsuitgeverij
- Cramer, J. (1993), *Productgericht milieubeheer* (Product oriented environmental management), Rijswijk: RMNO.
- CLTM (1995), Long-term environmental policy: Towards a sustainable future, in: Dutch Committee for Long-Term Environmental Policy (ed.), *The environment: towards a sustainable future*, Dordrecht: Kluwer Academic Publishers, pp. 3-18.
- Craigh, C. Samuel, and John M. Mc Cann, Developing strategies for influencing residential consumption of electricity, in: *Journal of environmental systems*, Vol. 9, No. 2, pp. 175-187.
- Deutscher, Irwin (1966), Words and deeds: Social science and social policy, in: *Social problems*, Vol. 13, pp. 235-254.
- Ester, Peter, and Tjitse Mandemaker, Socialization of environmental policy objectives: Tools for environmental marketing, in: Dutch Committee for Long-Term Environmental Policy (ed.), *The environment: towards a sustainable future*, Dordrecht: Kluwer Academic Publishers, pp. 49-83.
- Gustafsson, G., and J.J. Richardson (1979), Concepts of rationality and the policy process, in: *European journal of political research*, Vol. 7, pp. 415-436.
- Johnson, Richard P., and E. Scott Geller (1980), Engineering technology and behavior analysis for interdisciplinary environmental protection, in: *The behavior analyst*, Vol. 3, pp. 23-29.
- Johnstone, Nick (1995), *An empirical analysis of the UK Government's Environmental Policy for the Domestic Sector*, Cambridge: University of Cambridge.
- Klaassen, G.A.J., and J.B. Opschoor (1991), Economics of sustainability or the sustainability of economics: different paradigms, in: *Ecological economics*, 4, pp. 93-115.
- Klok, P-J. (1995), A classification of instruments for environmental policy, in: B. Dente (ed.), *Environmental policy in search of new instruments*, Dordrecht: Kluwer Academic Publishers, pp. 21-36.
- Knoepfel, Peter (1995), New institutional arrangements for the next generation of environmental policy instruments: intra- en interpolicy-cooperation, in: B. Dente (ed.), *Environmental policy in search of new instruments*, Dordrecht: Kluwer Academic Publishers, pp. 197-233.
- Koppenjan, J.F.M., A.B. Ringeling, R.H.A. te Velde (eds.) (1987), *Beleidsvorming in Nederland, een vergelijkende studie naar de totstandkoming van wetten* (Policy formulation in the Netherlands, a comparative study on the realisation of laws), Den Haag: VUGA
- Lanoie, Paul, Benoît Laplante, Maité Roy (1997), *Can capital markets create incentives for pollution control?*, Washington, DC: The World Bank.

- Larrue, Corrine, The political (un)feasibility of environmental economic instruments, in: B. Dente (ed.), *Environmental policy in search of new instruments*, Dordrecht: Kluwer Academic Publishers, pp. 37-54.
- Lélé, S. (1991), Sustainable development: a critical review, in: *World development*, 19 (6), pp. 607-621.
- Liberatore, Angela, Arguments, assumptions, and the choice of policy instruments, in: B. Dente (ed.), *Environmental policy in search of new instruments*, Dordrecht: Kluwer Academic Publishers, pp. 55-71.
- Ligteringen, J.J. (1997a), Public policy effects on household metabolism, in: K.J. Noorman and A.J.M. Schoot Uiterkamp (eds.), *Green Households? Domestic consumers, the Environment and Sustainability*, London: Earthscan Publications Ltd., (forthcoming in December), pp. 212- 231; earlier published in Dutch: Ligteringen, J.J. (1996), Onbedoelde effecten van overheidsbeleid op milieugedrag in huishoudens, in: *Beleidswetenschap*, 10 (1), pp. 3-22
- Ligteringen, J.J. (1997b), De verwijdering van witgoedproducten, in: Lulofs, K.R.D., Schrama, G.J.I. (eds.) *Ketenbeheer. CSTM Jaarboek 1998* (Life cycle management, CSTM Annual 1998), Enschede: Twente University Press
- Ligteringen, J.J. (1999), *The feasibility of Dutch environmental policy instruments*, Enschede: Twente University Press
- Linder, S.H., B.G. Peters (1989), Instruments of government: perceptions and contexts, in: *Journal of Public Policy*, 9, 1, pp. 35-58
- Majone, G. (1992), *Ideas, interests and policy change*, EUI Working Paper No. 92/21, Florence: European University Institute
- Midden, C.J.H., en G.C. Bartels (1994), Het milieu, een kwestie van mensenwerk (The environment, a matter of work of man), in: C.J.H. Midden en G.C. Bartels (red.), *Consument en milieu*, Houten/Zaventem: Bohn Stafleu Van Lochum, pp. 1-16.
