

MARCH 2014

INFLUENCING BEHAVIOUR

MORE EFFECTIVE ENVIRONMENTAL POLICY
THROUGH INSIGHT INTO HUMAN BEHAVIOUR

About the Council for the Environment and Infrastructure

The Council for the Environment and Infrastructure (Raad voor de Leefomgeving en Infrastructuur, Rli) advises the Dutch government and Parliament on strategic issues concerning the sustainable development of the living and working environment. The Council is independent, and offers solicited and unsolicited advice on long-term issues of strategic importance to the Netherlands. Through its integrated approach and strategic advice, the Council strives to provide greater depth and breadth to the political and social debate, and to improve the quality of decision-making processes.

Composition of the Council

H.M. (Henry) Meijdam, Chair
A.M.A. (Agnes) van Ardenne-van der Hoeven
M. (Marjolein) Demmers MBA
E.H. (Eelco) Dykstra, MD
L.J.P.M. (Léon) Frissen
J.J. (Jan Jaap) de Graeff
Prof. Dr P. (Pieter) Hooimeijer
Prof. N.S.J. (Niels) Koeman
M. E. (Marike) van Lier Lels
Prof. Dr G. (Gerrit) Meester
A.G. (Annemieke) Nijhof MBA
Prof. Dr W.A.J. (Wouter) Vanstiphout

General Secretary

Dr R. (Ron) Hillebrand

Council for the Environment and Infrastructure
Oranjevuitensingel 6
P.O. Box 20906
NL-2500 EX The Hague
The Netherlands
info@rli.nl
www.rli.nl

MARCH 2014

INFLUENCING BEHAVIOUR

MORE EFFECTIVE ENVIRONMENTAL POLICY
THROUGH INSIGHT INTO HUMAN BEHAVIOUR

This advisory report is accompanied by *Influencing Behaviour: a Behaviour Analysis Framework* for the development of more effective environmental policy and the *Behaviour Quick Scan* (in Dutch only).

FOREWORD



More effective environmental policy through insight into human behaviour

The Netherlands faces the challenge of rendering both society and the economy more sustainable. This advisory report is concerned with ways in which the insights gained from behavioural science research can be used in pursuit of environmental objectives. That such knowledge is a valuable instrument is perhaps obvious. So why does the process of applying it demand special attention?

The government assumes a directorial role wherever there are generally recognized objectives which will serve society's interests but which will not be achieved 'automatically'. Ensuring a clean, sustainable environment is just such an objective. Interventions are required because people will not necessarily 'do the right thing' without encouragement.

Individual behaviour is influenced by many factors, including personal circumstances, motives, and choices. Some people attach little or no importance to the quality of the environment; others simply cannot appreciate the consequences of poor environmental quality. Some believe that acting in an environmentally responsible – or 'sustainable' – manner is more difficult or expensive than the alternative. And sometimes, sustainable behaviour may not be the obvious choice. In short, human behaviour is complex and variable.

The public's response to policy measures cannot always be predicted using traditional assumptions about the rationality of behaviour. If current knowledge regarding how people respond to certain situations and why they respond in a certain way is used in a (more) deliberate and systematic way, it will be possible to enhance the effectiveness of environmental policy. Fortunately, a substantial body of knowledge is available: we now know far more about how human behaviour works and how people are likely to respond to certain (policy) interventions. Much of this knowledge is already being applied to support policy-making processes. In 2009, the Scientific Council for Government Policy (WRR) produced an advisory report entitled *De menselijke beslisser: over de psychologie van keuze en gedrag* ('The human decision-maker: on the psychology of choice and behaviour'), in which it recommended that insights gained from behavioural science research should be applied in support of policy to the greatest extent possible.

The Council for the Environment and Infrastructure (Rli) is now going a step further. We have established direct links between insights into human behaviour and the various policy alternatives by means of the *Behaviour Analysis Framework* developed to accompany this report. This Framework can assist policy-makers in identifying relevant factors which determine behaviour, such as the individual's knowledge and skills, his or her motives, the influence of personal circumstances,

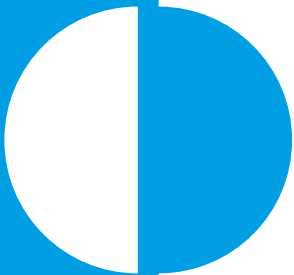
and the processes by which choices are made in a given situation. The Framework has been distilled to form a practical aid, the Behaviour Quick Scan, use of which makes it far simpler to take human behaviour into account when selecting appropriate policy instruments. Those instruments cover a broad spectrum, from prescriptive or proscriptive legislation to the facilitation of private initiatives. Together with the *Behaviour Analysis Framework* and the *Behaviour Quick Scan*, this advisory report consists of three parts.

Four case studies are presented in detail on the Council's website at www.rli.nl (in Dutch only). They relate to four policy domains: mobility (peak-hour avoidance), energy (reduction of household energy consumption), food (reduction of wastage), and waste management (separation of household refuse flows at source).

Effective use of behavioural insights to support environmental policy requires input from various domains and disciplines. It is therefore important that the representatives of those disciplines understand each other: they must speak a common language, although it is not always possible to avoid the use of scientific terminology altogether. A glossary of such terms has been appended to this report.

This advisory report is intended to offer the government ways in which to apply behavioural knowledge in a targeted and responsible manner. It should be remembered that the analysis of individual human behaviour can sometimes demand an examination of extremely specific aspects: everyday and seemingly mundane choices, decisions and actions.

CONTENTS



FOREWORD	3
----------	---

PART 1: ADVICE	10
----------------	----

1 Background and advice question	11
2 A behaviour analysis framework for the development of more effective environmental policy	17
3 Insights into promoting sustainable behaviour	21
4 Embedding behavioural knowledge within policy and policy processes	27
5 The behaviour analysis framework in practice	35
5.1 Peak-hour avoidance	35
5.2 Energy-efficiency measures in the home	38
5.3 Reduction of food wastage	43
5.4 Separation of organic waste	45

PART 2: ANALYSIS	48
------------------	----

Introduction	49
1 Developing government policy	51
1.1 How does government policy come into being?	51
1.2 Base policy strategies on more than considered and reasoned behaviour	53
1.3 Embedding behavioural knowledge within the organisation	54
1.3.1 Policy staff with behavioural knowledge	55
1.3.2 Behavioural Insights Teams	55
1.3.3 Commitment to the use of behavioural knowledge	57
2 An exploration of individual behaviour	59
2.1 Human behaviour is both associative and systematic	60
2.2 Abilities enable people to adopt certain behaviour	62
A1 Knowledge	63
A2 Skills	63

2.3	Motives influence the propensity to sustainable behaviour	63
M1	Values	64
M2	Emotions	64
M3	Beliefs	65
M4	Attitudes	66
M5	Personal norms	66
M6	Social norms	67
M7	Problem awareness	67
M8	Self- efficacy	68
M9	Response efficacy	68
2.4	Circumstances influence sustainable behaviour in both a positive and negative way	69
C1	Physical circumstances	70
C2	Technological circumstances	71
C3	Economic circumstances	72
C4	Social and cultural circumstances	73
C5	Institutional circumstances	73
2.5	Choice processes as a determinant of behaviour	74
CP1	Habitual behaviour	75
CP2	Intuitive behaviour	75
CP3	Reasoned behaviour	79
3	Policy instruments to promote sustainable behaviour	81
3.1	Top-down: the government at the helm	83
3.1.1	What is the problem? Analyse and identify the behaviour which causes environmental problems	83
3.1.2	What is the objective: specify the desired outcome of policy in behavioural terms	85
3.1.3	What is the most appropriate instrument? Policy instruments which will promote more sustainable behaviour and ways in which to maximise effectiveness	86
3.1.4	Establishing the effects of policy: evaluation	106
3.2	Bottom-up: society at the helm	107
4	What can - and must - the government do to promote sustainable behaviour?	113
4.1	The legitimacy of environmental policy	113
4.2	Government strategies to influence behaviour are always normative in nature	114
4.3	Is the government entitled to stimulate sustainable behaviour?	115
4.4	Is the private sector allowed to exert greater influence than the government?	119

4.5 Should the government attempt to change behaviour in the interests of sustainability? 120

4.6 Behavioural knowledge in policy: promoting (more) sustainable behaviour without manipulation 122

LITERATURE AND REFERENCES 124

APPENDIX 138

Glossary 139

Responsibility and acknowledgements 145

Overview of publications 149

PART 1 | ADVICE



BACKGROUND AND ADVICE QUESTION

1

People's everyday actions – what they do or don't do – can have a significant influence on their environment and on the very structure of society itself. This much is obvious: the behavioural choices that we make every day, consciously or otherwise, form the basis of our requirements in terms of energy, space, food, and resources. How do we heat our homes? How do we travel – whether to work or on holiday? What factors influence the way in which we purchase, use, reuse and dispose of products, what we eat, or how we use public services? What factors determine the choices we make? And how can people be encouraged to make more sustainable choices?

Human behaviour is one of the most significant factors which determine whether governmental objectives will be achieved, and hence whether the transition to a fully sustainable society will be successful. Individual choices combine to form society's overall impact on the environment. Significant progress towards long-term sustainability can be made by ensuring the availability of 'cleaner', more responsible products and solutions (e.g. 'green' energy, low-emission vehicles, and better public transport), and through innovations in our social, economic and technology systems (such as greater reuse of resources within the 'circular economy' concept). However, all such changes demand careful examination of the way in which people respond to such innovations. It is the public *response* to a specific innovation which will largely determine whether the intended effects will be achieved.

This advisory report focuses on human behaviour and its role in achieving environmental objectives. The advice question is therefore:

"How can government policy make effective use of behavioural insights in order to encourage people to make more environmentally responsible choices and to behave in a more sustainable manner?"

This question is prompted by two observations. First, the Council notes a significant increase in scientific knowledge about the factors influencing environmental behaviour. Second, the Council believes that government policy can be vastly enhanced if this knowledge is taken into account when selecting and developing policy instruments. Much of the (new) knowledge has been explicated elsewhere, notably in the Scientific Council for Government Policy's report *De menselijke beslisser*: WRR, 2009). The Council for Social Development (RMO) is

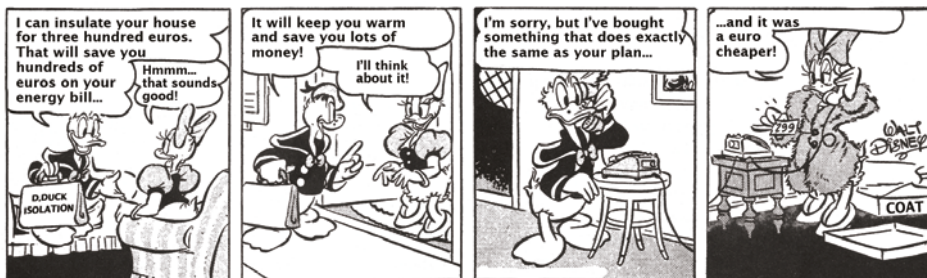
currently preparing its own advisory report on the application of behavioural knowledge in policy processes. This should not be regarded as unnecessary duplication. The current document focuses on the question of how environmental policy can be made more effective through the use of behavioural knowledge. Further to its remit, the RMO is contributing to the social debate regarding the acceptability of ‘nudges’: government measures intended to bring about behaviour change. The RMO is therefore examining whether the government can preserve the autonomy of the individual based on new insights in the fields of psychology and behavioural economics. Its advisory report views nudges as a means by which the government can encourage certain types of behaviour without impinging on the individual’s freedom (Thaler & Sunstein, 2008). In the current document, the Rli examines the entire range of policy instruments (including ‘nudging’), their potential value, and the role that behavioural knowledge can and should play. The RMO’s advisory report on the other hand is primarily concerned with the applicability and acceptability of nudges and with the relevant normative considerations with regard to the acceptable bounds of government authority.

As the transition towards the sustainable society progresses, the ‘low-hanging fruit’ of the more obvious policy options is already being harvested. It is now becoming increasingly important to engage the public in the pursuit of environmental objectives. The use of behavioural insights can help in this regard. For example, partly as the result of incentive measures and partly as the result of more stringent legislative requirements, cars have become more fuel-efficient and cause less emissions. Technology, however, is not the only relevant factor for environmental effects. Also significant are actual car usage (kilometres driven), route planning to avoid congestion, and an ‘economical’ driving style, all of which help to determine whether the full potential of cleaner vehicle technology will be realised in practice.

Although behaviour is a constant consideration within government policy, scientific knowledge about human behaviour has not always been used to full effect when developing that policy. Conversely, the way in which policy decisions influence behaviour has not been taken fully into account. The choices made with regard to spatial structure, for example, influence where people live and how they opt to travel to and from their place of work. Factors such as accessibility and the design of road and rail networks have a major impact on the availability and attractiveness of people’s mobility options. To date, the primary instrument for government policy aimed at influencing behaviour has been the provision of information. Policy aimed at changing behaviour demands a broader vision, however. In practice, almost every policy decision will have behavioural ramifications. Spatial policy, legislation, and financial instruments (whether in the form of penalties, subsidies, or pricing measures) for instance are also often intended to bring about a change in behaviour. When applying the various policy

instruments, it is therefore important to take express account of both the intended behavioural effects and those already achieved. This is not yet standard practice. Policy development may be based on unsubstantiated assumptions about the way behaviour works, which – from a psychological perspective – may be a pitfall. In many cases, the assumptions are concerned with the rationality of behaviour, as reflected by the use of ‘traditional’ instruments such as subsidies, fines, and prohibitions. Or policy-makers allow themselves to be led by their own intuitive assumptions – based on nothing more than personal experience – in selecting policy instruments. It is of course difficult to ignore the personal perspective altogether, adopting an entirely objective approach when seeking the most effective instruments to facilitate and encourage sustainable behaviour on the part of groups or individuals. The policy departments of the various ministries generally have ample legal and economic knowledge on hand, but expertise in the behavioural sciences (psychology, sociology, and behavioural economics) is less well represented. Furthermore, perhaps even as a result of this omission, they do not fully appreciate the contribution that such expertise could make to the quality and effectiveness of policy.

Figure 1: Assumptions about the motives for certain behaviours are not always borne out by actual behaviour



Source: Donald Duck Calendar 2013.

If it is not clear precisely what type of behaviour a policy instrument seeks to change and how, it will inevitably be difficult to assess the actual effect of that policy on behaviour. A further complication is that policy-makers often make assumptions about the mechanisms which determine the success or failure of a measure rather than subjecting the processes involved to careful analysis and learning from experience. In some cases, there is no post-evaluation at all. This is not only regrettable in view of the costs, time and effort which go into devising and implementing the policy, but also because it becomes impossible to identify any adverse or undesired side effects. For example, the government implemented a subsidy scheme for homeowners to finance energy-efficiency measures such as insulation. The take-up was very much lower than hoped or expected. Why? Is there an alternative approach which will succeed in reducing energy

consumption? Also, the subsidy scheme proved to have the undesired effect in that the scheme was mainly used by homeowners who had already decided to implement energy-efficiency measures and would have done so even without government assistance.

Research confirms that various factors influence behaviour, and that these factors combine in a complex way to determine the behaviour a person will adopt in a given situation. It is therefore not possible to arrive at any 'standard' solutions to influence behaviour which will guarantee that policy measures become more effective. The purpose of this advisory report is to draw attention to the now extensive balanced body of behavioural knowledge, which can and should be used to arrive at more effective policy. To make the first important steps in this process, the Council has developed a Behaviour Analysis Framework, which is described in greater detail below. We then go on to present a number of recommendations whereby policy – and environmental policy in particular – can draw upon behavioural insights in the interests of greater effectiveness. The Council's recommendations are based on current scientific insights, analyses of the effects of (environmental) policy in the Netherlands and elsewhere in Europe, and the application of our analysis framework to a number of real-life case studies.

The Behaviour Analysis Framework can be applied within various domains and to various types of behaviour. In this advisory report, the focus is on four domains: 1) personal mobility; 2) household energy efficiency; 3) food (wastage); and 4) domestic waste management. These domains have been selected as those in which the behaviour of individuals has greatest influence on environmental quality. In 2007, the (then) 27 member states of the European Union accounted for 74% of the world's greenhouse gas emissions, 74% of acidic emissions, 72% of emissions which erode the ozone layer, and 70% of the global extraction of natural resources required (directly or indirectly) for private consumption (European Environment Agency, 2012). Alongside the choices made in the private sphere, those made in the workplace also do much to determine our ability to attain environmental objectives. Although it is possible to establish various links between the private and professional spheres, this advisory report focuses on the former: the individual's role as consumer.

The Council's examination of the effectiveness of environmental policy in this private sphere is largely based on knowledge drawn from the disciplines of psychology and behavioural economics. Measurable targets for behaviour change can be formulated from the environmental objectives at the system level. Incidentally, in the Council's view, achieving behaviour change is not solely a question of increasing the contribution that (individual) behaviour makes towards the attainment of environmental objectives. It also entails offering (groups of) people the opportunity to devise and develop their own alternatives to today's

non-sustainable society. Nevertheless, this advisory report is chiefly concerned with the ways in which government (at all levels) can influence behaviour through policy. It devotes less attention to behaviour change as a result of private initiatives.

Although this report is concerned with behaviour at the individual level, and hence with very specific, every-day aspects, the Council wishes to stress that it does not support government policies aimed at influencing every last detail of the individual's life. Rather, the Council wishes to urge government to take relevant factors – those which can influence or determine behaviour – into account in all policy decisions, irrespective of the type of policy.

In Chapter 2 below, we describe the Behaviour Analysis Framework which accompanies and underpins this advisory report. It provides a firm foundation for the development of effective policy strategies to encourage sustainable behaviour. Chapter 3 presents a number of general behavioural insights which are relevant to policy-making processes. In Chapter 4, the Council makes recommendations whereby (the use of) behavioural insights can be firmly established within policy processes. The final chapter of Part 1 illustrates the use of the Behaviour Analysis Framework in four relevant case studies. Part 2 of the report provides a more detailed description of how the Council has arrived at its findings and recommendations.

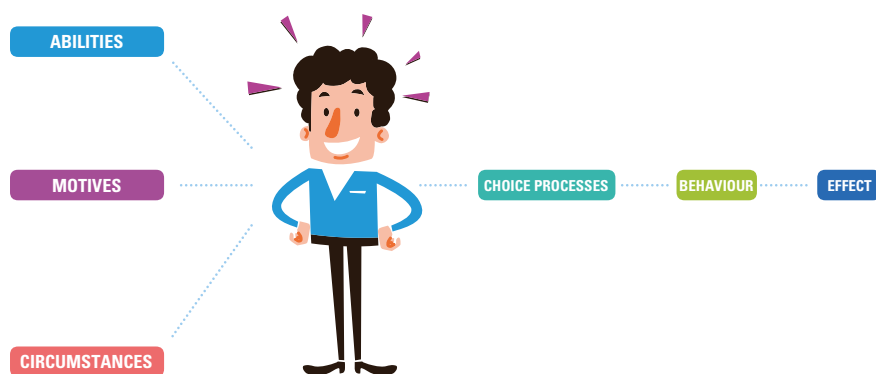


A BEHAVIOUR ANALYSIS FRAMEWORK FOR THE DEVELOPMENT OF MORE EFFECTIVE ENVIRONMENTAL POLICY

2

The Council for the Environment and Infrastructure has developed a Behaviour Analysis Framework which will support policy development processes by providing insights into the mechanisms and processes underlying human behaviour. The complete Framework is published separately to accompany this advisory report. The theoretical evidence base for the Framework is described in Part 2 (Chapters 2 and 3). The Behaviour Analysis Framework is largely based on knowledge drawn from the disciplines of psychology and behavioural economics. It seeks to establish a balance between the practical value of that knowledge for policy-makers and the desire to do justice to the depth of scientific knowledge and experience that has been developed in recent years. The Framework will assist policy-makers in determining what (types of) behaviour can or should be changed in order to address a specific environmental policy challenge. The knowledge it reveals will support the development of new policy strategies and instruments. The Council has identified four key aspects which are particularly relevant to the promotion of sustainable behaviour and the effect of any process of behaviour change: abilities, motives, circumstances, and choice processes (see Figure 2).

Figure 2: The four key aspects of behaviour



These four factors determine behaviour; they not only encapsulate the mechanism of behaviour but also provide a potential basis for policy intended to promote sustainable behaviour.

'Abilities' refers to the knowledge and skills which people require in order to display or adapt certain behaviour. For example, if a person has never learned

to ride a bicycle, a policy which promotes commuting by bicycle in preference to the car will have little or no effect on that person.

‘Motives’ are the reasons people have for adopting certain types of behaviour. These motives can be extremely diverse. They are influenced by the importance people attach to what others do in a given situation, as well as their assessment of their own ability to change their behaviour.

‘Circumstances’ refers to the individual’s personal situation, including the physical setting, which also has an influence on behaviour. Someone who lives in an untidy, run-down neighbourhood has less incentive to refrain from discarding yet more rubbish on the street. Financial circumstances are also relevant: the decision to replace a central heating boiler with a more energy-efficient model will be influenced by considerations of affordability.

The way in which people actually behave in practice is determined by a succession of conscious and unconscious ‘choice processes’. One example of an unconscious choice process is when a driver shifts gear based on engine tone.

In practice, the relationship between the four factors suggested by behavioural science and actual behaviour is rarely direct or linear. Moreover, actual behaviour is influenced by mutual interdependencies between the factors. The policy-maker wishes to bring about behaviour change for one key reason: to achieve an (environmental) effect. Astute use of scientific knowledge about the factors which determine behaviour can assist in this process, whereby it is not always necessary to communicate the desired effect to the target group.

The Behaviour Analysis Framework comprises six stages, each of which entails answering a series of questions.

1. Stage 1 defines and delineates the policy issue using a set of exploratory questions which identify the role of human behaviour within the policy domain concerned. The objective for behaviour change can then be established.
2. In Stage 2, outline questions are used to establish the relevant determinants of behaviour and possible points of departure for policy strategies.
3. Stage 3 ‘zooms in’ to examine the characteristics of specific determinants using more specific questions which focus on the behaviour in question.
4. In Stage 4, practicable policy strategies are identified based on the abilities, motives, circumstances and choice processes of the target group, as relevant to the policy issue and the associated behaviour.
5. Stage 5 entails a closer examination of the specific policy instruments that, based on the results of Stages 3 and 4, are likely to effectively bring about behaviour change which will result in the attainment of the environmental objectives. These instruments can be selected from the entire range at the government’s disposal, which includes:

- Physical and technological instruments
 - Legislative instruments
 - Economic and financial instruments
 - Communication instruments
6. The sixth and final stage is the post-evaluation. Has the policy served to alter behaviour in a way which achieves the desired effect (or is it likely to do so in future)? The evaluation will also assess the processes through which the policy effects were realised, in order to allow continuous updating and improvement of behavioural knowledge.

The Council advises policy-makers to use the Behaviour Analysis Framework as an aid in developing effective policy. It will help them to identify the factors which determine behaviour, and which will therefore play a role in the formulation of environmental policy, while requiring no in-depth knowledge of psychology or behavioural economics.

The incorporation of factors which determine behaviour into policy instruments will result in a broad spectrum of (new) policy options, without necessarily calling for any immediate prioritisation. The process will help policy-makers to consider which interventions are most likely to prove effective. When eventually setting priorities and selecting policy instruments for actual implementation (or a combination thereof), the relationship between the instrument and the behaviour that is to be changed is just one of the criteria to be observed. Others include:

- The likely contribution to the attainment of the environmental objectives and the improvement of environmental quality in general
- The costs of the policy
- The feasibility of achieving behaviour change based on the determinants identified
- The relationship (whether beneficial or adverse) between the instruments and other policy domains.



plastic

0002841

Plastic



Plastic afval
scheiden

nu ook
in Utrecht

INSIGHTS INTO PROMOTING SUSTAINABLE BEHAVIOUR

3

On the basis of a study of the literature examining the effect of behaviour within environmental policy (see Part 2, Chapters 2 and 3) and the application of the Behaviour Analysis Framework to four practical case studies (see www.rli.nl), the Council has identified some key insights which will support the development of environmental policy. The four policy domains considered in this advisory report are personal mobility, domestic energy consumption, food (wastage), and household waste management (see Chapter 5). The insights relate to behavioural factors to which attention should be devoted when devising policy strategies to supplement existing measures. In this chapter, we describe a few important insights in order to illustrate the intent of this advisory report. Although these insights may already be known to many policy-makers, it is also clear that they have yet to be given a prominent place in the practice of policy development.

The behaviour of others can encourage sustainable behaviour

People can inspire each other to adopt more sustainable behaviour. Social norms play a significant part in this respect. Individuals often base their decisions on how others behave in certain circumstances, how they believe other people will behave, or what they believe is expected of them. Civil initiatives which successfully promote sustainable behaviour therefore can motivate a wider public to adopt more sustainable behaviour. However, the converse also applies: a bad example can encourage others to follow suit. For this reason, it is important that due attention is devoted to social norms. Sustainable behaviour can be encouraged by redesigning the social and physical environment, whereby it is made clear that sustainable behaviour is the social norm (rather than drawing attention to irresponsible behaviour). A clean, graffiti-free wall is a physical manifestation of the social norm of responsible behaviour; a wall smothered in daubs and spray-painted 'tags' has precisely the opposite effect. This form of communication is far from straightforward in practice because it is necessary to promote the desired social norms in a manner which is appropriate to the circumstances in which the behaviour concerned is to occur. A sign prohibiting littering will have no effect if the street is already awash with discarded food wrappers or rubbish bags – indeed, the sign may actually encourage further unsustainable behaviour. Therefore it is essential that all policy instruments reflect and promote the same social norm.

Unsustainable behaviour is often due to habit

In general, people do not always act on the basis of carefully considered choices. They often do what they have always done; such behaviour is habitual. Policy strategies must therefore devote considerable attention to changing such 'ingrained' behaviour. As far as unsustainable behaviour is concerned, this can be achieved in various ways:

- *By altering the circumstances in which unsustainable behaviour becomes habitual*

This can be done through restructuring (parts of) the physical environment, or by focusing specifically on the factors which underlie unconscious decisions.

- *By restructuring the setting in a way which introduces new, sustainable options*
Habits will then be broken and people will be far less likely to continue their undesirable behaviour. For example, a person who moves house can be encouraged to find an alternative way of travelling to work, with less reliance on the private car. Another example is the national Het Nieuwe Rijden programme (literally, 'the New Driving', aimed to promote ecodriving), which seeks to instil sustainable behaviour from the outset by targeting young people as they prepare for their driving test (Brunsting *et al.*, 2013).

- *By drawing people's attention to their ingrained habits while simultaneously offering attractive and practicable alternatives*

Government authorities have various instruments at their disposal, including personal advice, warnings, and feedback using (new) technology. These communication instruments must be applied in combination with other types of instrument, since information alone is generally not enough to change habitual behaviour. The conditions which govern behaviour (such as regulations or pricing) should be such as to encourage the abandonment of bad habits. It may also be appropriate to allow people to experience the desired new behaviour, e.g. by allowing free use of public transport services for a trial period. A successful example of this proactive approach is the *Smaaklessen* ('Taste Lessons') programme in which primary school pupils are introduced to food products such as fruit and vegetables, and are thus encouraged to adopt a healthy diet (Brunsting *et al.*, 2013).

Make sustainable behaviour the attractive and easy option

People generally try to avoid behaviour which is seen as unattractive or that contravenes what appeals to them or what they consider 'right'. People are easier encouraged to adopt certain behaviour if it appeals to them and addresses what they consider important, or if it is obvious. So, to encourage sustainable behaviour, policy must therefore devote attention to attractiveness and convenience. Sustainable behaviour must never be the disagreeable or difficult option. It is, however, acceptable for sustainable behaviour to involve some degree of challenge since this will allow people to take credit for their achievements. They will feel that they are indeed making a contribution, and this feeling of self-determination can affect behaviour in various other areas.

Especially when sustainable behaviour cannot be made attractive in itself, it is important that people will realise they can actually play a part in achieving environmental objectives, and that making their contribution is made as easy as possible for them. If people are to manage their household waste effectively, for example, recycling depots must be readily accessible and located in an attractive, safe setting, with ample public information about hours of operation etc. Sustainable behaviour can be made more attractive by devoting attention to the way in which the options are presented. If litter bins with separate compartments for plastic, paper and organic waste are installed in public locations, waste separation at source will be made more convenient and will become more self-evident.

New technology creates new opportunities for sustainable behaviour

The (re)design of the technological environment and the use of new technology offers many new opportunities for policy and practice. Moreover, the introduction of new technology calls for very little effort or input on the part of consumers. There are three ways in which technology products and services can influence sustainable behaviour.

First, technology influences the environmental effects of the production and/or use of consumer goods. Recent years have seen various innovations in areas such as home insulation materials, while electric vehicles are now a viable alternative to those with an internal combustion engine. Ensuring the availability of sustainable technology which closely complements people's behaviour is therefore essential if that behaviour is to be made more sustainable.

The consumer must be able to form an accurate impression of how his or her use of a certain product or technology will help to resolve environmental problems. A policy which actively promotes research and development of the application of new 'green' technology will therefore also help to promote sustainable behaviour on the part of the general public. The same may be said of policies which offer consumers incentives to purchase and use sustainable products, perhaps in the form of reduced-interest loans or tax concessions.

Second, technology also has a direct influence on behaviour. The technological environment in the home, the workplace and elsewhere influences choices by virtue of the options it makes available and those which it restricts. If a consumer has ready access to a car, there is a far greater likelihood that he or she will use it in preference to public transport. The speed and comfort of modern vehicles makes it all the more tempting to do so. Public transport will be a more attractive option for longer journeys if it is made more accessible, more convenient, and more comfortable.

Third, new 'smart' technology can encourage consumers to make environmentally responsible choices. For example, a car's on-board computer might provide personal feedback, prompting the user to adopt a more efficient driving style. The rapid emergence of intelligent systems, in combination with the development of new knowledge of the way in which systems affect behaviour,

offers many opportunities to effectively promote sustainable behaviour at the individual level. Smart meters provide personal feedback about energy and water consumption in the home, while similar immediate feedback in the car helps the motorist to maintain optimum fuel efficiency. It is even possible to instil a sustainable driving style in the virtual environment of a driving school simulator. The widespread adoption of the smartphone creates plentiful opportunities for personal feedback (perhaps about the user's own behaviour compared to that of others in the neighbourhood) and personalised information, such as warnings of congestion along the user's intended route

Spatial planning offers opportunities to align behaviour with environmental objectives

The choices made in the initial stages of structuring the human environment will often determine the degree to which people (are able to) display sustainable behaviour in the longer term. Concentrating residential districts close to public transport hubs will, for example, result in a completely different mobility pattern to that seen when accessibility relies chiefly on the road network (VROM Council, 2009). Even household energy and water consumption can be influenced by choices made in the early stages of the spatial planning process. Where attention is devoted to the relationship between such choices and human behaviour, urban planning instruments can be used to promote sustainable behaviour, making it the 'automatic' choice.

Different target groups will be reached through different types of policy

Many people are willing to adopt more sustainable behaviour. However, there are major differences in how far they are willing and able to go to achieve the desired change. Not every member of society can make an equal contribution to the attainment of a policy objective, and not everyone will display the same level of unsustainable behaviour. People live in widely varying circumstances, and they have different skills and motives to act sustainably. Socio-economic, demographic and cultural characteristics influence all aspects of behaviour (including sustainable behaviour) and hence the degree to which people have already adopted more sustainable behaviour, their perception of how environmentally responsible they already are, and the degree to which they have access to information. For policy to be fully effective, these factors must be taken into account. For this, the standard target group segmentation models are unlikely to be adequate. Where people share certain behavioural characteristics, a policy strategy tailored specifically to this group will be more effective than one which addresses the entire population. Policy in each domain should reflect the wishes, requirements, values and capabilities of the target group, as well as the specific characteristics of their behaviour. It will then be possible to apply the relevant policy instruments in a direct and effective manner, thus fostering greater support for the policy itself. For example, policy on household energy efficiency could

be designed to take account of consumers' actual housing situation, or could address groups of people who share common motives.



U RIJDT

24



BELONING
VOOR DE BUURT
€ 1298,75

EMBEDDING BEHAVIOURAL KNOWLEDGE WITHIN POLICY AND POLICY PROCESSES

4

The Council wishes to see behavioural knowledge integrated into policy and policy processes in an effective manner. To this end, we make a number of organisational and process-related recommendations to the government and parliament.

Recommendation 1: Use behavioural knowledge to improve environmental policy

Het betrekken van beschikbare gedragskennis bij de beleidsontwikkeling heeft belangrijke voordelen:

- *Existing policy instruments will be made more effective*
Knowledge of the mechanisms underlying human behaviour should be applied when developing and implementing policy instruments. Doing so will ensure that policy strategies are more targeted and more effective, comprising a series of mutually reinforcing policy instruments which, in combination, will simultaneously address various important determinants of behaviour.
- *Assumptions can be tested*
The use of the available behavioural knowledge will make it possible to test the implicit assumptions about behaviour on which policy instruments are based, applying a critical and evidence-based approach. If those assumptions are then found to be false, the instruments can be revised accordingly.
- *The use of behavioural knowledge will provide new points of departure for policy and relevant instruments*
The development and application of communications technology (as in the use of the smart energy meter or personal feedback via a smartphone 'app') offers new opportunities to develop effective policy instruments which are situation-specific and highly targeted.
- *Public commitment, acceptance and support for policy will be enhanced*
Behavioural knowledge provides an understanding of people's motives. If the factors which determine behaviour are carefully researched as part of the policy development process, it will become possible to achieve a better 'match' between policy and the target groups' own motives and frame of reference.
- *The arguments in favour of policy will be strengthened*
Where policy is based on a thorough problem analysis, which integrally includes a behaviour analysis, the evidence and arguments supporting policy

(decisions) will be strengthened. This increases the legitimacy of the policy, and hence acceptance and public support.

Recommendation 2: Increase the legitimacy of environmental policy through transparency regarding the use of behavioural knowledge in its development; devote attention to ethical dilemmas

The use of behavioural knowledge to encourage the public to adopt more sustainable behaviour raises certain normative and ethical issues. These aspects relate to the way the government can attempt to influence the individual's conscious as well as unconscious choices and actions in order to achieve environmental objectives, and the degree to which the government could and should go. In the Council's opinion, it is entirely appropriate for the government to use available behavioural knowledge in order to increase the effectiveness of environmental policy. However, it must do so only insofar as the resultant policy seeks to attain democratically legitimated objectives, and only if it offers full transparency and accountability with regard to the methods and resources applied and to the intended effects on behaviour. In order to assess whether the influence is justified, the fact whether people may feel manipulated should also be taken into account. In the Council's view, all government policy instruments have some conscious or subconscious effect on behaviour. This applies equally to prescriptive or proscriptive legislation, financial incentives, and 'nudges'. All such instruments, in all policy domains, raise comparable normative issues. In practice, the individual's freedom of choice is frequently restricted by government interventions. Nevertheless, the Council takes the view that all policy instruments must offer the individual the greatest possible opportunity to make choices which are appropriate to his or her own circumstances. The justification for this standpoint is set out in greater detail in Part 2, Chapter 4. As previously noted, the Council for Social Development (RMO) is currently preparing an advisory report examining the possibilities and limitations of deliberate behaviour change. That report will take both political (normative) considerations and empirical evidence into account, in relation to factors such as the type of instrument and the policy domain concerned.

Recommendation 3: Address the diversity of environmental policy issues by making a thorough analysis of the relevant determinants of behaviour

Environmental policy issues have diverse characteristics, whereby various types of human behaviour must be taken into account. This demands a carefully compiled set of policy instruments which addresses both the unique circumstances and the relevant determinants of behaviour in each case. The instruments to be implemented must be selected on the basis of a thorough behavioural analysis so that each instrument deployed has the greatest possible influence on the most relevant determinants of behaviour. In many cases,

the determinants interact, whereby an integrated package of measures will be more effective than any one measure applied in isolation. For example, efforts to increase awareness through public information alone will rarely be enough to bring about the desired behaviour change, and neither will solely altering the costs-benefits ratio of certain behaviour by means of penalties, taxes, or subsidies. Different determinants of behaviour provide different points of departure for policy, and each calls for its own carefully devised set of instruments (see Section 3.1.3 in Part 2). Central government should therefore work alongside provincial and local authorities to arrive at a package of mutually reinforcing policy instruments drawn from each level of government responsibility. Incidentally, an analysis or empirical assessment may also reveal that certain instruments are not mutually reinforcing but actually detract from one another, or that one instrument used in isolation (such as a prohibition) is enough after all. Arriving at an effective mix of policy instruments is no easy task. The Behaviour Analysis Framework developed by the Council to accompany this advisory report – the evidence base for which is described in Part 2, Chapters 2 and 3 – provides a useful tool with which policy objectives can be formulated in a way which draws upon current knowledge about human behaviour and its determinants but which requires no specialist knowledge of the scientific terminology. It should be remembered that the Framework does not present ready-made solutions ‘on a plate’. It will however help in identifying relevant behavioural aspects and in defining the scope and content of a policy problem. In many cases, it will remain necessary to draw upon (specialist) behavioural expertise when devising the policy itself.

In April 2011, the government adopted a new methodology for the assessment of policy and legislation: the Integrated Assessment Framework (*Integraal Afwegingskader*, IAK), thus underscoring the importance of thorough policy development within a sound and structured framework. A comprehensive explanation is given in Part 2, Section 1.1. The IAK provides an analytical, phased approach whereby decisions relating to policy and legislation can be made in an effective, transparent and accountable manner. The Council’s Behaviour Analysis Framework is appropriate to the structure of the IAK but ‘zooms in’ to examine behavioural aspects in greater detail.

Recommendation 4: Promote the use of behavioural knowledge by ensuring its ongoing availability within the governmental organisation

Available knowledge about human behaviour is extremely relevant and useful, but it is also extensive and complex. Moreover, behavioural knowledge is constantly expanding. Ensuring the structural availability and use of this knowledge to support the development of policy strategies in pursuit of environmental objectives is therefore a major challenge. Not every policy department has the necessary expertise on hand. If behavioural knowledge is to be embedded in policy processes, it is essential that the relevant expertise is

indeed available. Ministries must therefore devote attention to staffing capacity, professional expertise, and organisation. The Council notes that some progress is being made. In 2013, for example, the Joint Council of Secretaries General asked the Scientific Council for Government Policy (WRR) to produce a report examining ways in which new behavioural knowledge can contribute to central government's policy-making processes (Ministry of Economic Affairs, 2013). The Council sees a number of ways in which the process can be furthered:

- *Deploy staff with specialist knowledge of behavioural science*

The policy directorates can improve the quality of their policies by involving staff with the necessary behavioural knowledge in policy-making, doing so in a structured and systematic way. These staff will be able to learn from their counterparts in other ministries, perhaps by means of an interdepartmental Centre of Expertise.

- *Establish Behavioural Insights Teams*

The Ministry of Infrastructure and Environment has recently set up a 'Behavioural Insights Team' (BIT), a concept pioneered in the United Kingdom¹. As the name suggests, it will encourage the use of knowledge gained through behavioural science research to support policy processes. A BIT can continually coordinate systematic analysis of behavioural aspects and assist in devising appropriate solutions to current issues. In the Council's opinion, however, it is essential to ensure that behavioural knowledge does not become the exclusive responsibility of a BIT. In other words, even where such a team is in place, the policy directorates themselves must remain alert to the significance of behavioural knowledge to their particular policy domain.

- *Ensure commitment to the use of behavioural knowledge*

A government directive may make the use of the IAK mandatory in policy-making prior to the submission of a proposal to the relevant committee, whether at the administrative or ministerial level. Such a requirement would demonstrate the government's commitment to embedding the IAK concept firmly within policy development processes. In the Council's view, similar commitment to the structural use of behavioural knowledge in those processes is essential throughout the government apparatus.

Recommendation 5: Learn from small-scale policy experiments, and use this knowledge to further improve policy

The Council considers it important to create opportunities to test policy intended to promote sustainable behaviour. Prior to the full roll-out of a policy strategy, it will be useful to conduct trial or 'test bed' projects on a smaller

¹ At the initiative of British Prime Minister David Cameron, the Cabinet Office (responsible for the effective running of government) set up a Behavioural Insights Team to promote the use of insights gained through academic research within policy processes. Various UK ministries – including the Department of Energy and Climate Change, the Department for Transport, and the Department of Environment, Food and Rural Affairs – now have similar teams, albeit with different nomenclature.

scale, in which new insights are evaluated. The proposed strategy can then be amended as necessary. A further advantage will be an increase in support for the policy once the public see the (positive) effects of the policy experiments. The implementation of new policy, particularly if undertaken by local authorities adopting varying approaches, represents many opportunities for experiments 'in the field', which in turn will provide a good arena for further academic research. Policy strategies should be formulated as specifically as possible, with measurable performance indicators. Their effectiveness and effects can then be subject to thorough and accurate evaluation. Here, it is not only important to evaluate the effects of policies on behaviour, but it is equally important to study effect on the factors that influence this behaviour (does the policy work as intended?), as well as the effects on well-being and environmental quality. In addition, a process evaluation will be needed. Section 3.1.4 in Part 2 lists the points for attention when conducting policy experiments. Of course, it will be neither necessary nor possible to work with experiments in every instance. Where policy is implemented on a large scale, a thorough policy evaluation which takes account of behavioural aspects will be required. It will be useful to monitor the work and achievements of the United Kingdom's Behavioural Insights Team which has formed various alliances with universities and research institutes. The government can thus offer researchers opportunities for field experiments in return for knowledge which can be used to support policy processes.

Recommendation 6: Ensure that government policy builds upon the creativity of civil sustainability initiatives

There are numerous civil initiatives in which individuals and organisations have joined forces to address sustainability issues. These include 'green' energy cooperatives, urban agriculture projects, and car-pooling schemes, to give three very different examples. The motives are equally diverse. However, all initiatives seek to encourage sustainable behaviour at the individual level with no government intervention. They offer viable and credible alternatives to established practices, thus inspiring people to abandon unsustainable behaviour. The Council regards civil initiatives as a valuable catalyst for change, and a channel through which sustainable behaviour may be encouraged. There is no need for the government to intervene in such initiatives, attempting to influence public opinion or attitudes. The initiatives themselves are an expression of society's opinions and attitudes, whereby it should be remembered that the government itself is part of society. The civil initiatives seen thus far are extremely diverse in terms of scale, objectives, and target group. The challenge now is to align and coordinate the initiatives with government policy in order to achieve a mutually reinforcing effect. It is a challenge which places high demands on the competences of policy-makers and on the effectiveness of administrative and political processes.

The government's role in those initiatives is that of facilitator; it must adopt a 'hands off' approach, accepting the initiatives, appreciating their worth, and encouraging their emulation. Moreover, the government should draw upon the experiences and lessons learned from the initiatives within its own policy development processes.



THE BEHAVIOUR ANALYSIS FRAMEWORK IN PRACTICE

5

This chapter presents the results of the practical application of the Behaviour Analysis Framework developed by the Council in four actual case studies, each addressing a particular policy domain. The results demonstrate that the Framework reveals some policy options which may not have been immediately obvious. However, the conclusions drawn should not be taken as firm recommendations from the Council. Supplementary (policy) analysis, experiments, and research should be undertaken to ascertain whether the insights gained can usefully be applied within policy to encourage more sustainable behaviour. Because the analysis relates to behaviour at the individual level, the proposed solutions are often concerned with small, everyday matters. This gives rise to a detailed description of how certain behaviours should be taken into account, as well as the factors which influence or determine those behaviours. Again, the Council wishes to stress that it does not wish to see the government involving itself in every last detail of the citizen's life. Many of the ideas and suggestions are not necessarily addressed to the government alone, since they require the input of private sector parties able to influence people's behaviour in various ways.

The findings described below are based on an extensive analysis, made using the Behaviour Analysis Framework developed to accompany this advisory report, of four topical themes within the policy domains listed in Chapter 1:

1. Personal mobility: peak-hour avoidance
2. Household energy consumption: energy-efficiency measures in the home
3. Food: reduction of food wastage
4. Domestic waste management: separation of organic waste

The full analysis reports are available online at www.rli.nl (in Dutch only). For a substantiation of the findings below, the reader is referred to the online versions. These also include a comprehensive list of sources and references, which are therefore omitted from the current document.