- NMP 2, Tweede Kamer der Staten Generaal (1993), No. 23.560, *Nationaal Milieubeleidsplan 2: Milieu als maatstaf* (National Environmental Policy Plan 2: Environment as a standard), Den Haag: VROM.
- Noorman, K.J., W. Biesiot, A.J.M. Schoot Uiterkamp (1996), Household metabolism in the context of sustainable development and environmental quality, in: *Proceedings of the ecology-society-economy conference*, Paris 23-25 May 1995.
- Oosterhuis, Frans, Frieder Rubik and Gerd Scholl (1996), *Product policy in Europe: New environmental perspectives*, Dordrecht: Kluwer Academic Publishers.
- Pelikaan, Huib (1996), Speltheorie en milieubeleid (Game theory and environmental policy), in: *Beleid & Maatschappij*, No.3, pp. 121-133
- Peter, J.P., en J.C. Olson (1987), *Consumer behavior*, Homewood: Irwin.
- Reich, Norbert (1995), The recognition of fundamental rights in the areas of consumer and environmental protection by the EC, in: Cecelia Kye (Ed.), *EU Environmental law and policy and EU consumer law and policy: Converging and diverging trends*, Diegem: Kluwer Éditions Juridiques en Belgique, pp. 127-143.
- Reijnders, Lucas (1996), *Environmentally improved production processes and products*, Dordrecht: Kluwer Academic Publishers.
- RIVM (1997), *Milieubalans 1997* (Environmental balance 1997), Alphen aan den Rijn: Samsom H.D. Tjeenk Willink.
- Sabatier, P.A. (1991), Toward better theories of the policy process, in: *Political Science & Politics*, 1991, pp. 147-156
- Sabatier, Paul A., and Hank C. Jenkins-Smith (eds.)(1993), *Policy change and learning: An advocacy coalition approach*, Boulder, CO: Westview Press.
- Savornin Lohman, L. de (1994), Incentive charges in environmental policies: Why they are white ravens?, in: H. Opschoor and K. Turner (eds.), *Economic incentives and environmental policies*, Dordrecht: Kluwer, pp. 55-69.
- Scharpf, F.W. (1989), Decision rules, decision styles and policy choices, in: *Journal of Theoretical Politics*, 1, 2, 1989, pp. 149-176
- Scott Geller, E., John C. Farris and David S. Post (1973), Prompting a consumer behavior for pollution control, in: *Journal of applied behavioral analysis*, Vol. 6, No. 3, pp. 367-376
- Scott Geller, E., R.A. Winett, P.B. Everett (1982), *Preserving the environment, new strategies for behavior change*, New York.

- Spaargaren, Gert (1994), Duurzame leefstijlen en -consumptiepatronen (Sustainable life styles and consumption patterns), in: *Tijdschrift voor sociologie*, Vol. 15, No.2, pp. 29-65
- Stern, Paul C., and Gerald T. Gardner (1981), Psychological research and energy policy, in: *American psychologist*, Vol. 36, No. 4, pp. 329-342.
- Tromp, Onno-Sven (1995), *Towards sustainable quality*, Groningen: State University of Groningen.
- Uusitalo, Liisa (1983), Environmental impacts of changes in consumption style, in: Liisa Uusitalo (ed.), *Consumer behaviour and environmental quality*, Aldershot: Gower, pp. 123-142
- WCED, World Commission on Environment and Development (1987), *Our common future*, Oxford/New York.