5.1 Peak-hour avoidance

The case study within the policy domain of mobility is concerned with projects intended to reduce peak-hour congestion through encouraging drivers to avoid peak hours. Such projects supplement the existing research with comprehensive

information about the factors which determine their success. The participants (those participating in peak-hour avoidance trial projects) are predominantly male, aged between 29 and 59, married with children, with a graduate level (or equivalent) education, owning more than one vehicle (usually not a lease car), and in full-time employment at a permanent location to which they drive by a set route with regular high congestion. Further examination of the peak-hour avoidance policy using the Behaviour Analysis Framework offers some points of departure for more effective policy, i.e. further reduction of the number of journeys made during peak hours, with a concomitant increase in those made at other times of day.

Location

The most obvious locations in which to recruit motorists willing to alter their behaviour (i.e. to avoid peak hours) are those in which congestion is particularly high, whereby personal interests are therefore most marked (high problem awareness). Regular users of high-congestion routes are identified using automated registration plate recognition systems, and are contacted directly by letter. (This approach calls for attention to be devoted to personal privacy.) Because only a relatively short stretch of road is designated as the 'target area' for peak-hour avoidance, it is easier for potential participants to find valid alternative routes (greater self-efficacy). The presence of bus and cycle lanes in city centres places the emphasis on the importance of alternatives to car use (including peak-hour use) and can be made permanent.

Time vs circumstances

The majority of those who took part in the peak-hour avoidance trial projects were already in the habit of travelling at the beginning or end of the peak period. They were therefore required to make only a slight adjustment to their regular behaviour in order to meet the criteria for peak-hour avoidance. Motorists who usually travel at the height of the peak hour were less well represented. This is partly because 'peak hours' were defined very broadly, meaning driving outside those times demands a major alteration of behaviour. This group will derive greatest benefit if the circumstances which require them to travel at the height of the peak hour are made more flexible. In part, this will entail altering or dispensing with certain perceptions, assumptions and habits (that of the standard 9-to-5 working day, for example), although behaviour is often determined by actual circumstances: school hours, the availability of childcare, working hours (both those of the individual concerned and their partner) etc. It will be useful to talk to families, schools, and employers – perhaps through existing partnerships to encourage peak-hour avoidance – to investigate means by which the external circumstances can be adapted to allow peak-hour avoidance or to achieve better distribution of traffic flows throughout the day. This process may also reveal obstacles raised by the corporate culture of employer organisations.

Role models

There are many people who already avoid peak hours every day. They may do so expressly to avoid congestion, because they live close to their place of work, or because they prefer to cycle rather than drive. Information regarding exact numbers or motives is not available: further research is required. If this information is then widely publicised, a strong social norm will be established, and those who display sustainable behaviour can be held up as role models worthy of emulation. In its role as employer, the government (at all levels) can set an example.

Technology

There is relatively strong opposition to the idea of fitting cars with registration systems. This is partly due to reasons of privacy, but linking a named individual to a specific vehicle also creates opportunities for fraud (e.g. using a second vehicle for peak-hour journeys). Existing roadside camera systems appear to be a reliable and inexpensive alternative. And given the widespread use of smartphones, it should also be possible to apply app-based technology rather than installing a 'black box' in the car itself. This would also open up the possibility of personalised feedback and information about alternative routes or public transport options. Those willing to adopt such systems could be rewarded with, say, an up-to-date sat-nav app for which any usage charges reflect the level of sustainable behaviour.

Parking management

Restricting the number of parking places available and increasing fees is a relatively inexpensive way of reducing traffic volume in the city centre, including peak-hour volume. Providing fewer parking places does not impinge directly on personal freedom of choice. It does however make driving into the city a far less attractive option. The remaining parking places should have good access to alternative public transport services in order to facilitate transferring.

Simplicity

Peak-hour avoidance projects should present potential participants with a clear and positive proposition. Many of those who did not take part in the trial projects report that they did not understand the proposition or the objective. It is therefore necessary to start with a more positive picture than is currently the case. 'Peak-hour avoidance' is a negative or at best neutral formulation, yet there is much to be gained in terms of time, predictability, comfort, accessibility, and reduced costs. If people are offered a way in which to save time and money while enjoying greater comfort and knowing exactly when they will arrive at their destination, many will eagerly seize the opportunity. An element of competition might even enhance this.

Concluding remarks

Policy intended to encourage peak-hour avoidance has been extensively tested and refined as necessary. It has proven its effectiveness and will be implemented on a wider scale. Nevertheless, it has proven very difficult to reach the 'hardcore' peak-hour motorists, who seem very set in their ways. Are they unwilling to change their behaviour? Are they unable to do so? Is it just too difficult to plan 'smarter' alternatives? Rewards, avoidance plans, and feedback will only be effective if the circumstances which determine this group's mobility patterns are made more flexible. The societal debate should devote greater attention to the interplay between factors such as accessibility, working hours, school hours, employment participation, and the life-work balance.

5.2 Energy-efficiency measures in the home

The government wishes to encourage households to reduce energy consumption by means of various energy-efficiency measures. It has already introduced or announced a number of programmes, including *Blok voor Blok*, the Energy Label, and a revolving fund for investments in energy-efficiency measures.

Blok voor Blok ('Block by Block') is a series of trial projects undertaken as a public-private partnership, in which the owners or tenants of all dwellings in a street or neighbourhood are encouraged to install insulation, double glazing, and other energy-efficiency measures at subsidised prices. Its experimental nature lies mainly in the focus on the demand side of the market.

The Energy Label scheme is the Netherlands' national implementation of the European Directive which requires the energy efficiency of a building to be rated and recorded, thus providing information for potential purchasers and encouraging owners to improve energy performance by investing in energy-efficiency measures.

The revolving fund is another public-private partnership in which commercial lenders provide reduced-interest loans to cover investments in energy-efficiency measures. The application of the Behaviour Analysis Framework reveals that these instruments will have a mutually reinforcing effect if they are interlinked. The Energy Label serves to increase awareness and knowledge about the possibilities for reducing energy consumption, while the revolving fund will help to lower the financial threshold. The insights and knowledge gained from the *Blok voor Blok* programme demonstrate that offering an attractive range of energy-efficiency options helps in managing expectations and assumptions. Consumers are often uncertain of the potential benefits of certain measures due to a lack of knowledge and restricted choice. They may feel that making alterations to their home is 'too much bother'. They need a complete proposal, covering all aspects including costs, together with good after-sales service (so they will learn to operate any new devices). When asked to state their motives for investing in energy-efficiency

measures, homeowners generally cite increased comfort and lower energy bills. The research concludes that sustainability considerations form the most important motive for applying energy-efficiency measures. If the Energy Label scheme is to encourage investments, these considerations must be brought to the fore, and the required investment costs should not be too high. The Energy Label scheme is soon to be revised, whereby the cost of obtaining a rating will be significantly reduced (to well under €50). Unfortunately, the reported energy efficiency and the estimated costs and benefits of improvement measures will be somewhat less accurate, due to the simplification of the label itself and the fact that no physical inspection will be made. The former label did not devote attention to user comfort, and neither does its replacement (as yet). The simplification of the system will result in an increase in the number of providers offering the Energy Label rating. This may erode public trust in its reliability, particularly given that the traditional providers – the government and energy companies – are seen as particularly reliable sources of information (Veltman & Welzen, 2012). A logo denoting that the Energy Label and its provider are officially approved by the government, the local authority, and the energy company may help to dispel any doubts.

The *Blok voor Blok* project was prompted by a desire to develop the demand side for energy-efficiency measures which will help to create an independently functioning market for such measures. However, evaluations of the pilot projects thus far suggest that demand has not come to full maturity due to the limited quality of the supply side. Smaller contractors in particular find it difficult to produce a full project proposal and generally do not possess the skills necessary to manage customers' expectations effectively. The construction industry federation *Bouwend Nederland* acknowledges this problem and intends to take remedial action. However, doing so is not exactly a priority; it is just one of 62 'action points' on a very long list. One way in which to improve the situation might be for selected homeowners to act as 'street ambassadors'. Having had the various energy-efficiency measures installed in their own homes, they would then share their positive experiences with others in the neighbourhood and recommend certain providers.

Decisions regarding the implementation of energy-efficiency measures are informed by factors such as the physical condition of the dwelling, whether any measures are already in place, and planned (major) maintenance. Timing is therefore of the essence, both in terms of offering the measures and of actually installing them. An individual, 'tailor-made' approach is required. It calls not only for expert knowledge in energy-efficiency measures themselves, but also in contract and procurement management. The supply side of an independently functioning market can do much to influence the demand side by increasing the reliability of both the solutions and their providers. To that end, those providers must be able to identify the interests of their customers and have the skills

required to manage expectations. They must also be able to oversee the entire installation project in a manner which ensures that the customers are left with a positive impression of the entire process.

The government will make arrangements with commercial lenders enabling them to offer reduced-interest loans to finance investments in energy-efficiency measures. A revolving fund will be established that will help to lower the financial threshold. A direct link with the revised Energy Label scheme is likely to increase effectiveness. If lenders demand to see the Energy Label rating before approving a loan, the use of the label will become more widespread, even where no change of occupancy is planned. (At present, many people obtain an Energy Label only when selling their home.) Having applied for the Energy Label, the occupant may become aware of further opportunities to increase energy efficiency, including some that may have been overlooked. The Energy Label will support the policy effects of the revolving fund in that increased energy efficiency will become measurable and is automatically recorded. Increased use of the label and the tangible effects may persuade more people to apply for an Energy Label or to implement energy-efficiency measures. A visible correlation between improved energy performance and a higher market value will increase the importance of taking energy performance into account when buying or selling a property. In addition to low-cost loans, the revolving fund could offer favourable savings arrangements, with either higher or tax-exempt interest. Consumers who do not wish to take out a loan, or are ineligible, can then save up to finance energy-efficiency measures.

Stronger encouragement for people to participate in energy-efficiency programmes

Consumers' willingness to invest in energy-efficiency measures in their homes can be increased by improving the flexibility of supply over time. This takes the diversity of motives into account. For example, the price quoted for a package of measures covering a number of buildings should not be subject to any limit of time, but should remain valid until the customers are ready to act (which may be when major maintenance is required or when they have saved enough to cover the costs). If the period during which a programme is operational does not coincide with the moment that people wish to invest, other attractive financing opportunities should be made available. These might include loans from the revolving fund or a savings scheme with favourable conditions. The policy should not be confined to entire streets or blocks as a pre-defined target group, but should also offer opportunities for consortia of customers and providers. It should also be possible to take advantage of a programme as a 'late entrant'. The positive experiences of neighbours may persuade people to follow suit. If every house in which energy-efficiency measures have been installed is also fitted with a 'smart meter', the direct feedback it provides will reinforce the positive experience (assuming that the difference can be perceived at a glance). The entire street or

block may then be won over, which is also beneficial to the provider for reasons of scale and capacity.

People are more likely to adopt energy-efficiency measures if encouragement to do so comes from within their own community. For this reason, the development of an independently functioning market should involve consortia of residents, with consultation and support provided as necessary (the ‘collective demand side’). This will not necessarily take place at the level of the individual street or block, but can be based on partnerships and coalitions within the neighbourhood or district. Social networks will then be used to disseminate information and to ‘encourage encouragement’ by such means as street ambassadors, show houses, highlighting exemplary behaviour by neighbours, information evenings, and ecoteams². There may be subgroups and subcultures within the community which can be approached jointly. Once again, providers will be able to achieve advantages of scale that way.

Increasing the knowledge and skills of the general public

For many people, deciding whether to implement energy-efficiency measures is a complex undertaking. They will often lack the knowledge and skills necessary to take all considerations into account. The development of the demand side must therefore include appropriate assistance, helping consumers to become active on the market. This may take the form of (impartial) assistance in assessing providers and their prices, and guidance during negotiations. Very specific advice may also be appropriate: the colour of the interior decor for example (which affects the perception of warmth and hence the likelihood of turning the thermostat up or down by a degree or two), or about simple but effective measures that anyone can take without professional help, such as fitting draught strips around doors and windows. An infrared photograph of the home, showing where heat is escaping, can raise awareness of energy-efficiency issues and pique consumers’ interest in taking remedial measures. It is also motivating for homeowners if contractors they have found for themselves are involved in the project (and are not automatically excluded because the programme has its own ‘preferred suppliers’).

Reinforcing the approach with consistent policy

To increase the uptake of government programmes, it is important that people are able to rely on their long-term availability. Temporary subsidy arrangements or reduced VAT rates can have a short-term positive effect, but once they are discontinued, the market will begin to stagnate once again.

Government can help to ensure the consistency of policy by making an inventory of the (subsidy) arrangements currently in force at the provincial and local level, identifying their strengths and weaknesses. Knowledge regarding the

2 The ‘ecoteam’ project is a joint initiative in which consumers are encouraged to examine their purchasing behaviour, waste production, and consumption of water and energy. Ways in which to reduce wastage and unnecessary consumption can then be sought.

arrangements can then be harmonised at the national level, as can their quality. One point for attention is that all programmes must address the actual requirements of their target group. This can be achieved by listing the objectives rather than the resources available. For example, rather than specifying the thickness of roof insulation material, set an insulation value (which reflects the quality of insulation, not the quantity). The same applies to windows; a single pane of thick glass can be just as effective as double glazing.

Decisions about energy efficiency are not taken in isolation. The decisions that people make, consciously or otherwise, are heavily influenced by wider considerations such as the manner in which energy is produced. Government can support the decision-making process by linking energy-efficiency policy to that on local energy generation. At present, solar panels and smart grids³ fall under a separate policy framework. Consumers do not make the same distinction. The revolving fund could help remove obstacles to the desired behaviour. A direct link with the Energy Label and the extension of the fund to include attractive savings arrangements for energy-efficiency measures will serve to increase the potential for behaviour change. Both the fund and the label will gain in strength as a result; the Energy Label will assume a more permanent role in surveyors' reports, valuations, and mortgage approvals. In principle, this is entirely appropriate to the Dutch political context and the desire to comply in full with the European directives governing energy efficiency.

Providing incentives to the construction sector

The construction industry (united in *Bouwend Nederland*) can do much to enhance policy effectiveness by attaching greater importance to expertise and reliability in the field of energy-efficiency measures to homes. Smaller contractors in particular must devote more attention to their interaction with customers. It may be useful to appoint project managers who can assume responsibility for this interaction where required. Expert advice and freedom of choice will increase consumers' willingness to implement energy-efficiency measures.

Concluding remarks

Central government has developed a large body of policy intended to persuade consumers to invest in energy efficiency. There is, however, very little cohesion and coordination between the various policy lines, which rarely refer to each other's existence although they could have a significant mutually reinforcing effect. Central government faces the important task of remedying this situation. Consumers adopt energy-efficiency measures chiefly to reduce household outgoings and to increase comfort. The Energy Label, however, focuses on sustainability and environmental performance. Attention should be devoted to this difference as it offers an opportunity to improve the effectiveness of the Energy Label scheme. The Dutch are relatively good at setting money aside for

³ A 'smart grid' is an energy network in which supply and demand for various types of energy are matched as closely as possible using ICT.

a major purchase. The revolving fund could take advantage of this fact by offering savings arrangements with favourable conditions such as tax-exempt interest in addition to reduced-interest loans.

Bouwend Nederland regularly draws attention to problems within the construction industry, such as poor capacity utilisation leading to forced redundancies. Greater expertise and reliability will increase demand for energy-efficiency measures and will help smaller contractors to establish a firmer market position.

5.3 Reduction of food wastage

The government wishes to achieve a 20% reduction in food wastage by 2015. However, the statistics (published in the regular '*Voedselverspilling in Nederland*' report) suggest that this target will not be achieved at the current rate of progress. *Milieu Centraal* (an organisation providing information on sustainability) and the Netherlands Nutrition Centre have listed the most effective ways in which to help reduce food wastage by consumers:

- Encourage consumers to prepare a shopping list in advance. Food wastage among consumers who do not use a list is some 40% higher than average. (Various mechanisms are at work here.)
- Make sure consumers set their refrigerator at the correct temperature: this is not the case in between 15% and 40% of households. If the temperature is too high, food will spoil more quickly, which increases wastage. (Setting the temperature too low results in unnecessary energy consumption.)
- Encourage consumers to adopt a more flexible attitude to 'sell by' and 'best before' dates. This can reduce food wastage by a third. (It does however demand some knowledge and skill in assessing whether a product remains safe to eat.)
- Request supermarkets to package products in smaller portions, and to extend their shelf-life wherever possible.
- Aim measures at the following target groups:
 - Young people and those with higher educational qualifications, who in general are most receptive to new or alternative eating habits (thus providing a good starting point for policy)
 - Women and large households, who are most aware of food wastage as a problem and are more motivated to take action
- Focus on reducing wastage of meat, rice, and dairy products, all of which account for high environmental impact during production and transport. In terms of land usage, the greatest adverse impact is caused by wastage of meat, dairy products, and vegetables.
- Policies are more effective when consumers, producers, retailers, and government collaborate.

The application of the Behaviour Analysis Framework to the problem of food wastage provides a number of supplementary insights.

Creating and maintaining circumstances which discourage food wastage to the greatest extent possible

New 'defaults' in kitchen design can help to reduce food wastage. Examples include smart solutions for waste separation at source, with dedicated containers for organic waste. This will increase user awareness of how much edible food is being discarded unnecessarily. Even simple aids can be useful: a measuring jug, kitchen scales, a notebook for shopping lists, a calendar on which meal plans and 'best before' dates can be tracked, space for several chopping boards, and a thermometer in the refrigerator. They will encourage consumers to buy, store and prepare just enough food for their needs, thus reducing wastage. For instance, it would be possible to distribute 'thermochromic' stickers (perhaps via the Nutrition Centre) for use in the refrigerator. They change colour according to the temperature: green indicates the correct temperature, blue too low, and red too high. To establish such 'defaults' will require the cooperation of kitchen suppliers, kitchen utensil retailers, housing corporations, project developers, and industrial designers. The government's role will be that of coordinator, bringing the parties together and providing the necessary behavioural knowledge to reduce food wastage.

Motivating consumers via the supply side

A similar role falls to retailers. Supermarkets should be encouraged to examine how food products can display their shelf-life more clearly (differentiating between long-life and short-life products), perhaps with a logo or tips to discourage wastage. Many products are sold in pre-packaged quantities. It will be appropriate to examine alternatives, such as weighing the desired quantity out in the store. It may also be possible to introduce packaging concepts specifically for smaller households. If supermarkets inform customers about the effect of using a shopping list (a 40% reduction in wastage), by means of an app or printed information on till receipts, this may motivate people to devote attention to the problem. If the 'best before' or 'use by' date shows the day of the week, this will help consumers to plan ahead and to decide when they should consume the product. Adjusting prices according to the remaining shelf life will also have a positive effect on purchasing behaviour. All such measures will enhance retailers' sustainability profile.

Ensuring that legislative instruments are mutually reinforcing

Food safety and public health are government responsibilities, for which it establishes the necessary legislation, regulations and standards. All such instruments should also seek to reduce food wastage. Current government recommendations on shelf-life and 'use by' dates tend to be conservative. This is understandable but in some cases, they seem to be more restrictive than absolutely necessary. In combination with the public's rigid and often erroneous

interpretation of 'use by' and 'best before' dates, the current guidelines tend to encourage people to discard food unnecessarily.

Concluding remarks

Behaviour change opens many opportunities to reduce food wastage. The government must act as facilitator and coordinator for the various parties, creating a broad policy mix which helps consumers to understand what is expected of them. The application of the Behaviour Analysis Framework reveals the actions that can be taken and the parties whose cooperation is required.

5.4 Separation of organic waste

During its first term of office, the Rutte government announced the ambition of increasing the proportion of household waste which is recycled from 50% to at least 60% (and preferably 65%). This increase would be achieved through further separation of organic waste (from the kitchen and garden), paper and large items at source, and through improved sorting technology at waste processing sites. Current policy on the collection of domestic organic waste is described in the *Landelijk Afvalbeheer Plan* (National Waste Management Plan), which states that local authorities have a statutory obligation to make adequate arrangements for the separation (and separate processing) of organic waste. However, it falls to the authorities themselves to decide how they will meet this obligation. Various solutions have been devised and have been shown to be effective in practice. The Behaviour Analysis Framework reveals a number of additional factors which influence behaviour and which can form the basis for further improvements in domestic waste management policy.

Central government and local authorities

Central government has set itself the task of increasing the proportion of recycled domestic waste, yet responsibility for the implementation of policies rests with local authorities. Accordingly, the current behavioural insights are most relevant at the local rather than the national level. Nevertheless, central government can draw upon the behavioural context when deciding how best to support the local authorities and increase the effectiveness of local policy. Use of the Behaviour Analysis Framework reveals several promising avenues of approach.

Local authorities have a statutory obligation to provide waste collection services and to maximise the recyclability of waste flows. An examination of the waste management costs incurred by local authorities reveals that those which achieve the highest level of separation at source have the lowest costs. As a result, households pay less in waste collection charges. There also seems to be a direct correlation between recycling behaviour and the degree to which the local authority formulates clear objectives and pursues them in a consistent manner. Central government can encourage local authorities to formulate clear objectives

by means of a covenant with the Association of Netherlands Municipalities (VNG). How those objectives are pursued in practice will remain the responsibility of each individual local authority, but behavioural science tells us that public commitment is a key success factor. Central government can provide additional impetus by establishing uniform waste management norms for all local authorities, and by rewarding those which perform particularly well. Government can also assist by ensuring access to knowledge and by providing practical support in policy formulation, with a view to increasing separation at source and reducing waste management costs. In consultation with local authorities and their contractors, new methods can be developed whereby waste processing companies are able to apply innovative contracting forms, achieving lower costs as well as better waste separation. The variation in the methods already applied by local authorities should be used to identify best practice examples (e.g. the Diftar⁴ zero-rate for organic waste) and to learn from the less successful projects. Government should join local authorities in making an inventory of any obstacles to more effective waste separation at lower costs.

There are many parties – including waste processing companies, housing corporations, private landlords, project developers, kitchen suppliers, and industrial designers – who will be useful partners to both central government and the local authorities. Government should act as coordinator in the quest for effective and innovative solutions to increase the proportion of domestic waste that is recycled.

Influencing citizens' behaviour

Motivation to separate waste at source can be influenced by means of targeted information, such as lectures organised for tenants' and homeowners' associations. The lecture must of course appeal to its target audience, many of whom are likely to have limited interest in the subject matter. The meetings will also provide an opportunity for people to suggest their own solutions and to be given support in devising new solutions. Those who already show exemplary behaviour can be publicly commended. The annual waste collection bill could include an invitation for people to devise a plan for better waste separation (a so-called 'implementation intention'); this will enhance motivation, as will rewarding the desired behaviour. The reward need not be a direct financial advantage, as in the Diftar model. It could be in the form of a lottery ticket (which research has shown to be extremely effective) or a visit by the mayor to households, streets or blocks doing well in this respect. Separation of organic waste can also be encouraged by establishing links with developments in the field of sustainable food (reduction of wastage; the use of compost in urban agriculture) and in sustainable energy (some cities now have distinct refuse collection vehicles which run on biogas produced from organic waste). Other options include adapting the current waste collection arrangements: collect

⁴ Diftar is a waste collection system which applies differentiated charges for various types of waste.

separated waste on a regular basis, but collect unseparated waste less frequently, or require people to bring it to a central depot.

Physical circumstances influence behaviour to a significant degree. Attention must therefore be devoted to measures which make waste separation easier for those living in high-rise apartment buildings or in small homes. This may entail more frequent collection or the introduction of standard facilities for waste separation in the kitchen. Greater attention must also be devoted to the factors which influence behaviour in such circumstances. It will then be possible to develop policy which addresses specific target groups, taking the physical factors into account.

Concluding remarks

Behavioural knowledge provides various points of departure for policy intended to encourage the separation of organic household waste at source. Central government's responsibility and authority is limited, since this is primarily a matter for the local authorities. The role to be adopted by central government is that of coordinator and facilitator, ensuring that knowledge is developed and disseminated. It can encourage local authorities to maximise the effectiveness of their policy, and can bring together the various stakeholders such as waste processing companies, housing corporations, private landlords, project developers, kitchen suppliers, and industrial designers.

PART 2 | ANALYSIS



INTRODUCTION

1

Part 2 of this advisory report presents the arguments and evidence which underpin the recommendations given in Part 1. Chapter 1 describes how the use of behavioural knowledge, including the organisational aspects, can be embedded within policy and policy processes. Chapter 2 examines the relevant determinants of behaviour and their mechanisms, and how various factors can influence sustainable behaviour (in other words: how does human behaviour work?). Chapter 3 examines how insights gained from behavioural science can support the development of more effective policy, and links the determinants of behaviour to policy options, while Chapter 4 considers the normative and ethical issues: how far can and should the government go to promote sustainable behaviour?

KAAS

**GOUDSE 48+
JONG KOMIJN**

Prijs/kg

€ 11.25

Inhoud/g

197

Ten minste houdbaar tot:

WAT DENK JE ZELF?

Bedrag

€

2.22

5011

JONG

DEVELOPING GOVERNMENT POLICY

1

1.1 How does government policy come into being?

According to the rational approach, the policy design process involves analysis, argumentation and the formulation of policy intended to resolve a societal problem or to meet certain common objectives, thus ensuring that the public interests are safeguarded in the longer term. In this respect, it is important that the arguments supporting the proposed policy are well-grounded (Hoogerwerf, 2008). In other words, there must be a logical relationship between the problem to be solved, the content of the policy, and its effects. In practice, however, policy design forms part of a political process. The objectives cannot always be clearly defined, and it is not always possible to establish a direct relationship between those objectives and the chosen instruments. Moreover, the design process takes place in a particularly dynamic setting, whereby it is rarely undertaken in a systematic, step-by-step manner. Problems and objectives are not formulated solely by policy-makers. Many other factors play a part: the political arena, the input of societal midfield organisations and the general public (acting individually or collectively), existing policy, and so forth. These factors determine the scope within which new solutions may be sought, the level of support for policy, and the degree to which government can and should be involved. Environmental objectives do not stand in isolation; many other public interests must be taken into account. Upholding those interests can influence the effectiveness of policy instruments intended to promote sustainable behaviour.

In order to arrive at grounded, evidence-based policy, the Dutch government has adopted a system known as the *Integraal Afwegingskader beleid en regelgeving* (IAK), the 'Integrated Assessment Framework for Policy and Legislation'. It comprises seven questions, the answers to which are relevant when developing policy or legislation (Ministry of V&J, 2012c). In 2011, a government decree made it mandatory for all policy proposals and draft legislation submitted for consideration by parliament to provide satisfactory answers to these questions (House of Representatives, 2011):

1. What is the cause of the problem?

Drawing an analytical distinction between the cause of the societal problem and the problem itself allows various avenues of approach to be explored.

2. Who are the stakeholders?

The development and/or implementation of policy calls for the involvement of various parties at all stages of the process. Their input may be in the form

of collating the necessary knowledge, engendering support, or undertaking practical activities. If the policy process is to be managed effectively, it will be necessary to identify all contributors and stakeholders at the earliest possible moment.

3. What is the problem?
When describing the problem, a distinction is drawn between the facts (relationships between causes and effects) and the perception of those facts. The facts are the same for everyone: the perception of those facts depends on the standards and values of the stakeholder concerned.
4. What is the objective?
Once the problem has been adequately defined with the help of the appropriate stakeholders (the current situation), the policy objectives can be formulated (the desired situation).
5. What is the justification for government intervention?
Once the problem and the objective(s) have been defined, it is necessary to consider why the government should be responsible for implementing a solution. In a democratic, constitutional society, any government intervention must be justified by the existence of a public interest. Also relevant is the probable outcome were the government to do nothing: the 'zero option'.
6. What is the most appropriate instrument?
Once it has been established that government intervention is desirable in order to achieve the policy objective, it becomes possible to examine the available instruments to determine which instrument will be most appropriate. The final choice should be based on an integrated weighing of all opportunities and risks, and the extent to which the proposed instrument meets the criteria of legitimacy, proportionality, effectiveness, and practicality.
7. What will be the effects?
While policy and legislation seek to answer certain objectives, they will often have a secondary impact – or 'side effects' – on various parties. Identifying all possible effects beforehand allows a thorough consideration of the proposed policy.

The IAK system is currently being implemented throughout the central government apparatus. Its use is mandatory for every proposal submitted to the relevant administrative or ministerial (sub-)committees. This structured approach to policy problems is, in the Council's view, an important step towards policy of better quality, and hence of greater effectiveness. It offers opportunities to give behavioural knowledge a permanent place in the policy development process, thereby arriving at a thorough problem analysis and full, accurate formulation of the policy objectives. However, the Council wishes to stress that policy practice does not always allow for such a phased approach. To ensure that policy proposals are backed by sound arguments, each problem must be considered in the light of the wishes and requirements of society. The strength and self-organising ability of society can do much to promote (more)

sustainable behaviour and thus to achieve the public objectives. In other words, the IAK system provides useful building blocks for policy development, but it remains essential to draw upon the knowledge and energy of society at large from the very outset. Doing so will help to establish an appropriate division of responsibilities between government and civil society. Moreover, further improvement can be accomplished by devoting greater attention to monitoring, evaluation, and knowledge management, both during and after the development process itself. Such a structured approach is also essential in the development of policy strategies which do not require parliamentary approval, e.g. those which are the responsibility of executive agencies such as *Rijkswaterstaat* (the Directorate-General for Public Works and Water Management).

1.2 Base policy strategies on more than considered and reasoned behaviour

From the psychological perspective, the strategies applied within current government policy, including environmental policy, seem to assume – implicitly or explicitly – that people act on the basis of reasoned, deliberate choices. Although governments are now devoting greater attention to other behavioural aspects, many strategies continue to rely on personal financial interests. Examples include the additional tax levy on lease cars, the subsidy on solar panels, and the revolving fund described in Part 1. This type of policy assumes that the consumer's key motive is to maximise utility, i.e. his (or her) own financial self-interest: the “what’s in it for me?” response. It supposes that he or she acts as a rational *homo economicus*, carefully weighing all pros and cons before selecting whichever option will prove the most financially advantageous (WRR, 2009). This assumption will sometimes produce the intended result but it does so less often than might be expected. We now know that a focus on rational considerations and self-interest is too narrow, especially where sustainable behaviour is concerned. Research in behavioural economics, social psychology, neuropsychology, and sociology has conclusively shown that decision-making processes are frequently unconscious, non-deliberate, or routine, and are often driven by factors such as emotions and intuition. Although this knowledge is now more widely applied within government information and communication campaigns, the majority of government policy strategies have yet to take full advantage, which means that policy is not as effective as it could be. A further complication is that policy-makers fail to disassociate themselves from their own role as consumers. Assumptions about human behaviour are made on the basis of personal experience and intuition; they are often not supported by any scientific evidence. Also, too little attention is devoted to people's non-financial motives, which may include status, genuine concern about the environment, or altruism: a desire to do something for the collective good. People in the Netherlands donate over one billion euros per annum to charitable causes

(CBF, 2013) while 6.3 million Dutch citizens – over a third of the population – are actively involved in voluntary work (Movisie, 2013). The role of altruism and society's ability to address collective interests together are well illustrated by many activities presented on 'Sustainable Tuesday' each year (*Duurzame dinsdag*, 2013). It is obvious that efforts to promote sustainable behaviour must look beyond financial interests alone.

For this reason, the Council believes that behavioural knowledge must be applied within government policy processes in a targeted and effective manner. This will do much to promote the (more) sustainable behaviour sought by the policy itself. Scientific insights into human behaviour and decision-making processes should be firmly and permanently embedded within policy development processes. The IAK makes an initial step in this direction by means of its third question ('What is the problem?'), which demands express attention for the behavioural components of the problem (Ministry of V&J, 2012b). Similarly, Question 6 ('What is the most appropriate instrument') takes account of ingrained, habitual behaviour when selecting policy instruments to manage such behaviour (Ministry of V&J, 2012a). The strategic knowledge agendas of several ministries now acknowledge the importance of behavioural knowledge. For example, the Ministry of Infrastructure and the Environment's Strategic Knowledge and Innovation Agenda 2012-6 (SKIA) devotes an entire section to individualisation and behaviour (Ministry of I&M, 2012).

Giving all the many facets of (choice) behaviour a prominent role in development of policy strategies intended to promote sustainable behaviour will, in the Council's opinion, provide better opportunities to address and exploit the factors which actually determine behaviour. This will enhance the effectiveness of policy, eventually resulting in more sustainable behaviour in practice. Exactly how that role can be made more prominent is considered in the following section.

1.3 Embedding behavioural knowledge within the organisation

Although the importance of applying behavioural knowledge within policy processes is now more widely acknowledged, its use is by no means standard practice. The staff of policy departments frequently lack the time and opportunity to make in-depth analyses, apply existing knowledge to best effect, or rectify any gaps in that knowledge. There is often not enough time to consult the relevant literature, while it may be politically opportune to 'background' certain knowledge, giving it less weight than it may deserve. Sometimes, the available knowledge remains incomplete; it has so many unresolved uncertainties that it does not offer adequate direction for policy.

To ensure that the necessary behavioural knowledge is indeed given a permanent place in policy processes, government organisations must take an active

approach whereby expertise is deployed when and where it is needed. In this section, we consider the organisational requirements for structurally leveraging behavioural knowledge for developing more effective environmental policy. Various initiatives have been launched, both in the Netherlands and elsewhere, to institutionalise the use of behavioural knowledge in policy processes. As yet, no single recipe for success has been found. In some ministries, policy topics that share a number of common features are brought together within one directorate or department, so that the experts can consult each other and exchange ideas. This 'clustering' into policy domains has a positive effect in terms of the application of knowledge but fails to transcend all boundaries; it may even create new boundaries (RMO, 2008). This approach will do little to embed behavioural knowledge within the organisation concerned, since this type of knowledge is not confined to one particular policy objective but is relevant to all. Accordingly, a different approach is required to apply behavioural knowledge within policy processes. The Council sees three lines along which behavioural knowledge can be institutionalised within policy processes. The lines are complementary and should be explored in parallel:

1. Deploy staff with behavioural knowledge.
2. Appoint Behavioural Insights Teams.
3. Ensure commitment throughout the organisation.

1.3.1 Policy staff with behavioural knowledge

The shortest route towards improving the quality of policy using behavioural knowledge is to deploy staff who possess some degree of behavioural knowledge, preferably trained behavioural scientists. Their task will be to apply behavioural knowledge systematically in all policy development processes undertaken by the directorate to which they are assigned. Interpersonal skills are also important; they must be able to discuss the application of behavioural theories with colleagues, and they must ensure that the use of evidence-based knowledge within policy processes is placed firmly on the agenda. These staff should be encouraged to look beyond their 'own' ministry or directorate; they can learn from each other, so it may be useful to establish an interdepartmental Expertise Centre. After all, some of the knowledge and experience they gain will be entirely new because there are areas of policy in which links with behavioural effects have not yet been established. Such an Expertise Centre could also play a part in the production of reviews and policy evaluations, developing to become an authoritative, regulatory component of the policy development process in its own right.

1.3.2 Behavioural Insights Teams

To date, other European countries offer few examples of organisations which are specifically charged with making behavioural knowledge available in support of policy processes. Germany, Belgium, and Norway do appear to be devoting increasing attention to the potential of doing so. In the United Kingdom, however,

such attention is now fully institutionalised. Soon after the Cameron government came to power, the Cabinet Office was instructed to set up a 'Behavioural Insights Team' (BIT), a relatively small unit of 13 staff with backgrounds in the social sciences, policy development, and marketing. The Behavioural Insights Team, often called the 'Nudge Unit', applies insights gained from research in behavioural economics and psychology to public policy and services. It has worked with virtually all UK ministries, as well as with local authorities, charities, NGOs, private sector partners, and foreign governments, developing proposals and testing them empirically across the full spectrum of government policy (gov.uk, 2012).

Through its contribution to policy, the BIT attempts to encourage and support people in making better choices for themselves and for society. It does so by promoting the use of behavioural knowledge in policy development, and by disseminating scientific methodologies and policy evaluations. So far, the BIT has been able to apply behavioural knowledge within various policy domains and to actually affect policy. The BIT has been successful in gaining the support and commitment of the entire government apparatus, up to and including the Prime Minister David Cameron (who instigated its creation). Such commitment is essential if the policy directorates are to be persuaded to incorporate behavioural knowledge in their processes. The directors (known as permanent secretaries) of all UK ministries and departments have openly expressed their support for the BIT concept, whereupon BITs have been established at various departments and directorates. A further strength of the BIT is that it has demonstrated the practical effectiveness of evidence-based policy by means of a number of controlled field experiments, by seeking 'quick wins' at the start of experiments, by deploying strong communicators, experts, ambassadors, and 'bridge-builders', and by actively engaging in knowledge-sharing activities, both internal and external (for instance through master classes). The application of the behavioural knowledge contributed by the BIT does not offer any hard guarantee of success: "do this and that will happen" (Of course, this applies to all policy: there can be no guarantees.) However, it has resulted in significant, measurable and controllable effects. In addition to its permanent staff, the BIT has an advisory board comprising a number of prominent academics who contribute knowledge and reflect on the choices to be made. The BIT therefore enjoys close contact with several leading universities and research institutes. Their role is to collect and collate relevant data, and to oversee the field experiments which produce the knowledge required by the government to support policy decisions.

In the Netherlands, the Ministry of Infrastructure and the Environment (I&M) has now formed a Behavioural Insights Team as well. Its remit is to increase the effectiveness and efficiency of policy measures, project implementation, and the Ministry's fulfilment of its regulatory responsibilities by contributing current, evidence-based knowledge relating to behavioural aspects (Ministry of I&M, 2012). This first Dutch BIT intends to develop a broad arsenal of potential applications for

behavioural knowledge. Within the Ministry itself, the primary objective is to help policy staff (many of whom are specialists in technical disciplines or economics) to appreciate the value of behavioural knowledge and to recognise when it will be useful to call upon the expertise of the BIT. In the Dutch context, this makes the Ministry of I&M a pioneer in the deliberate use of behavioural knowledge in policy processes. There is already clear commitment on the part of senior Ministry officials, as illustrated by the inclusion of a section devoted to human behaviour in the Ministry's Strategic Knowledge and Innovation Agenda (SKIA) mentioned before, which provides further opportunities for experimentation and knowledge development.

By emulating the British BIT concept, the Ministry of I&M has made a significant step towards the institutionalisation of behavioural knowledge within environmental policy. Of course, the specific national context must be taken into account. Incidentally, it will be necessary to ensure that the use of behavioural knowledge for policy purposes does not become the exclusive responsibility of the BIT alone. In other words, even where a BIT is in place, policy directorates must remain alert to the significance of behavioural knowledge within their respective domains. The BIT can provide support in this respect. In the Council's opinion, other ministries should now follow I&M's lead and pursue the institutionalisation of behavioural knowledge by appointing a Behavioural Insights Team. This will ensure an appropriate approach within every policy domain. The creation of a BIT will not in itself embed knowledge within the policy processes, but a departmental BIT can help the organisation as a whole to formulate 'tailor-made' solutions.

1.3.3 Commitment to the use of behavioural knowledge

Currently, the IAK method is being implemented throughout the Dutch government for substantiation of all policy proposals. This has been made mandatory by government decree. Whenever the documents are submitted to the relevant committee, whether at departmental or governmental level, they are required to address the seven questions of the IAK framework. This is a minimum quality requirement, the imposition of which demonstrates the government's clear support for the IAK approach, allowing it to be embedded in policy development processes. In the Council's opinion, a similar level of commitment is necessary to allow the systematic application of behavioural knowledge within the policy processes. Such commitment is an essential adjunct to the lines of approach discussed above (the deployment of expert staff within departments and the appointment of Behavioural Insights Teams).

If the use of behavioural knowledge is to be firmly embedded within the departmental organisation, a formal directive to that effect should be issued at cabinet level. The Council believes that a thorough behavioural analysis should be a set component within the process of preparing proposals for the consideration of the relevant committees.

ZAMELING
EDSELBANK



AN EXPLORATION OF INDIVIDUAL BEHAVIOUR

2

Human behaviour is complex, whether individual or group behaviour, incidental or ongoing behaviour, or conscious or unconscious behaviour. To develop fully effective behavioural policy, it is necessary to analyse unsustainable behaviour, identifying its characteristics and causes, as well as the factors which will encourage people to abandon *unsustainable* practices in favour of the desired sustainable behaviour. Such insight will also be required when it becomes time to evaluate the results that the policy has actually achieved. Better use of behavioural knowledge in the development of government policy will enhance the effectiveness of that policy, and will create new opportunities to increase the effectiveness of all future policy.

The Council has developed a Behaviour Analysis Framework to accompany this advisory report. It allows the user to examine various factors which influence or determine behaviour, and is therefore a valuable tool in the policy development process. The Framework seeks to strike an appropriate balance between the ease with which behavioural knowledge can be applied by policy-makers who are not specialists in the field, and the depth of the scientific knowledge and experience now available. The Framework establishes direct links between behavioural knowledge, the manner in which government policy should (ideally) come into being, and the instruments which government has at its disposal.

The Behaviour Analysis Framework is published separately. It has been designed to align as closely as possible with the steps of the Integrated Assessment Framework (IAK) (see Section 1.1). The starting point of the Behavioural Assessment Framework is the policy problem (issue) to be addressed, the definition of which leads to the identification of the relevant determinants of behaviour. The behavioural insights revealed by the Framework form the basis for the selection of policy strategies, which are then refined to aid in the selection of appropriate policy instruments.

The Framework helps to identify factors which influence unsustainable behaviour, to identify groups of people for whom a certain type of policy is required, and to determine which interventions are likely to be effective. It is not a deterministic model which produces ready-made solutions. It does however provide a practical guide to making a problem and behavioural analysis, and helps to identify the target groups for specific policy strategies. In this chapter, we first examine the factors influencing or determining sustainable behaviour, and which therefore form the basis for the Behaviour Analysis Framework.

2.1 Human behaviour is both associative and systematic

The human brain processes information in various ways to determine choice behaviour: via an associative system and via an analytical system based on fixed rules (Sloman, 1996). In practice, there is no strict division between the two systems, but this approach offers a useful starting point for a description of choice behaviour. The main difference between the two systems lies in the nature of the process which leads to the decision to adopt a certain (type of) behaviour. The associative system, also termed System 1 (Stanovich & West, 2000), responds on the basis of quick comparisons and similarities. The process is largely automatic and demands little or no effort. In most situations, System 1 is perfectly adequate. Many everyday decisions are made very quickly, with little interest or attention, and with limited information about all the possible aspects and options. Such decisions are more often than not taken on the basis of System 1. The analytical system, System 2, thinks through situations methodically and in detail. Thought processes involving System 2 demand focused attention. They are more precise and more flexible, but they take more time and effort. A System 2 process can be transformed into a System 1 process by 'automation': if someone makes the same type of decision often enough, and the results are satisfactory on each occasion, it is likely that he or she will cease to think consciously about the options. This is the process underpinning brand loyalty, for example.

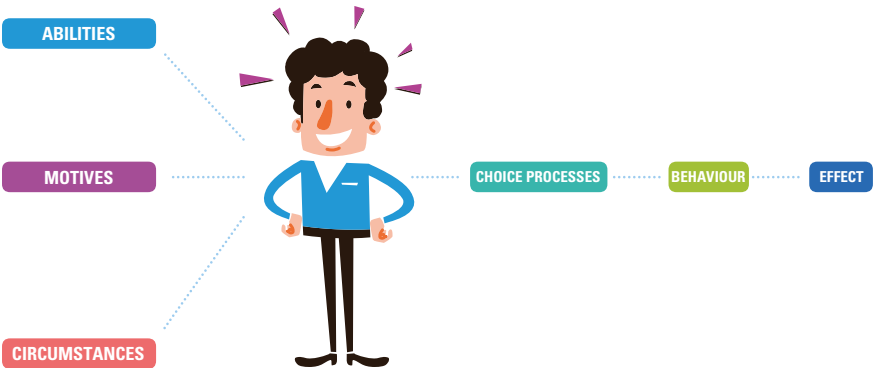
It turns out System 1 cannot be ignored: it is frequently involved in human decision-making processes. Although people are able to suppress associative System 1 thinking by deliberately adopting System 2 behaviour, System 1 will remain in play. It can influence the deliberate, systematic thought processes of System 2, and sometimes does so to such a degree that deliberate choice is subsumed (Kahneman, 2011). For example, consumers are generally far more susceptible to social 'word of mouth' information than information from written sources, since the former is more immediate and 'vivid' (Taylor & Thompson, 1982). Much government policy is concerned with conscious, reasoned behaviour, i.e. System 2 behaviour. The Council wishes to stress that the development of government policy must also take the automatic and associative behavioural processes of System 1 into account. This entails going beyond merely making people aware of their System 1 behaviour; it can itself be the direct target of policy.

Drawing a clear distinction between System 1 and System 2 thinking helps to describe and explain the mechanisms of human behaviour, but it does not offer a sufficiently strong foundation for effective policy instruments intended to influence and change that behaviour. In general, policy instruments do not seek to influence either type of behaviour in isolation. Rather, they address a number of factors which influence or determine behaviour, and those factors are at play in both systems (associative and systematic), often simultaneously. Moreover, there

are many different subtypes of System 1 behaviour, such as adherence to general rules or precepts, social influence, and influence by various external ‘cues’.

To arrive from behavioural knowledge at points of departure for policy instruments, we will describe the most important knowledge for sustainable behaviour using four key factors which influence or determine behaviour: abilities, motives, circumstances, and choice processes. All four play a part when behaviour is adopted, in both System 1 and System 2. They not only form the headings under which we can describe behaviour and its effects, they are also directly related to the potential policy strategies which can promote sustainable behaviour. ‘Abilities’ refers to the knowledge and skills required to display a certain type of behaviour, or to change existing behaviour. In addition, people will have personal reasons for adopting or aspiring to certain types of behaviour, which we term their ‘motives’. Behaviour is also influenced by people’s ‘circumstances’ (or conditions). Circumstances have a significant impact in terms of the costs and benefits of various behaviour options. Finally, a person’s actual behaviour is determined by a series of conscious and unconscious ‘choice processes’ which take place in the brain. Those choice processes are undertaken in an associative or systematic way at the time that the behaviour is determined. Figure 3 (below) represents the mechanism of human behaviour based on these four key factors. In practice, the factors also have a mutual influence. Often, there is no direct relationship between any given factor and behaviour, but it is the result of a series of complex interactions between the factors. The following sections examine abilities, motives, circumstances and choice processes in greater detail.

Figure 3: The factors underlying human behaviour



Homo economicus and The four main determinants of behaviour

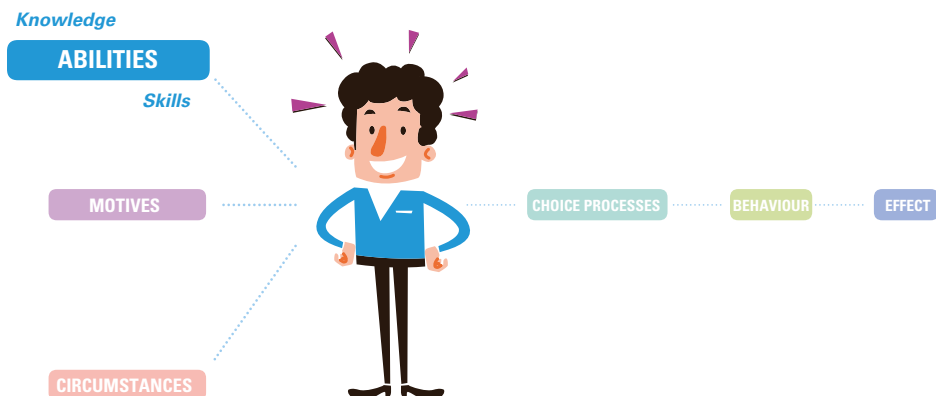
Much government policy is based on the notional *homo economicus*, the consumer who makes reasoned, well-considered choices and always acts in his own (financial) interests. *Homo economicus* considers all relevant information and weighs the costs and benefits (both immediate and long-term) of each alternative. He then selects whichever option will represent maximum utility. As he acts out of self-interest, this will be the option with the greatest personal benefits for him, against the lowest costs. Various policy instruments have been based on this behaviour, from price incentives and subsidies to penalties and fines. It is easy to determine costs and benefits, whereby the resultant choice behaviour appears to be clear-cut. In our diagram of the four determinants, this choice behaviour ('weighing the options') falls under the heading *Choice processes*. The knowledge which *homo economicus* gleans from the information he gathers falls under *Abilities*. His main (or sole) Motive is presumed to be self-interest: moral, normative or social interests play a secondary role at best. The *Circumstances* may be a setting in which the various options are clearly presented.

2.2 Abilities enable people to adopt certain behaviour

If people are to play their part in achieving environmental objectives, they must be able to display the desired sustainable behaviour. It will help if they understand the problem, know what contribution they can make, and are aware of the results of their actions. In addition, they must have the resources – financial or otherwise – required to support the desired behaviour. In our model, these factors are termed 'Abilities', which we can divide into two subheadings:

- Knowledge
- Skills

Figure 4: The factors underlying human behaviour: Abilities



A1 Knowledge

Knowledge may be defined as the degree to which people have (objective) information about environmental problems and risks, solutions, and behavioural options, and the degree to which they understand that information. For example, recent years have seen growing awareness of the environmental impact, in terms of carbon emissions, for which food production accounts, and most especially that of meat production. Consumer behaviour – the choice and purchase of food products – plays a significant part in this respect. This has led to greater knowledge, enabling people to consider alternative behavioural choices. In the past, the problem and the role of behaviour was virtually unknown to the vast majority of people, who were also unaware that the solution lay partly in their hands. While information can help to fill gaps in knowledge, it is usually not enough to bring about behaviour change (Schultz, 1998). It is important to realise that the lack of knowledge can indeed be an obstacle to sustainable behaviour, but that the availability of that knowledge is not in itself enough to motivate behaviour change. Knowledge is only effective if people are indeed motivated to use it (Schultz, 2010), which will be more likely if someone has particularly strong pro-environment values.

A2 Skills

‘Skills’ determine the extent to which someone is able display the desired sustainable behaviour in practice. This may be subject to physical or intellectual limitations. For example, asking consumers to purchase only sustainable food products will serve little purpose if they do not know how to prepare those products. Similarly, a policy which discourages commuting by car can only be effective if people have a viable alternative: they must be able to cycle or be able to understand the public transport timetable.

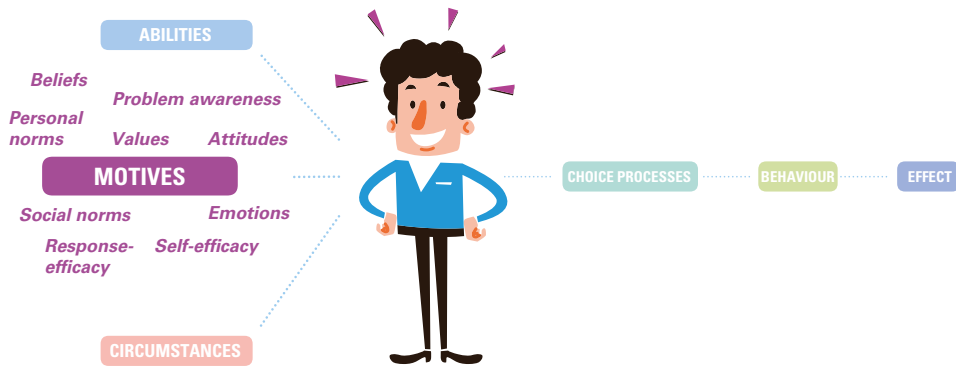
2.3 Motives influence the propensity to sustainable behaviour

Motives influence a person’s behaviour either directly or indirectly: they are the drivers and determinants of human behaviour. The motives listed below can exert their influence via the associative system (System 1) or the systematic system (System 2). Motives go a long way towards explaining why people show certain types of behaviour, and to what extent. Motives therefore offer useful points of departure for policy development. The following motives are relevant to sustainable behaviour and are described in greater detail below:

- Values
- Emotions
- Beliefs
- Attitudes
- Personal norms
- Social norms

- Problem awareness
- Self-efficacy
- Response efficacy

Figure 5: The factors underlying behaviour: Motives



M1 Values

Values can be defined as general goals, varying in importance, which serve as the guiding principles in a person's life (Schwartz, 1992). Values are not a component of someone's innate character but do reflect the importance that he or she attaches to certain general developments and goals in life. They are formed at a relatively early age and remain stable over time (Feather, 1995). It is therefore difficult to change values. People prioritise values in different ways.

Four types of value appear to play an important role in determining beliefs and behaviour with regard to sustainability: biospheric, altruistic, egoistic and hedonic values. (Steg *et al.*, 2012). Egoistic values are particularly significant in the case of *homo economicus*. The more inclined people are to endorse values which go beyond their own direct self-interest (i.e. altruistic and biospheric values), the more likely it is that they will display behaviour with low environmental impact. People with strong biospheric values will probably eat less meat, take shorter showers, and show greater acceptance of environmental policy than those with marked hedonic values (Steg *et al.*, 2014; Steg & De Groot, 2012).

M2 Emotions

Emotions play a significant part in choice processes. People form an immediate impression – positive or negative – of the things that they observe and experience. They often do so long before there has been any conscious evaluation (Zajonc, 1980). Mental images of objects and events are inextricably linked with emotion (Bechara & Damasio, 2005). The emotions associated with a situation or event, particularly those which are conceivable, are based on past experiences. Once a

mental image has been activated, the emotion which is paired with that image surfaces from the memory. This is usually a subconscious process. It occurs when assessing risks, for example. People tend to rate the risks of nuclear energy as far greater if they can clearly visualise the effects of a nuclear incident (Midden *et al.*, 1984). Climate risks appear to be underestimated because, for most people, the possible effects are extremely abstract. If the consequences are clearly laid out and are linked to emotions, people will process information on risks more thoroughly. Research by Italian scientists concludes that people are more willing to separate waste and use public transport if they believe that doing so will create positive emotions such as happiness or contentment (Carrus *et al.*, 2008). According to the same insights, people will make greater use of the car if the act of driving evokes positive emotions (Steg, 2005). An emotional response can also be sparked by some discrepancy between norms and behaviour, in which case the emotions have a 'signal' function which will influence future behaviour. The decision to purchase sustainable food, for example, can be prompted by feelings of pride or guilt (Onwezen *et al.*, 2014): people are more inclined to act in a way which makes them feel proud, and less likely to act in a way which they think will make them feel guilty. (In this case, it is therefore a matter of anticipated emotions.)



M3 Beliefs

People have their own thoughts, opinions and ideas about the various environmental issues. These are termed 'beliefs'. People weigh the pros and cons of situations and actions, and they form impressions of how other people think (Fishbein & Ajzen, 1975). In doing so, self-interest may play a part but people may also act in the collective interests (Hardin, 1968). Beliefs can influence human behaviour both consciously and subconsciously. They are formed through interactions, experience, observation, and information. Beliefs are coloured by the more general values people endorse with regard to specific domains. For

example, assumptions about nature will affect a person's attitude towards nature, and hence his or her behaviour (Manfredo *et al.*, 2009).

M4 Attitudes

People's attitudes towards environmental problems and possible solutions are largely based on their beliefs, and the weight that they attach to these. Someone who expects a certain behaviour to bring significant benefits will be more inclined to display that behaviour. A behaviour which entails disproportionate effort or inconvenience is likely to create or reinforce a negative attitude. If, however, the advantages compensate for the additional effort, there may be a positive attitude. People are far more inclined to show sustainable behaviour if they have a positive attitude towards that behaviour, which will be the case if they see that the advantages outweigh the disadvantages. People have been shown to do more to reduce their water consumption, use public transport (instead of the car) more often, and eat less meat when they expect the benefits of this behaviour to be greater than the expected disadvantages (Harland *et al.*, 1999).

M5 Personal norms

People often feel a moral obligation to behave in a certain manner, based on normative beliefs. These 'moral intuitions' – convictions with regard to what is right and wrong which are not based on any conscious deliberation (Haidt, 2001) – are termed 'personal norms' (Fishbein & Ajzen, 1975). People can feel a stronger moral obligation to act in a sustainable way if they are more aware of the negative consequences of their current behaviour for the environment. Their propensity to do so is even greater if they feel that they can make a useful contribution to solving the problem (Steg & De Groot, 2010). The influence of personal norms appears to be greatest in terms of sustainable behaviour which involves relatively little costs or inconvenience (such as not using the car for short journeys) and in terms of intentions to adopt more sustainable behaviour in future (Bamberg *et al.*, 2003). Incidentally, it has been shown that interventions involving external



incentives (such as rewarding good behaviour) do not automatically result in behaviour changes. In fact, the interventions may have the effect of ‘crowding out’ intrinsic motivation (Deci *et al.*, 1999). People then display the desired behaviour largely or solely because of the external incentive; their personal norms play a less important role. Their intrinsic motivation to act in a sustainable manner is replaced – subsumed – by the external incentive. When that incentive is withdrawn, people who are not acting primarily on the basis of their personal norms may well lapse into their former, unsustainable behaviour.

M6 Social norms

‘Social norms’ refers to the individual’s beliefs and perceptions with regard to what others expect of him or her, or how other people behave. Because people share certain social norms, to which they adhere, there are circumstances in which it becomes possible and appropriate to call on collective resources to further the interests of sustainability (Ostrom *et al.*, 1999). For example, a solar power plant in Cuba could not produce enough electricity to meet demand. Local residents made agreements among themselves, restricting their personal consumption to avoid overburdening the system: a sort of voluntary rationing. The approach was effective by virtue of social control: if you turned on the lights when it wasn’t your turn, all the neighbours would know (Jenny *et al.*, 2004). Cialdini *et al.* (1990) identify two types of social norm: *injunctive and descriptive*. An injunctive norm is the individual’s perception of the degree to which his or her behaviour will meet with approval or disapproval from their social environment. People are more likely to reduce their water consumption and use public transport (instead of the car) if they believe that they are expected to do so by others who are important to them (Harland *et al.*, 1999). A descriptive norm is the individual’s perception of the degree to which other people in their environment display the behaviour in question. For example, people are more inclined to drop litter on the street if they see that others also do or have already done so, or if there are indications that other social norms are not being observed either (such as graffiti on walls). Conversely, if they can see that others are indeed adhering to the social norms, people will be more inclined to follow suit. (This phenomenon is not confined to environmental matters.)

The extent to which injunctive and descriptive norms influence behaviour depends on how significant they are judged to be. A sign prohibiting litter in an area awash with discarded food wrappers will have little effect. It may even be counterproductive, prompting further violations of the social norms because the presence of the sign draws attention to the fact that other people are also violating the respective social norm, and thus the descriptive norm is reinforced (Keizer *et al.*, 2011).

M7 Problem awareness

‘Problem awareness’ is the degree to which people believe that they understand the environmental issues and risks, and the importance that they attach to these.

Problem awareness is closely related to the responsibility that people feel for the existence of collective problems. The greater the awareness that certain environmental problems are caused by certain behaviour, the less likely people will be to display that behaviour. For example, they will be more willing to reduce their car use if they realise that road traffic and its emissions are contributing to environmental problems (Nordlund & Garvill, 2003). People are also more inclined to campaign against potentially unsustainable activities if they believe that those activities pose a significant threat to the environment (De Groot & Steg, 2010). Problem awareness appears to generate a greater behavioural effect if people have direct experience of the problem concerned. Those who have previously been the victim of flooding, for example, are more likely to take precautionary measures to preclude a recurrence (Zaalberg *et al.*, 2009).

M8 Self- efficacy

An important motive for sustainable behaviour is the individual's confidence that he or she is able to adopt a certain (type of) desired behaviour. This is termed 'self-efficacy' (Bandura, 1977). The greater the self-efficacy, the more likely it is that behaviour change will be achieved. People will use public transport in preference to the car more often if they have greater confidence in their ability to do so (Harland *et al.*, 1999).

M9 Response efficacy

If people expect the recommended behaviour to make a real contribution to solving the problem in hand, 'response efficacy' will be high. In other words, response efficacy is the individual's perception of whether the choice he or she makes will help to further the collective interests. The more positive that perception is, the greater the motivation to adopt the recommended behaviour



(the 'response'). Where people regard the efficacy of their own contribution as particularly high, they will be more likely to use public transport instead of their car, reduce water consumption, or to consider restrictive environmental policy acceptable (Harland *et al.*, 1999). The more people are aware of environmental problems, the higher their response efficacy (Witte, 1992) and their willingness to take action (Kuhl, 1982).

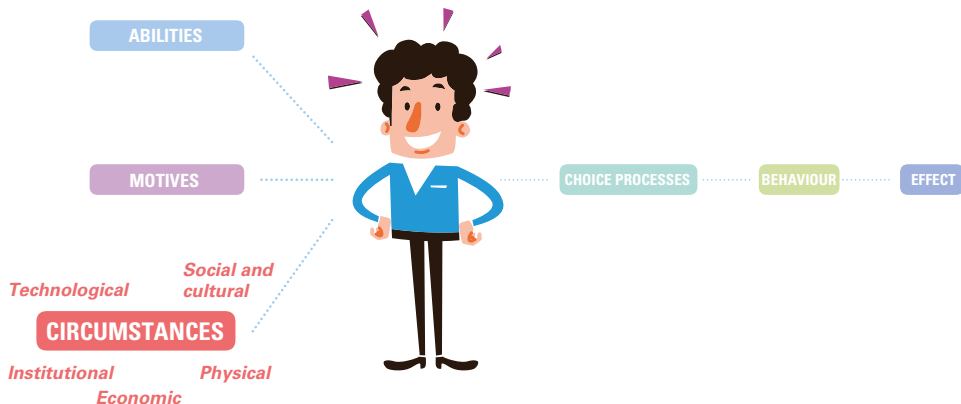
2.4 Circumstances influence sustainable behaviour in both a positive and negative way

Sustainable behaviour is influenced by a person's circumstances. There are various external factors which can either facilitate or stand in the way of sustainable behaviour. Their influence may be exerted through the System 1 choice mechanism. For example, people tend to drive at higher speed on wider roads, which is not a conscious decision. System 2 behaviour can also be influenced by circumstances. The availability of better waste separation facilities makes it easier for people to manage their waste flows effectively, and they will make the conscious decision to do so.

Circumstances can also raise such high barriers to sustainable behaviour that it becomes almost futile to apply policy addressing the other determinants of behaviour (abilities, motives, and choice processes). For example, there is little point in discouraging car use if there is no viable alternative in the form of good public transport services. Such a policy will be effective only among those with extremely high intrinsic motivation.

There is enormous diversity in the circumstances which surround the individual, all of which can have a significant influence in terms of sustainable behaviour. Interventions targeting the circumstances can enhance the effectiveness of policy intended to bring about behaviour change.

Figure 6: The factors underlying human behaviour: Circumstances



The circumstances which are relevant to sustainable behaviour fall into five main categories:

- Physical
- Technological
- Economic
- Social and cultural
- Institutional

C1 Physical circumstances

Sustainable behaviour is determined or influenced by a person's immediate setting or surroundings: the human environment, its design, and its condition. Choices made in the spatial design of an area will determine its users' options in areas such as sustainable mobility, energy-efficiency, and waste management. Other ambient factors such as noise and smells will influence behaviour, often without people being aware. Physical circumstances, such as the spatial structure of an area and its level of amenities, are factors which influence behaviour, ergo behaviour can be changed by changing the physical circumstances. For example, siting accessible public transport hubs close to economic centres will influence the choice of transport modality. At a lower level of scale, placing sustainable food products at eye level on supermarket shelves will influence consumers' purchasing behaviour. Factors which play a part in terms of physical circumstances include:

- *The 'readability' of an area*

The setting can provide certain 'signals' which prompt a conscious or unconscious response. A line of trees alongside the road, for example, may encourage drivers to reduce speed. They 'read' the road differently. Installing large mirrors in lifts has been shown to discourage graffiti. When the would-be 'artist' is confronted with his own reflection, aerosol in hand, his focus shifts to himself, and moral considerations come to the fore (Beaman *et al.*, 1979).



Similarly, installing attractive, well-designed bins in conspicuous and readily accessible locations will encourage people to use them rather than discarding litter in public areas (De Kort *et al.*, 2004).

- *The 'ease' of an area*

A setting which makes the desired behaviour obvious has a different effect to one in which the desired behaviour is unclear. For example, litter bins placed at strategic points not only 'inform' people what is expected of them but make it easier to adopt the desired behaviour.

- *The 'atmosphere' of an area*

Various signs and 'prompts' – light, smells, music, and colour – influence people's behaviour in their environment because they activate certain motives and values. It has been shown that the smell of freshly-baked biscuits activates people's hedonic values and causes them to become impatient (Li, 2008).

The sight of a church or bible reinforces their normative goals and associated behaviours

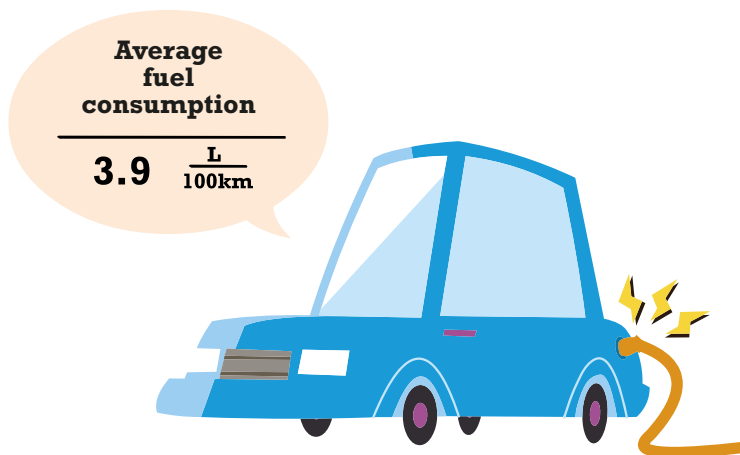
C2 Technological circumstances

People today live in a highly technological environment. They use numerous technical systems, products and services, both directly and indirectly, consciously and unconsciously. The possibilities and limitations of those technological resources influence the choices that are (or can be) made within the scope available, and they help to determine the attractiveness of the respective options. Moreover, some behavioural patterns become embedded in the technological context whereupon they become 'automatic'. The propensity to show automated behaviour is then linked to certain contextual circumstances and signals. For example, many people habitually accept a living room temperature of 22°C because, once set, the thermostat automatically adjusts the temperature to this level each morning. Technological circumstances determine not only behaviour and its environmental effects, they also determine whether the user is willing and able to make more sustainable behavioural choices. They may do so in the following ways.

- The environmental or ecological effects of the consumer's behaviour can be influenced by means of the technological resources made available. In the modern world, almost every action involves the use of some technological application. We are awoken by the alarm clock, shower with hot water, and then eat a breakfast which may well include fruit. That fruit has its own ecological 'footprint', depending on how and where it was grown, and how it has been processed and transported. The introduction of sustainable technologies which reflect and influence actual human behaviour, such as the 'smart meter' and the programmable thermostat, is therefore important if that behaviour is to be made more sustainable.
- Technology and the technological context can exert a direct influence on human behaviour, whether in the home, in the workplace, or in settings such as transport and mobility, by determining the options that are available.

Certain behavioural choices are offered, others are restricted. Providing access to a car will increase the likelihood of its use. The speed and comfort of modern vehicles makes it very tempting to adopt this mode of transport for longer journeys, while a lack of a viable alternative in the form of accessible and comfortable public transport will do little to encourage the use of this mode of transportation.

- (Smart) technology can be used to motivate people to adopt sustainable behaviour. An in-car computer ('black box') is an example of smart technology. It can provide instant feedback about fuel consumption, thus prompting the driver to develop a more efficient driving style.



C3 Economic circumstances

Financial and material circumstances influence the degree to which people will display sustainable behaviour. These factors can determine whether certain types of sustainable behaviour are even possible, and therefore whether the people concerned will be reached by policy intended to change behaviour. This may encompass socio-economic circumstances. For example, the current housing market crisis will deter some people from moving house to be nearer to their place of work. On the other hand, the rapid increase in the price of petrol seems to be a factor in the growing popularity of electric and hybrid vehicles, while demand for solar panels is increasing now that prices are falling.

Behaviour is also influenced by economic circumstances such as the fiscal regime surrounding investments in sustainability, the possibility to take out low-interest loans, or the availability of pre-financing arrangements. After all, people will be more inclined to invest if the (additional) costs of doing so are limited. Alongside these socio-economic circumstances, which apply to everyone to a greater or lesser degree, personal economic circumstances – such as people's financial

assets – also determine whether someone is able to adopt behaviour which will make a real contribution to environmental objectives. The use of an electric vehicle, for example, is not an option for someone who cannot afford to buy one. Precisely the same applies to investments in sustainable energy generation, such as installing rooftop solar panels.

C4 Social and cultural circumstances

Behaviour is further influenced by the degree of engagement that people feel with their social setting. The cohesion of a social group influences its members' propensity to pursue the common interests, and hence the likelihood of success in local, community-based sustainability projects (Weenig & Midden, 1991). A prime example of cultural circumstances is offered by Japan, where society is very much geared to the pursuit of collective interests. In Japan, information about the combined energy consumption of a group seems to carry far more weight than it does in the Netherlands, with its more individualised culture (Midden *et al.*, 2011).



C5 Institutional circumstances

The way in which society is organised and structured is another factor which determines certain types of behaviour and the possibility of behaviour change. Formal legislation and agreed procedures govern the way in which people behave. Lengthy or overly complex permit application procedures will deter many from installing solar panels, for instance. Restrictive legislation can prove an obstacle to various social initiatives in pursuit of greater sustainability, as in the case of local energy collectives. At present, a private individual who generates electricity and wishes to sell any surplus to his or her neighbours is eligible for sales tax. This could prove an obstacle to the expansion of local generation schemes.

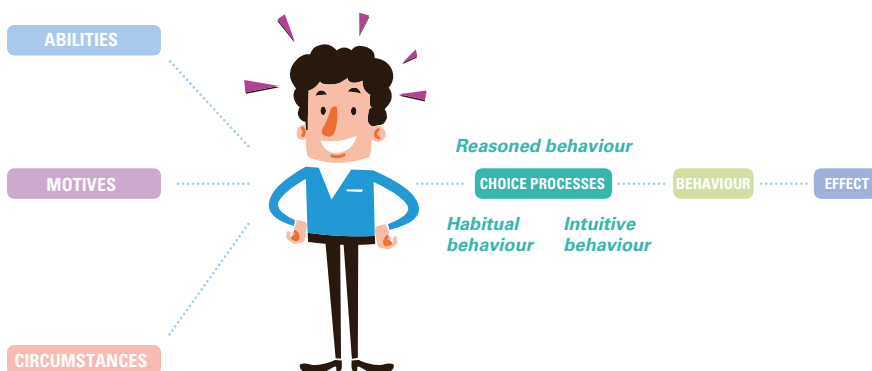
Informal structures and differences in status and power can also influence behaviour. In addition, authorities, organisations and experts also have a certain image and authoritative standing. The level of confidence they inspire will influence both conscious and unconscious behaviour, and thus determine public acceptance of the sustainable products and systems they endorse. In Sweden, for example, the information provided by municipal energy advisors proved a significant success factor within a programme intended to reduce domestic energy consumption. This is attributed in part to the high level of trust and confidence that the Swedish people place in local government authorities (Breukers *et al.*, 2013).

2.5 Choice processes as a determinant of behaviour

People undertake various choice processes via both System 1 and System 2 mechanisms before actually adopting a certain behaviour. They often attempt to save time and effort by basing their behaviour on habit and cognitive 'heuristics'. On other occasions, however, they base their choices and preferences on thorough, reasoned decision-making processes. Behavioural scientists have researched a large number of choice processes. The most relevant in terms of the promotion of sustainable behaviour fall under three headings, which are explained below:

- Habitual behaviour
- Intuitive behaviour
- Reasoned behaviour

Figure 7: The factors underlying human behaviour: Choice processes



CP1 Habitual behaviour

The term 'habitual behaviour' is a general term for all stable types of ingrained, automated behaviour. This type of behaviour is important because it would be impractical, and indeed impossible, to subject every action to a conscious and deliberate decision-making process. Habitual behaviour saves time and effort. The greater the degree of habitual behaviour, the greater the brain capacity that remains available for those matters which do require conscious thought and attention. However, habitual behaviour is problematic if it is contrary to environmental interests (e.g. a preference for unsustainable food products) or self-interests (such as an unsafe driving style). It is also possible that the circumstances have been altered, as a result of which the individual may not be aware that the 'usual' choice is no longer the best choice. For some people, travelling by car is entirely a matter of habit; they take their place behind the wheel without giving a second's thought to whether there may be some faster, less expensive or more convenient alternative (Aarts *et al.*, 1998). As a general rule, we can state that habitual behaviour is only reassessed when the context and circumstances are tangibly altered and the outcomes of such behaviour are no longer satisfying. The change in circumstances may be major and permanent – marriage, divorce, the birth of a child, or the death of a partner – but even the temporary closure of a motorway may prompt a review of habitual behaviour.

CP2 Intuitive behaviour

Many choices and preferences are based on past experience, resulting in 'intuitive behaviour'. Such behaviour is typified by quick solution strategies which people apply to simplify choices so that they are not required to engage in any lengthy, thorough decision-making process. The technical term for such 'rules of thumb' is *heuristics*. Reliance on intuition can lead to distortion of the decision-making process, so-called biases. People rely on insights and assumptions which are informed by their own personal experience and which may not take full account of the actual facts and situation. People apply many different heuristics, meaning the likelihood of bias in decision-making processes is high. Kahneman (2011) offers a comprehensive account of this mechanism. Here, we confine ourselves to a description of some heuristics and biases which are relevant to deciding upon sustainable behaviour.

Heuristics

Heuristics are simple, intuitive 'rules of thumb' which people apply, consciously or otherwise, in order to make quick choices. For example, if someone sees other people buying an unsustainable product, it is more likely that he or she will opt for the same product rather than weigh the costs and benefits of all alternatives. Most people opt to do business with a well-known high street bank (such as ING or ABN AMRO) rather than one which is not so well-known (e.g. Triodos Bank) without enquiring into their respective financial or ecological performance. In any cases, the use of heuristic, intuitive choice processes leads to perfectly acceptable

outcomes, but not necessarily to the best or most sustainable outcome. Intuitive thinking is generally automatic and non-deliberate, as people can only consciously devote attention to a limited number of issues. Some important heuristics for sustainable behaviour include:

- *Social proof*

If people are wavering, they may learn new behaviour by using information about what others do in a similar situation (Cialdini, 2009). This type of heuristic mechanism can be particularly relevant in terms of environmental issues, which are generally very complex and dynamic. For example, if people are unaware of the speed limit on a stretch of road, they will usually adapt their own speed in line with that of other road users.

- *Affective heuristics*

When people do not base their decisions on any rational analysis of costs and benefits, but on 'how it feels', this is called the affective heuristic (Slovic *et al.*, 2004). This mechanism can be seen at work among the proponents and opponents of nuclear energy. The pros and cons of nuclear energy are very complex, meaning few people can consciously take them all into account. People have either a 'good' or 'bad' feeling about nuclear energy, whereupon they come down on one side of the argument or the other. Car use is also heavily reliant on 'feeling' rather than any considered analysis of costs and benefits. People will opt to drive if they believe that they will enjoy doing so (more than, say, taking the train) or that doing so will accord them a certain status.

- *Availability heuristics*

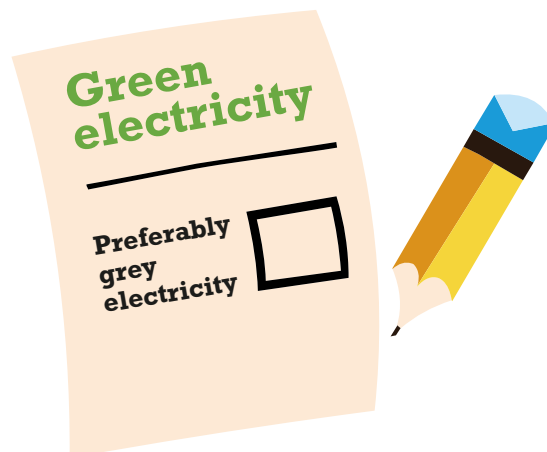
People tend to estimate the likelihood of an event actually occurring based on the ease with which they can visualise its consequences (Tversky & Kahneman, 1973). For example, the Fukushima Daiichi nuclear disaster of March 2011, and the accompanying extensive news coverage, may influence people's assessment of the risks of nuclear energy, whereupon those risks may play a more prominent role in the energy debate.



Biases

Decisions and preferences can be subject to distortion in the form of ‘biases’. There are many examples of such biases. Here, we confine ourselves to some examples relevant to sustainable behaviour.

The first bias at work are what are called ‘anchoring effects’: the outcomes of a certain choice are generally compared to a standard or base level. People are often ‘loss adverse’, meaning that they are more sensitive to negative changes than they are to positive changes of the same magnitude compared to the standard (Tversky & Kahneman, 1981). People have a general desire to maintain the status quo, whereby any outcome which detracts from the current situation is a ‘loss’ which will not be directly compensated by any expected advantages or ‘gains’ (Samuelson & Zeckhauser, 1988). In general, people will therefore favour an alternative which is presented as maintaining the status quo rather than one which is seen to create a new situation (Johnson *et al.*, 2002). A familiar example is organ donation: the number of registered organ donors is higher in those countries which have an opt-out system, thus presenting organ donation as the status quo (Johnson & Goldstein, 2003). Another example: if the perceived norm is that every household owns two cars, a new situation in which the norm is only one car and greater use of alternatives (bicycle, public transport, and car-pooling) will be seen as a ‘loss’ (one car has to go). However, the transition can also be regarded – and presented – as a distinct ‘gain’: lower costs, more exercise (good for the health), with a second vehicle always available when it is needed. As yet, little has been done to promote such an alternative view.



It is relatively easy to influence the perception of the new situation – thus establishing a new reference point – according to how it is presented: as a

loss or as a gain. For example, people seem to attach greater importance to environmental problems when they are told it is possible to restore the former (better) situation, thus negating a loss, rather than being told that it is possible to improve the current situation, thus achieving a gain (Gregory *et al.*, 1993). Moreover, people take greater notice of negative information than to positive information (Baumeister *et al.*, 2001). Choices are therefore influenced by the manner in which the facts and information are presented, known as ‘message framing’. This behavioural insight is already being applied to persuade homeowners to increase household energy efficiency. Traditionally, energy advisors have promoted home improvement by drawing attention to the financial gains that await in the form of lower household energy bills – a strategy based on intuitive behaviour. However, it has proven more effective to draw attention to the *losses* that will accrue if people do not make modifications to their homes: their hard-earned money will literally go up in smoke (Gonzales *et al.*, 1988). The effect of framing depends on the target group. Research reveals that conservative and non-affiliated Americans consider mandatory carbon emission pricing to be far more acceptable when presented as a compensation measure rather than a tax. For progressive Americans, on the other hand, the framing makes relatively little difference since they already supported the idea of mandatory charges (Hardisty *et al.*, 2010).

The second bias that can influence sustainable behaviour is ‘discounting’, which implies that people value short-term consequences more than equal consequences in the future. People are impatient, attaching far greater importance to immediate consumption than to the long-term interests. This is for example reflected by a rapid write-down of the future benefits of energy-efficiency equipment, often exceeding 20% per annum (Hausman, 1979; Gately, 1980). This preference for short-term consequences means that people have different priorities with regard to short-term and long-term outcomes (Loewenstein *et al.*, 2003). There is generally greater reluctance to invest in measures with a particularly long payback period. People prefer to invest in something which will produce immediate benefits. The short-term focus can be explained in terms of an inability to foresee the requirements people may have in future, and is also the result of uncertainty about the future (Loewenstein, 2005). One way in which the effect of discounting can be offset is to incentivise and facilitate long-term consumer investments, perhaps in the form of low-interest loans, pre-financing, or savings schemes with attractive terms and conditions.

The final bias relevant to sustainable behaviour which we will discuss is the effect of certainty, and the attraction of anything that is seen to be ‘free’. Alternatives which can be guaranteed to offer positive outcomes, or at least avoid any negative outcomes, are far more attractive than those with some degree of uncertainty, even if the potential gains are greater (Kahneman & Tversky, 1979). For instance, a product which is absolutely guaranteed to work for at least ten

years is seen as more attractive than one which will *probably* do so (with a certainty of, say, 95%), even if the latter is of better quality. Similarly, a product which is entirely free is seen as more attractive than one for which the consumer has to pay, even if it is very small amount (Shampanier *et al.*, 2007). This principle is now frequently applied in marketing, as in zero-interest car loans and 'free' delivery of products. (In fact, delivery is usually not 'free' but included in the price.) From the environmental perspective, a fully recyclable product is likely to be more attractive than one which can only be recycled in part, even if it is of superior quality. A product or service is more attractive if it is free or offers certainty.

CP3 Reasoned behaviour

Reasoned behaviour entails conscious, deliberate mental effort (Kahneman, 2011). It requires concentration, as the decision-making process involves undertaking a series of steps towards a predetermined objective. As a result, attention for other tasks and considerations will decrease (Baumeister & Tierney, 2011). The rational weighing of costs and benefits made by *homo economicus* is an example of reasoned decision-making behaviour. The purchase of a new car can involve a similar process, whereby the (technical) characteristics and price variables of various models and options are systematically compared. In psychology, the theory of planned behaviour, proposed in 1985 by Icek Ajzen, also assumes that people make deliberate choices, and states that people will tend to select the alternative with the highest potential benefits at the lowest possible cost. Certain types of sustainable behaviour, such as the choice of transport modality or efforts to reduce water consumption, can be explained reasonably well using this theory (Steg & Vlek, 2008).





POLICY INSTRUMENTS TO PROMOTE SUSTAINABLE BEHAVIOUR

3

Government (at all levels) is devoting ever greater attention to the role that behaviour change can play in attaining societal objectives. To date, the use of insights drawn from behavioural science has largely been confined to public information and communications policy. Environmental policy has yet to draw upon this knowledge to any significant degree, based as it is on obsolescent and simplistic hypotheses about the determinants of human behaviour. Without a thorough knowledge of all the factors which influence behaviour – abilities, motives, circumstances, and choice processes – and how they will do so in practice, government interventions are unlikely to be fully effective. Scientific, evidence-based knowledge reveals a far more complex picture of human behaviour than is currently applied, with a far greater number of possible points of departure for policy. The possibilities of behaviour change in support of environmental objectives are not being exploited to the full. Valuable opportunities to improve environmental policy will be missed if the use of behavioural knowledge remains confined to communication instruments. There is even a risk that public resources will be misspent, or that undesirable secondary effects will occur.

‘More with less’: a policy that missed its target

Central government has entered into agreements with the construction industry and housing sector whereby energy-efficiency measures are to be installed in at least 300,000 existing homes each year. The agreements are established in a formal covenant, *Meer met Minder* (‘More with Less’). Encouraging private households to adopt energy-efficiency measures is a complex undertaking which calls for a fully coordinated approach. There are many obstacles to be overcome, which are technical, financial and organisational in nature. A key focus of the ‘More with Less’ programme is to make it as easy as possible for owners to increase their buildings’ energy efficiency without any increase in monthly outgoings. In other words, the measures should quickly pay for themselves. The instruments selected to support the process are communication and advice, with a central ‘front office’ to coordinate implementation. The original target was for at least 2.4 million existing buildings, both residential and non-residential, to achieve a 30% increase in energy efficiency by the year 2020. However, it quickly became apparent that this target would not be met. Evaluations revealed that the programme was too ‘supply-driven’. It did not do enough to stimulate demand for energy-efficiency measures (Schneider & Jharap, 2010).

There appeared to be poor coordination of the activities addressing the demand side and those on the supply side. The 'More with Less' programme shows how attempts to preclude market distortion interfere with the ambition of encouraging sustainable behaviour on the part of consumers. The task of advising consumers about appropriate energy-efficiency measures as well as the task of installing those measures was assigned to participating private sector contractors. In principle, any contractor can take part in the programme, whereupon the company concerned is listed on the (official) website. There are no quality or other selection criteria. Because the programme is co-financed by the government, it does not wish to discriminate but to maintain an absolutely level playing field for all market parties. As a result, it has become little more than a directory of companies which sell energy-efficiency measures. This makes it extremely difficult for consumers to make a reasoned choice of supplier. As far as can be ascertained, no attempt was made to involve consumer organisations in resolving this problem. Although several housing advocacy groups (such as *Woonbond*, VEH, and *VvE Belang*) have run their own information campaigns in parallel to the programme, their activities have not been integrated with those of the covenant itself. It is notable that, with one exception (the *Woonbond* housing advocacy organisation), all signatories to the covenant are either government representatives or private sector companies.

This is all the more remarkable given that the various parties were informed of the basic principles of behaviour change. A report (*Meer met Minder*, 2010) produced by an informal expertise centre set up to make an inventory of promising approaches expressly contains the following conclusions: people do not think in an economically rational manner; money is not always the decisive factor; programmes must be based on research, evidence, and facts; the collective interests are not a prime motivation for individuals; target group segmentation and individual advice are necessary; as the interests, wishes and requirements of consumers are of primary importance, they must have freedom of choice; the programme must be implemented by parties who are regarded as reliable and trustworthy by consumers; and local authorities should act as the intermediary between supply and demand.

Source: Brunsting *et al.*, 2013

Behaviour change in the interests of environmental objectives can be achieved in various ways: as the result of government interventions, or further to civil initiatives which seek to engage the public and foster commitment. Behavioural knowledge can also be used in various ways to promote sustainable behaviour.

The most significant opportunities lie in:

- Enhancing the effectiveness of government policy
- Exploiting the self-organising ability of society

These approaches are described in further detail below.

3.1 Top-down: the government at the helm

The questions that must be answered in order to ensure thorough policy-making by government (at all levels) – as formulated in the Integrated Assessment Framework (IAK; see Section 1.1) – offer opportunities to apply behavioural knowledge in a targeted manner. Questions 3, 4, 6 and 7 of the IAK do indeed go some way towards integrating behavioural knowledge into the policy-making process:

3. What is the problem?
4. What is the objective?
6. What is the most appropriate instrument?
7. What will be the effects?

The following sections examine how behavioural knowledge can be used to enhance the development of more effective policy.

3.1.1 What is the problem? Analyse and identify the behaviour which causes environmental problems

Making a thorough analysis of the problem which the policy seeks to address will strengthen the arguments underpinning the policy and enhance its effectiveness. The Council takes the view that a thorough analysis of the role of human behaviour in environmental problems should form a set component of the overall problem analysis. As environmental problems have widely varying characteristics, they are often the result of similarly diverse types of behaviour. It is rarely possible to identify a single causal factor; the problem may be due to individual behaviour, group behaviour, incidental behaviour, ongoing behaviour, conscious behaviour, or non-conscious behaviour. During the problem analysis phase, scientific knowledge about the mechanisms of human behaviour – how it actually ‘works’ – should be both applied and developed further. Only then will it be possible to gain a full understanding of which factors serve to influence the behaviour underlying the problem in hand, and thus of the most appropriate policy strategies. To do so calls for specific expertise and research in disciplines such as social and environmental psychology and behavioural economics. In addition, leveraging knowledge and experience contributed by society itself will help to ensure that the problem analysis is as thorough as possible and that the outcomes are fully grounded. In general, we can state that both policy strategies and the instruments used will be more effective when there has been prior public consultation (Gardner & Stern, 2002).

A problem analysis involving public consultation

The German region of Schweinfurt planned to introduce the Diftar system, under which waste collection charges vary according to the quantity (weight) and type of refuse offered for collection. Before doing so, the regional authority commissioned a comprehensive study of its population’s behaviour with

regard to waste, examining factors such as the way refuse was offered for collection and the extent to which the various waste flows were already being separated at source. It then became possible to implement the system in a form which seemed most likely to encourage positive behaviour change and reduce the overall quantity of waste produced. Members of the public were expressly asked about any misgivings they might have, and the proposed system was adapted accordingly. For example, it was suggested that there would be an increase in 'waste tourism', with some unscrupulous people attempting to avoid collection charges by depositing their refuse in other people's containers, perhaps in another street or district. The regional authority therefore stepped up its monitoring and enforcement measures. The results of the trial projects were subject to considerable coverage and discussion in local media. This boosted those already taking part, and provided an additional incentive for others to become involved.

Source: Breukers *et al.*, 2013

A thorough problem analysis will always include:

- An explicit definition of the problem, identifying the causes and consequences, which entails answering the following questions:
 - What policy problem must be solved and why? For whom it is a problem?
 - What is causing the problem? To what extent is it the result of human behaviour?
 - What type of behaviour is causing the problem, and what is causing the behaviour? What are its main determinants?
 - Which (groups of) people are contributing to the problem by displaying undesirable behaviour? Conversely, who are displaying the desired behaviour?
 - What determinants of behaviour (abilities, motives, circumstances, and choice processes) are at work in both groups?
- An analysis of societal developments and scenarios which are relevant to the behaviour to be changed, and which influence the policy problem
- An analysis and description of current policy and any civil initiatives (see Section 3.2) which may influence the policy problem, and of their effects on human behaviour, any unavoidable side effects, and all short-term and long-term effects

The Behaviour Analysis Framework described in Chapter 2 will provide a valuable aid in this process.

3.1.2 What is the objective: specify the desired outcome of policy in behavioural terms

Once it is known which factors influence or determine the behaviour underlying the policy problem, it is time to define the new 'target' situation which the policy to be implemented will, hopefully, bring about. This also entails defining the desired sustainable behaviour and the contribution it will make to resolving the problem.

The policy objective must be defined as explicitly as possible. Establishing clear objectives helps to formulate an effective policy strategy. Every statement of the policy objectives should therefore include:

- An accurate description of the situation that the policy is intended to bring about
- An explicit description of the desired behaviour that people (perhaps specific groups) will be expected to display, and how that behaviour will help to create the desired situation
- A description of the unsustainable behaviour that is to be changed, and what effects doing so will have
- A description of the (groups of) people whom the policy will target

Not everyone in society is able to make an equal contribution to the attainment of environmental objectives, and not everyone will show the same level of sustainable behaviour. This is partly due to differing motives, preferences, values, and norms, as well as demographic or cultural characteristics, but also relies on the degree to which people have already adopted sustainable behaviour and on their access to relevant information. In addition to identifying those who are displaying unsustainable behaviour (and why), it is therefore necessary to look at those who have already adopted more sustainable behaviour, and the abilities, motives, circumstances, and choice processes which have helped them to do so.

Based on the above considerations, policy-makers will then go on to formulate measurable criteria, preferably further to public consultation. Those criteria will then be used to monitor and evaluate the effectiveness of the policy strategies. For example, is the policy intended to encourage people to abandon the use of the car altogether, to opt for more sustainable modes of transport, or to adopt a more economical style of driving when they do take to the road? The more specific the objective, the easier it becomes to identify the behavioural factors that must be influenced in order to achieve that objective. Explicit assessment criteria facilitate monitoring and evaluation once the policy has been implemented. Effective evaluation may prompt some revision of the objectives, giving rise to even more successful policy in future.

3.1.3 What is the most appropriate instrument?

Policy instruments which will promote more sustainable behaviour and ways in which to maximise effectiveness

A policy strategy is a framework, an outline plan stating the action that will lead to the attainment of the intended policy objective. The implementation of a policy strategy entails the use of diverse policy instruments, either individually or in combination. Policy instruments can be defined as “all resources which are or can be used by or on behalf of government in the pursuit of one or more policy objectives” (Bressers, 1994; here in translation). The choice of a (set of) policy instruments, and the design of those instruments, determine the extent to which behaviour can be influenced and made more sustainable. This advisory report is concerned first and foremost with sustainable behaviour; the policy strategy is then derived from that behaviour. A well-grounded choice of policy strategy and the associated instruments requires more than knowledge of the costs and organisational aspects. It also calls for knowledge concerning: 1) the abilities, motives, circumstances and choice processes which are at the root of the desired behaviour, and hence of behaviour change; 2) the relevant determinants of behaviour in each of the various groups targeted by the policy; and 3) the manner in which the policy instruments work and the effects they will have.

To arrive at an effective strategy which will attain the policy objective, it is first necessary to identify the behavioural determinants which the strategy will attempt to influence. The next step will be to determine which policy instruments are most likely to be effective in bringing about the desired behaviour change. The Behaviour Analysis Framework which accompanies this advisory report forms a useful aid in selecting policy instruments based on the underlying determinants of behaviour.

A case-study analysis of behavioural determinants: peak-hour avoidance in Brabant

Traffic congestion, particularly during peak hours, not only wastes time but causes additional emissions of harmful greenhouse gases. Many drivers who find themselves sitting in traffic jams could plan their journeys either earlier or later in the day. Some could use alternative means of transport, such as the bicycle or train. Experiments with simple price incentives to avoid peak hours showed promising results. However, once the trials had run their course and the incentives were discontinued, peak-hour traffic volumes not only recovered but exceeded the levels seen prior to the trials. One possible explanation is that some drivers had already been motivated to avoid peak-hour journeys, perhaps for environmental reasons. During the trial, this intrinsic motivation was replaced by a financial reward. In the absence of the reward, they reverted to travelling during peak hours. In one recent trial project in Brabant, the ‘traditional’ instruments of financial incentives and information were

supplemented by other behavioural interventions. Participants were required to produce a personal 'peak-hour avoidance plan' and were given feedback about their behaviour both during and after the trial. As a result, a significant number of participants have continued to avoid peak-hour congestion even after the financial incentives were withdrawn. The direct objective of this project was to spread traffic flows into the city centres of Eindhoven and 's-Hertogenbosch (Den Bosch) more evenly over time, even when no major road maintenance work is being undertaken. The underlying policy objective was to improve the accessibility of the region, while also pursuing the interests of safety, liveability, and environmental quality. Peak-hour avoidance has a positive effect in terms of reduced CO₂ emissions and improved air quality.

What desired behaviour will achieve the policy objective?

The peak-hour avoidance policy targets motorists who use the same route several times each week during the busiest time of day, attempting to persuade them to adapt their routine and travel behaviour. They are encouraged: 1) to travel at a different time of day; 2) to take a different route; 3) not to travel at all (but to work from home); or 4) to use some alternative means of transport, such as the bicycle, bus, or train.

Which determinants of behaviour play a dominant role?

A thorough examination of the policy problem using the Behaviour Analysis Framework which accompanies this advisory report suggests that the following factors play a significant part in determining behaviour, and hence in the attainment of the objectives.

Motives

- *Social norms*

If the majority of people opt for a particular form of transport, it quickly becomes the social norm. Sitting in traffic jams, surrounded by other drivers in the same situation, therefore has a self-reinforcing effect. Conversely, the perception that a significant number of other people are avoiding peak-hour congestion (by whatever means) is likely to encourage the individual to do likewise. That said, there are also some motorists who take advantage of the reduction in traffic volume and improved accessibility due to the success of peak-hour avoidance schemes, showing 'free-rider' behaviour by continuing to drive during peak hours. The Brabant trial took advantage of social norms by providing feedback about what other participants were doing, and by asking people to demonstrate their ongoing commitment: an appeal to the social norm of consistent behaviour.

- *Self-efficacy*

Not everyone is confident of his or her ability to help solve the traffic jam problem, and many people are unaware of the alternatives open to them. The participants in this project were required to draw up a personal

‘peak-hour avoidance plan’, a process which forced them to consider the various possibilities and opt for a particular course of action. Self-efficacy was therefore increased at a stroke, without actually introducing any new opportunities for peak-hour avoidance.

Circumstances

- *Physical circumstances*

The availability of other options (alternative means of transport, alternative routes and so forth) combines with self-efficacy to determine whether someone will alter his or her behaviour (i.e. start avoiding peak hours), and how.

- *Technological circumstances*

Behaviour can be influenced by technological tools and resources, such as readily available traffic information which enables the driver to consider all options. This project therefore made in-car computers available, although few participants (approximately 20%) actually used them. Systems such as this can influence various behavioural factors: they provide information about congestion, suggest alternative routes and transport modalities, tell the driver how much time or fuel he or she will save (or has saved) by adopting an alternative, and offer feedback about driving style, including positive reinforcement of the desired behaviour.

- *Social circumstances*

If people wish to avoid driving to work during the peak hour, their conditions of employment must permit them to seek alternatives. Is it possible to arrive at the workplace earlier or later in the day? Can they work from home? Does the employer provide a company car, or perhaps a public transport season ticket?

Choice processes

- *Habitual behaviour*

For many, the daily commute from home to work is a matter of routine. The personal peak-hour avoidance plan required participants to describe their new behaviour, which must therefore be considered by means of a conscious, reasoned process. Ingrained habits were broken: System 1 behaviour was supplanted by System 2 behaviour.

- *Intuitive behaviour*

- Anchoring effects: Motorists invest money in their vehicle, whereupon they will perceive discontinuing its use as a ‘loss’.

An effective policy strategy must address the combination of all the above behavioural determinants in order to achieve the stated objective. In this trial, the policy strategy drew upon experiences from earlier projects while also applying current behavioural knowledge.

Source: Brunsting *et al.*, 2013

Available policy instruments

Policy instruments change abilities, motives, and/or circumstances, whereupon behaviour itself is influenced by means of the choice processes. The influence applied to the behavioural determinants can be direct or indirect, i.e. via other factors. For example, self-efficacy can be influenced by means of altering the technological circumstances. Intuitive choice processes can be managed indirectly by changing the physical circumstances. There are various ways in which policy instruments can be categorised. We have chosen to group those most relevant to behaviour change under four headings:

- *Physical and technological instruments*

The basic principle underlying the use of physical and technological instruments is that people's behaviour is largely determined by their circumstances ('setting') and the resources at their disposal.

- *Legislative instruments*

The use of formal regulation, in combination with enforcement, assumes that the rules and regulations are internalised by the people whose actions they are intended to control.

- *Economic instruments*

The use of economic instruments assumes that people will respond in a reasoned, rational manner, adopting whichever behaviour choice has greatest benefit at lowest costs.

- *Communication instruments*

Some communication instruments are based on the assumption that people make reasoned choices, and that their behaviour can be changed by altering their perception of the problem and of the costs and benefits (financial or otherwise) of their behaviour. Other communication strategies target the unconscious, associative choice processes.

Of course, policy problems and objectives can call for the development of instruments which are not yet available or not yet in widespread use. In the Council's view, the use of behavioural knowledge in policy processes will almost inevitably lead to the further development of both existing and new instruments, since new insights will be gained when analysing behaviour, and new examples of (successful) behaviour change processes will emerge when testing the various instruments in practice. Developments in technology and in the field of behavioural science itself will offer ample opportunities in this regard. In recent years for instance, the development of 'ambient technology' has made it possible to provide immediate and personalised feedback through a variety of 'natural' interfaces. Users can process information more easily, without undue cognitive effort. Another example is the rapid penetration of the smartphone in combination with the use of social media. A growing number of people now have information (although not necessarily *correct* information) literally at their fingertips. This has a marked influence on behavioural determinants such as problem awareness and self-efficacy.

Types of instrument and their effectiveness

Below is an overview of the four main types of policy instrument and their effectiveness in promoting sustainable behaviour.

Physical and technological instruments

Physical and technological instruments seek to influence the setting within which people make the choices which determine their behaviour. The term 'setting' is open to broad interpretation. It can refer to the design of the physical (human) environment, or to the (technological) resources to which people have access. These instruments can influence both conscious (deliberate) and unconscious (associative) decision-making processes. They can be used to delineate options which are open to the individual and to enhance self-efficacy. Physical and technological instruments can be coercive in nature. Speed bumps and road narrowing are examples of physical 'traffic calming' instruments which compel motorists to reduce speed. Instruments can also be less prescriptive in nature, seeking to facilitate desired behaviour, as in the case of separated waste containers. Various types of physical and technological measures exist.

In *spatial planning* processes, government (often at the regional or local level) decides where economic centres, residential clusters, infrastructure, green amenities and so forth are to be located in relation to each other. Effective coordination of urban and infrastructural development at an early stage of the spatial planning process creates outstanding opportunities to promote sustainable behaviour in the longer term. Accessibility can be enhanced, and sustainable mobility encouraged, by siting key urban functions close to multimodal transport hubs, for example (VROM Council, 2009). Appropriate conditions for sustainable domestic energy consumption and good waste management can also be created when planning new development. The existing spatial structure, on the other hand, is a 'given'. Here, different policy strategies are possible. People can be encouraged to make (more) sustainable choices by ensuring that the appropriate alternatives are *available* to them (Van Raaij, 2002; Stern, 1999; Ölander & Thøgersen, 1995). Providing good public transport services, for example, will encourage people to use them in preference to the car. Wide, accessible roads are likely to have the opposite effect, and will encourage motorists to drive at higher speeds. The presence of dedicated cycle paths encourages the use of the bicycle. The *accessibility* of public amenities can be influenced by measures such as pedestrianising city centres or adapting the design of a road (Hajer *et al.*, 2012). This type of instrument enhances self-efficacy and changes attitudes. Moreover, by adapting the range of behavioural choices open to the individual, it also becomes possible to influence behaviour which is based on reasoned decision-making processes. The choices made may eventually become habitual behaviour, especially if the outcomes are regarded as satisfactory or, better still, satisfying.

At the city level, behaviour can be influenced by means of the *design* of the public domain. Copenhagen and Vancouver are notable examples of cities which have incorporated the interests of sustainability firmly in their urban development practice, with 'slow traffic' zones and prioritisation of public transport.

Copenhagen has been laid out in such a way as to bring public amenities (shops, schools, sports facilities) within easy walking or cycling distance for all residents. Its urban design places a strong emphasis on pedestrians and cyclists (in terms of both quality and space), while public transport is convenient and accessible (Roorda *et al.*, 2011).

Behaviour can also be influenced using certain 'associative cues' within the public domain (Broeders *et al.*, 2011). A clean, tidy environment with high-quality polished surfaces encourages respect and responsible behaviour, for instance.

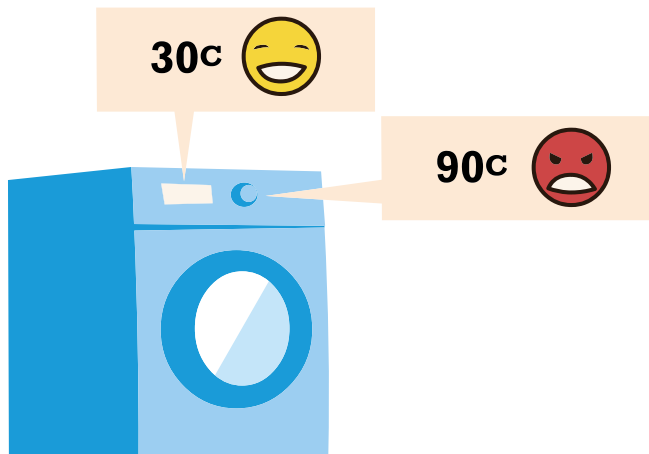
An example of physical instruments in combination

The German region of Schweinfurt wished to introduce a Diftar waste management system, under which collection charges vary depending on the volume and type of waste presented for collection. The key objective was an environmental interest: to reduce the total volume of residual waste. A secondary objective was to spread the costs of waste processing more fairly, according to the 'polluter pays' principle. Thirdly, it was hoped that the system would also reduce costs for individual households. To reinforce the use of this economic instrument, Schweinfurt introduced a number of supplementary structural measures. It created 160 new collection points for recyclables such as glass, metal containers, plastic, paper, and textiles, in addition to the standard street collections. The combination of measures resulted in a significant increase in the volume of waste being recycled.

Source: Breukers *et al.*, 2013

Persuasive technology is a technology that is used to draw people's attention to the desired sustainable behaviour. The rapid emergence of 'smart' systems, in combination with new knowledge about how systems can be used to influence behaviour, opens many new avenues for encouraging more environmentally responsible choices: it becomes possible to draw attention to sustainable alternatives, provide advice on necessary maintenance, offer personalised feed-back to help reduce energy consumption, or instil a more economical driving style in the virtual world of the simulator. Rather than applying a 'one size fits all' approach, persuasive technology systems can be adapted to personal circumstances, preferences and objectives with relative ease. The installation of smart technology in homes, offices, cars and on public transport will create many opportunities for providing effective, context-relevant information and for influencing behaviour.

As society becomes ever more ‘digitised’, the volume of data which can be used to support smart technology applications continues to grow (Kreijveld, 2013). A now familiar example is the smart meter which provides instant feedback about energy consumption, not only in the home in which it is installed but also in the locality. This information allows consumers to compare their consumption against the average in their street or area, or against their own past consumption patterns, and to adapt their behaviour accordingly. At present, however, the smart meter offers only general feedback. A smart meter which offers more detailed information will be even more effective.



Persuasive technology can subtly inform users, warn them, reward them, or admonish them. The desired sustainable behaviour might result in a ‘smiley’ face on the display panel, while less desirable behaviour gives rise to a ‘frowny’. Alternatively, indicator lights in different colours could be linked to certain types of behaviour: green for good, red for bad.

Research suggests that this type of technology is particularly effective in influencing the unconscious decision-making processes (Maan *et al.*, 2010). Indeed, these systems are specifically designed to avoid the need for close attention or cognitive effort. Persuasive technology influences behavioural determinants such as emotions, attitudes, and self-efficacy, doing so on the basis of social or personal norms. Persuasive technology can also influence behaviour by offering new opportunities to experience the consequences of behavioural choices directly. It has been shown that not only actual but ‘virtual’ exposure to flooding prompts people to take proactive measures as well, for example (Zaalberg & Midden, 2013). The virtual environment can also be used to instil a more economical driving style, or to allow users to experience sustainable housing concepts before making a major investment.

It will also be possible to create new gaming environments which bring people

into contact with each other (Kreijveld, 2013). Much research is now ongoing to determine exactly how these new media and data facilities can be optimised to support behaviour change, prompting people who live in widely divergent settings to make more sustainable choices.

Legislative instruments

Legislative instruments establish a norm or standard which delimits behaviour. Permits, laws and regulations are typical legislative instruments. Legislation can be either prescriptive, i.e. requiring a certain type of behaviour, or proscriptive, i.e. prohibiting a behaviour. It addresses reasoned behaviour by altering the costs-benefits ratio of certain actions. Legislative instruments also serve to communicate a social norm (“we do not consider this to be acceptable behaviour”) and can influence personal norms (“when this is the law, I will obey it”). Penalties communicate that certain types of behaviour are socially unacceptable and undesirable, and generally have a greater effect than rewards (Mulder, 2008). The imposition of a prohibition often requires some additional support though. For example, leaving rubbish or litter on the street is prohibited by law. This may be brought home to people more forcibly if there are also signs which reiterate that refraining from doing so is the norm. Legislation can be extremely effective in achieving environmentally responsible behaviour, particularly in combination with effective enforcement. Other factors which determine effectiveness are the perceived fairness of the measure (is it just?), and whether it can indeed be enforced in practice. Research has shown that the effectiveness of penalties is largely determined by the risk of being apprehended and by the swiftness with which the penalty is imposed. The actual amount of a fine seems to have less bearing on effectiveness (Skinner, 1969). It is therefore interesting to note that the severity of penalties is a recurring theme within the public discussion.

With legislative instruments, the need for enforcement and a fine collection system raises certain problems, since both are labour-intensive operations and hence expensive. In practice, their use is therefore restricted. The enforcement of legislative measures also demands public cooperation. Measures which enjoy little acceptance because they are seen as unreasonable or unfair are likely to be ignored (e.g. the smoking ban in public bars), circumvented, or sabotaged (e.g. the deliberate vandalising of surveillance cameras). Moreover, the costs of enforcement can quickly become excessive, while the imposition of yet more rules and regulations can be seen as oppressive and lead to public dissent (House of Representatives, 2013). A point for attention is the consistency of legislative instruments, which derives from consistency in policy itself. The rules and regulations are based on various interests and public objectives, not all of which can be reconciled. However, regulations which actually contradict one another will have a deleterious influence on behaviour through motives such as self-efficacy and problem awareness. Inconsistent legislation also undermines confidence

in the social institutions, thus negatively affecting the 'social circumstances' component of the behavioural determinants.

One specific legislative measure which can encourage consumers to make more sustainable choices is a *mandatory reflection period*, which may take different forms. One example is the requirement that online purchases can be returned for any reason (or no reason at all). Other examples include a 'disposal and recycling charge' for electronic products, levied at the time of purchase rather than when the item is eventually discarded, and the 'Breath Alcohol Ignition Interlock' (BAII), a device similar to a breathalyser which is installed in the car. All such measures serve to defer or delay action, forcing the individual to consider other options. Their effectiveness lies in their ability to engage with emotions and with intuitive choice processes such as 'discounted utility' (Gattig, 2002). In addition, people are more likely to make poor decisions when they are tired. The (forced) deferment of the decision will encourage them to make their choices when in a more alert frame of mind (Baumeister & Leary, 1995).

Another specific form of legislative measure is one which reverses the legal status quo, whereby the most sustainable option becomes the most convenient course of action. An example of a measure which reverses the status quo, although not directly connected with environmental matters, is provided by recent legislation under which subscriptions (to magazines, book clubs, gym memberships, etc.) can no longer be unilaterally extended by the service provider simply because the consumer has failed to cancel on time. Such measures are likely to prompt different choice behaviour on the part of the consumer

Economic instruments

Economic instruments such as subsidy schemes, fiscal arrangements, and penalties are widely used to promote sustainable behaviour. This type of instrument alters the costs-benefits ratio of behaviour, either in a monetary sense or in terms of the time and effort that a certain course of action entails. The assumption underlying most current policy is that people make a reasoned decision, considering all implications of the economic instruments, whereby their primary concern is their personal financial interests. If reducing energy consumption results in a visible decrease in household costs, for example, it is assumed that this positive experience will serve to strengthen and embed the behaviour.

In many cases, economic instruments do indeed influence behaviour. However, they do not do so through the reasoned choice mechanisms alone. Policy based on a pricing mechanism, for example, will only be fully effective insofar as people are aware of fluctuations in prices, and if they are (and believe themselves to be) able to change their behaviour (self-efficacy). Where price alone is the most important criterion, this could undermine the effect of normative considerations, whereby any price incentive will have little effect. It may even have a negative effect because the intrinsic motivation to display more sustainable behaviour

is supplanted by the idea that doing so merits some financial reward (Deci *et al.*, 1999). The effectiveness of financial incentives also depends on the degree of effort involved in claiming them. If the (financial) savings achieved through reducing energy consumption are not proportionate to the degree of effort or inconvenience involved, a financial incentive will be less effective (Heyman & Ariely, 2004). Handgraaf *et al.* (2013) found that office staff are more likely to turn off computer monitors when they are publicly commended for doing so than when they are offered a cash reward.

Economic instruments in practice

Encouraging waste separation at source

Diftar (a waste management system with differentiated charges for different types of waste) is an economic instrument which can be applied at the municipal level under the provisions of the Environmental Management Act (WM). This Act entitles local authorities to impose a charge to cover the costs of collecting and processing (domestic) waste. The amount of the levy, and how it is collected, are left to the local authority's discretion: it may be a fixed charge, but it can also be differentiated. It is, for example, possible to weigh the refuse that each household presents for collection and the frequency with which they do so, taking account of the different waste flows such as dry waste and organic waste. This 'registered collection' forms the basis of the Diftar system, in which a lower (perhaps zero) rate is applied to organic waste which has been separated at source.

Diftar is therefore an economic (fiscal) instrument which seeks to reduce waste flows and encourage separation at source by appealing to the reasoned choice processes. It alters the financial costs-benefits ratio for the householder. The risk is that people will attempt to avoid paying at all by dumping their refuse elsewhere: the phenomenon known as 'waste tourism'.

Peak-hour avoidance

Peak-hour avoidance schemes attempt to persuade motorists who regularly use the same route during peak hours to alter their daily travel routine. A trial project in Brabant applied a broad range of instruments, including a price incentive whereby participants were given a financial reward (of between EUR 1.25 and EUR 3.50) for each day on which they refrained from driving into the urban centres: a sort of congestion charge in reverse.

Source: Brunsting *et al.*, 2013

Penalties and rewards provide feedback with regard to the choices people make. A penalty, usually in the form of a fine, identifies undesirable behaviour and

assigns negative consequences. People can, for example, be fined for fly-tipping. However, the use of fines has several disadvantages, including the necessity of effective enforcement and – more importantly – the fact that a fine does not necessarily define the desired behaviour. Where enforcement is ineffective or missing, people will not change their behaviour or may revert to their previous, undesirable behaviour (Lehman & Geller, 2008). Influencing behaviour through the fiscal regime or levies has a similar effect to penalties and fines. Tax measures, for example, make it possible to make sustainable products less expensive than the unsustainable alternatives. This requires no enforcement. Rewards address the positive effects of the desired, sustainable behaviour, seeking to encourage the adoption of that behaviour (as in the peak-hour avoidance schemes). Unlike fines, they do not create negative attitudes, unless the reward for the desired behaviour fails to outweigh the disadvantages of adopting it. Rewards are therefore often more effective than fines or taxes (Geller, 2002a; Lehman & Geller, 2008). The use of rewards to support policy is, however, expensive. Moreover, the effect is often only temporary, persisting only while the reward is available and while there is a direct and visible link between behaviour and consequence. The effect of financial rewards on attitudes is thus mostly limited. As noted above, rewards can also undermine people's intrinsic motivation to adopt more sustainable behaviour (Frey, 1992; Geller *et al.*, 1982).

Another way in which certain types of behaviour can be encouraged is through *subsidies*, an approach which has frequently been applied in the environmental domain. One example is the direct investment subsidy for solar panels. Another is the promotion of the use of low-emission vehicles by means of an indirect subsidy in the form of reduced fiscal surcharges. (In the Netherlands, access to a company vehicle is deemed a component of personal income and is taxed as such.) A subsidy works on the same principle as a reward, and it has the same advantages and disadvantages. One significant difference, however, is that subsidies are usually offered in a situation which involves a single, once-only choice. Rewards are concerned with more frequent choice behaviour. Subsidies can also generate effects in others by the mechanism of observation. If a homeowner is given a subsidy to purchase solar panels and is seen to reduce his or her energy consumption (and costs) as a result, this positive experience is likely to influence the purchasing decisions of neighbours, encouraging emulation. A disadvantage of subsidies is that they are often claimed by people who would have made the sustainable choice even in the absence of any financial assistance. The subsidy therefore has no additional effect in terms of sustainable behaviour. There can be differences between the behavioural effects of subsidies and those of taxes and levies. A tax on unhealthy, high-calorie food products has been shown to prompt consumers to choose healthier alternatives. A subsidy on healthy foods, on the other hand, has been shown to increase the consumption of less healthy products as well, since the amount saved on low-calorie food was spent on high-calorie products (Epstein *et al.*, 2010). This is termed the 'rebound effect'.

Interest-free loans, microcredit and pre-financing arrangements increase self-efficacy. In addition, interest-free loans and pre-financing also appeal to intuitive behaviour: the attraction of something which is 'free' and the focus on the short term. Various city authorities, including Amersfoort in the Netherlands and Ostend in Belgium, have provided interest-free (or very low-interest) home improvement loans, the condition being that the alterations must reduce energy consumption (e.g. insulation, solar panels, heat exchangers, etc.).



Communication instruments

Communication instruments take many forms. As a general rule, communication instruments are often an essential element of any policy strategy. They convey information to provide new knowledge, to persuade, to convince, or to tempt. They seem to be most effective when used as part of a policy strategy which includes various other types of instrument (Steg & Vlek, 2008). The effectiveness of communication instruments is often determined by the trust and confidence that people have in their source: the 'sender'. There is an ongoing trend whereby people are placing less trust in the social institutions and somewhat more trust in the (social) media. One survey, the Edelman Trust Barometer 2012, reveals that trust in government – an area in which the Netherlands has traditionally scored above average – is declining and being replaced by 'peer trust'. In other words, a message sent by a public sector authority now meets with a greater degree of scepticism than would have been the case only a few years ago, while people's opinions are increasingly being informed by personal contacts, the (new) media, and the internet (Brunsting *et al.*, 2013).

Communication instruments can have various objectives, including:

1. *Increasing knowledge*

People's awareness of environmental problems can be enhanced, as can their knowledge of alternative, more sustainable behaviours. In general, this type of

communication does not in itself bring about behaviour change (Steg & Vlek, 2008; Midden *et al.*, 1982).

2. *Persuading people to change their behaviour*

Information intended to strengthen altruistic and biospheric values can lead to more sustainable behaviour. This may, for example, be achieved by urging people to commit to sustainable behaviour and to require them to describe how they will do so (Bamberg, 2002). This approach formed part of the Brabant peak-hour avoidance project, in which participants were required to produce a personal 'avoidance plan'. Similarly, personalised information which addresses the individual's specific requirements and perceived obstacles to sustainable behaviour can be an effective means of achieving behaviour change.

3. *Reinforcing the social norms*

Informing people about the views, opinions and behaviour of others can alter or strengthen (their perception of) the social norms. The information may describe the behaviour of others, thus offering a descriptive norm or social proof, or it may present 'best practice' examples as provided by role models (Schultz *et al.*, 2007).

4. *Framing the social problem or behaviour*

The message can be presented in such a way as to emphasise the implicit key values. The framing helps link the message to the desired frame of mind and subsequent choices. For example, a message which requests attention for energy *efficiency* is more likely to be well received than one which condemns energy *wastage*, even though the objective is the same. Framing attaches importance to the interests of the recipient, rather than those of the sender. The framing, and hence the message itself, will not be effective if it fails to take the recipient's likely response into account.

Environmental issues are by no means the highest priority for every member of society. They are not 'top of mind', particularly if addressing those issues demands time, energy or money which could be devoted to other, more personal interests. The promotion of sustainable behaviour will therefore enjoy more chance of success when based on interventions which do not demand a lot of time or conscious effort. People can be encouraged to devote some attention to sustainable behaviour almost *en passant*, without the need for an extensive effort, and this can have implicit effects on their actual behaviour. This is possible in various ways. Simple warnings, reminders (so-called prompts) and information encapsulated in very brief messages can all influence behaviour in a way which will further the attainment of the environmental objectives, perhaps by altering perceptions of the alternatives available, by activating norms, or by reminding people of the good intentions they have expressed in the past. To avoid 'information overload', the message must be presented in a simple, easy-to-digest form. Examples include per-unit prices on grocery products to aid comparison, a statement of the effective interest rate of a loan, labels, consumer reviews, and product comparison sites. Matching the information provided to the wishes,

requirements, abilities and current views of the recipient(s) has been shown to be important (Abrahamse *et al.*, 2007). It is possible to do so through stronger alignment with the existing social networks at the local level (the neighbourhood, village, company, school, etc.) and with the social media. This 'community approach' has proven effective in promoting more sustainable behaviour in a number of areas, including waste separation, home improvement, solar energy uptake, and car usage (Abrahamse & Steg, 2013).

The manner in which alternatives are presented can take advantage of the intuitive choice processes to influence behaviour without restricting freedom of choice (Camerer *et al.*, 2003; Thaler & Sunstein, 2008). Again, there are several possible approaches. One familiar example is changing the 'default' option, as in the case of organ donation registers. Some countries, including Austria, Belgium, and France, have an 'opt-out' system: people are assumed to have given consent for their organs to be harvested unless they indicate otherwise. Research shows that some 85% of people are indeed willing to donate. Other countries, including the Netherlands and Germany, have an 'opt-in' system under which people must actively have their names placed on a register. The percentage of the population actually doing so is between 4% and 28% (Johnson & Goldstein, 2003). Another example: it seems that people are willing to spend more on a new car when the price "includes all optional extras" than when they have to select the extras and pay for each separately, even though the total price would be exactly the same (Park *et al.*, 2000). Another way in which to influence choice is by presenting the alternatives for behaviour in a different order or relative position. In a supermarket, for example, sustainable products can be positioned prominently at eye level, thus prompting shoppers to choose them. The same principle is used by search engines such as Google. Most people instinctively click the first 'hit' on the list, even though it may be no more or less relevant than the second (Joachims *et al.*, 2005). These ways of influencing choice draw on the framing effect, on habitual behaviour, and on the anchoring effect.

Interpersonal communication enhances the individual's self-efficacy and helps to remove biases from the decision-making process, where these biases would prove an obstacle to the desired behaviour. Examples of interpersonal communication include personal advice, the use of volunteers to inform the members of their social networks about sustainable behaviour, and the 'block leaders' approach, in which those showing the desired level of sustainable behaviour are held up as role models for others in the neighbourhood. This may involve appealing to social norms and attitudes. Interpersonal communication is more effective when the ties between people are strong and there is a high degree of mutual trust (Weenig & Midden, 1991). One clear illustration of the effectiveness of interpersonal communication is that the most accurate predictor of whether someone will install solar panels is whether his or her neighbours have already done so.



An example of interpersonal communication

In 1998, the Swedish government introduced the *Local Energy Advice Programme* (LEAP) in order to reduce domestic energy consumption. All 290 local authorities in Sweden appointed an energy advisor to provide homeowners and small businesses with objective, free advice on ways to improve energy efficiency and to become more sustainable, whether by reducing consumption or by adopting the use of 'renewables' such as solar and wind energy.

LEAP has been reasonably successful in motivating households to reduce energy consumption. A survey of householders who received advice in 2008 and 2009 reveals that 78% went on to implement at least some of the energy advisor's recommendations. Over 25% state that the energy advisor was their main, or sole, source of information. A 2012 case study partly attributes the success of LEAP to the high level of confidence that the Swedish people have in local government. They saw little reason to question the reliability and impartiality of the advice they were given.

Source: Breukers *et al.*, 2013

There are various ways in which the *provision of comparative information* can aid purchase decisions or alternative behaviours. The use of labels, such as those indicating an appliance's energy consumption, promotes sustainable behaviour by increasing response efficacy, self-efficacy, and problem awareness. Labels are also intended to overcome the consumer's preference for short-term gains – a lower purchase price – by revealing the longer-term gains in the form of lower energy bills, which may otherwise have lost out (Antonides, 2011). Information can also take the form of user reviews, an approach adopted by

many online retailers. User reviews offer 'peer information' which is offered to potential purchasers by actual purchasers. They therefore influence the choice process based on social comparison, availability heuristics, and anchoring effects. Moreover, user reviews enhance self-efficacy. A more advanced (and more professional) approach is the use of 'recommender systems', which apply intelligent algorithms to offer individualised support in making an appropriate decision (Knijnenburg & Willemsen, 2009).

An example of labelling

The Netherlands introduced the 'Energy Label for Dwellings' in 2008, partly further to the European Energy Performance of Buildings Directive (EC 2002/91/EC). As stated in Part 1 (Section 5.2), the Energy Label system is soon to be revised. The following description relates to the original objective of encouraging homeowners to invest in energy-efficiency measures. The underlying principle was that behaviour could be influenced and changed by means of information. Although the law requires anyone selling a property to obtain an Energy Label for the benefit of potential purchasers, there is no penalty for not doing so. In other words, the institutional circumstances do not support the instrument.

In practice, the Energy Label seems to play very little part in consumer choice behaviour on the housing market. One reason is that, as an information instrument, it lacks clarity and reliability, thereby failing to prompt action. Potential purchasers consider many other aspects of a property to be more important than its energy efficiency: location, the number of rooms, floorspace, whether there is an outdoor area, and of course price. Home buyers in the Netherlands who were presented with an Energy Label rank it as only the tenth most important source of information supporting their decision-making process. An international comparison of ten countries reveals that confidence in the Energy Label is lowest in the Netherlands. This may partly be due to bad publicity surrounding the announcement of the new label.

By contrast, the Energy Label for electrical appliances has been successful in the Netherlands. Consumers show a clear preference for energy-efficient alternatives, and this has prompted manufacturers to adapt their product range accordingly. Under European legislation, manufacturers and retailers must rate the energy consumption of all 'white goods', and the resultant label must be clearly displayed. The success factors of the Energy Label for electrical appliances include:

- *Clarity*

The Energy Label presents clear, standardised information. The energy efficiency of any type of refrigerator can be determined by consulting its annual energy consumption. Through the use of recognisable icons, the

differences between products can be compared at a glance (attention value).

- *Comparability*

Relative decisions are easier to make in the case of electrical appliances because, unlike houses, they are directly comparable. Having narrowed down the options based on the usual consumer considerations (type, dimensions, design, and appearance), it still remains possible to choose between the A label and B label.

Source: Brunsting *et al.*, 2013

Modelling involves exemplary behaviour on the part of role models, be they peers or people in the public eye, can influence behaviour in the desired direction. One example of the role model approach in practice is the 'Twitterbike': a customised bicycle which is loaned to various Dutch celebrities and prolific *twitterati* who then tweet about their experiences on two wheels. The objective is to motivate others to make greater use of the bicycle in preference to the car. The normative feedback from the actions of role models appears to be particularly effective in promoting sustainable behaviour, provided that the behaviour is clear, and the role model enjoys public respect or affection.

Virtual reality and multimedia communication can be used to add direct sensory experiences to the information provided by other communication instruments. They explicate and elucidate a problem or desired behaviour, making a direct appeal to the emotions (Slovic *et al.*, 2004). They also exploit the fact that decision-making processes are often biased, which makes people more susceptible to concrete, immediate information. Intelligent tools can also help to deploy educational communication more effectively and to make it less reliant on location. They will help citizens to adopt sustainable behaviour in a concrete and engaging manner. 'Serious gaming' applications or other virtual settings can also be used to raise awareness of climate risks, ecological decline, and so forth (Zaalberg & Midden, 2010).

Prompts – reminders or brief instructions provided at strategically chosen moments or locations – are also effective in promoting sustainable behaviour. They take advantage of various behavioural determinants, drawing attention to the desired behaviour (availability heuristics), enhancing self-efficacy (you can make a contribution right now). For example, far more of the plastic crockery used in many (staff) restaurants was shown to be recycled because the signs requesting diners to deposit their cups, plates and cutlery in the designated containers were made larger and placed alongside the containers themselves (Werner *et al.*, 1998).

Prompts exert a direct influence on behaviour and are most effective when:

- The desired behaviour is clearly illustrated or explained by the prompt
- Compliance with the prompt is relatively easy

- The message is presented at the location of the desired behaviour
- The message is presented in a friendly way
- There is already a positive attitude to the desired behaviour

(Geller *et al.*, 1982)

One point for attention is that prompts intended to promote sustainable behaviour are often formulated in a way that stresses the unsustainable behaviour. Although such messages draw attention to the problem, they also communicate that unsustainable behaviour is 'normal'. As a result, the message may actually encourage unsustainable behaviour.

Asking people to expressly state their *commitment* to a certain type of desired behaviour, requiring them to undertake to act in a certain way, either verbally or in writing, in public or in private, appears to increase the likelihood that they will indeed adopt the behaviour in question (Geller, 2002b). In one experiment, guests checking into a hotel were asked to show their commitment to sustainability by signing a declaration to that effect and wearing a lapel pin demonstrating this for the duration of their stay. These guests were found to use fewer towels (Baca-Motes *et al.*, 2013). Asking for commitment results in the desired behaviour because people feel honour-bound to keep their promises (personal norms), all the more so if the commitment is made in public (social norms) (Lokhorst *et al.*, 2013; Cialdini, 2001). The effect of commitment can be further enhanced by asking for a written 'implementation intention' (Bamberg, 2002), in which people state how, where and when they will display the required behaviour.

Because people anticipate potential obstacles and plan their response in advance, they are far less likely to be deterred if those obstacles do indeed emerge.

The implementation intention helps to break habitual behaviour, partly because it explicates the undesirable behaviour and partly because the planned, desired behaviour becomes automatic once it has been repeated a few times (Aarts *et al.*, 1999).

An 'implementation intention' in practice

The peak-hour avoidance experiment in Brabant attempted to increase participants' motivation in ways other than direct financial rewards. For example, it required them to draw up a personal 'avoidance plan', which was in effect an implementation intention with regard to their planned sustainable behaviour. The process of producing a concrete and detailed avoidance plan forced participants to devote conscious thought to the actions they could take to avoid peak-hour congestion. This helped them to realise that it is indeed possible to change one's behaviour (self-efficacy) and to overcome potential obstacles. The avoidance plan approach also draws on the principle of commitment and consistency: people prefer to act in accordance with their earlier decisions, words, deeds and attitudes (Cialdini, 2009). The personal

avoidance plan served to strengthen personal norms, becoming an intrinsic motivation to actually adopt the intended behaviour. Because the plan is produced by the participant himself, he will be even more determined to display that behaviour in order to “keep his word”

Source: Brunsting *et al.*, 2013

Feedback strategies provide people with information about their behaviour as well as the extent to which they have been successful in changing that behaviour and have therefore achieved the desired effects. Feedback strategies, which can be supported by new technology such as smart meters and in-car computers, increase problem awareness, response efficacy, and self-efficacy. They therefore help to bring about the desired behaviour change. Moreover, offering feedback about other people's behaviour will influence behaviour by means of the social norm. Such strategies have proven particularly effective in areas such as household energy efficiency. One specific feedback strategy is that of ‘mirroring’, whereby people are forced to reflect on their own behaviour. The term can be applied literally, with an actual mirror on or alongside the table at dinner time, for example. This can help to bring a person's actual behaviour in line with his or her motives (De Kort *et al.*, 2008).



Education is the process which strives to improve knowledge and skills, thus increasing people's ability to achieve their long-term objectives. It is also a means by which people can be made aware of their subconscious motives and intuitive choice processes (Bazerman & Moore, 2009). Education can also involve imparting a skill through practical experience ('learning by doing'). Sustainable behaviour can be encouraged by explaining the effects of unsustainable behaviour, deliberate or otherwise, and presenting appropriate alternatives.

A disadvantage of education as a behaviour change instrument is that, in most cases, people must have the motivation to take part.

Information campaigns often set out to increase problem awareness, response efficacy and self-efficacy, which in turn can have an effect in terms of attitudes and personal norms. Information is a popular instrument in government policy because it is usually easy to implement. The expectation is that the information will change people's attitudes and hence their behaviour. In recent decades, however, we have learned that (mass media) information campaigns often have significantly less impact on sustainable behaviour than intended. They often serve only to draw attention to a particular topic or to increase public knowledge of it. They have limited effect in terms of attitudes and actual behaviour change (Vakrastas & Ambler, 1999). Information campaigns are most effective if people already subscribe to values which are relevant to the intended behaviour. Information about the environmental hazards of plastic drinks containers, for example, will increase public knowledge about those hazards, but it will only lead to stronger intentions and higher acceptance of policy intended to reduce the use of plastic containers among those who already hold strong biospheric values (Bolderdijk *et al.*, 2013). In a mass media campaign, the visibility of advertisements and their message is high but there is no significant effect in terms of problem awareness. In fact, this sort of campaign can actually increase the knowledge gap between the informed (the "I know"s) and the uninformed (the "I don't know"s and "I don't care"s) (Weenig & Midden, 1997). Such campaigns fail to bring about the desired behaviour change for the following reasons:

- They fail to reach certain groups, or fail to devote enough attention to those groups.
- The message quickly becomes too generic to persuade everyone.
- The message is not in line with personal beliefs, values, skills, and knowledge, with local and infrastructural circumstances, or with social norms. As a result, it is not possible to achieve behaviour change, or people may feel that the message is not addressed to them at all.

Information campaigns can be designed to appeal to motives such as emotions, social norms, and personal norms. Efforts to increase awareness of climate risks often rely on the emotional response, with vivid (often harrowing) images of the effects of natural disasters elsewhere in the world (Meijnders *et al.*, 2001). An appeal to biospheric values can be more effective than one which focuses on purely economic considerations, particularly when small financial gains are involved, since it allows people to feel better about themselves (Bolderdijk *et al.*, 2012).

Emotion in information campaigns

Activating negative emotions, such as concern, is one way in which to increase engagement. Meijnders, Midden & Wilke (2001) produced a video about climate change which presented the risks in a particularly vivid and concrete way rather than relying on static, 'matter of fact' information. The video showed the actual consequences of climate change, including the aftermath of a tsunami which claimed many lives and left even more people homeless. The video was shown to a test group who were later found to devote far greater attention to information about ways in which they can help to offset climate change (e.g. by reducing energy consumption) than the members of a control group who had been informed about the same risks in a much less direct, less personal, and less emotive manner.

3.1.4 Establishing the effects of policy: evaluation

Much research is being undertaken to develop new knowledge about human behaviour and the importance of behaviour change in pursuit of environmental objectives. There remains much to discover about the problem-solving ability of policy strategies and policy instruments in relation to behaviour. A strategy may be successfully applied in one domain but its success in another cannot be guaranteed. This may be due to differences in the circumstances in which the policy is applied. To improve the policy design process, the effects of policy interventions must therefore be systematically monitored and evaluated. This will establish whether the policy strategy itself was, or is, successful, and will offer points of departure for further improvement. Effective monitoring and evaluation will also expand the body of (behavioural) knowledge to benefit future policy. To ensure thorough evaluation of a policy, the evaluation criteria should be formulated in advance, i.e. at the same time as the policy objective. Such criteria will enable a complete analysis of the effects of the policy on behaviour to be made.

The evaluation process requires the following questions to be answered:

- How can the effect of the policy be quantified and measured?
- To what extent has each policy instrument – or the combination of instruments – resulted in behaviour change?
- To what extent do the various policy instruments reinforce each other or, conversely, detract from each other?
- Through which behavioural determinants was behaviour change achieved?
- What contribution has behaviour change made in terms of the policy objective, and will the social problem be solved as a result?
- What has been the relevance of the policy context?

Much policy is developed in such a way that its actual effect on behaviour cannot be determined by means of post-evaluation. Small-scale advance policy

trial projects will allow (new) insights and hypotheses to be tested in practice before the policy is implemented in full. This project can then be monitored and evaluated, and assuming that the results are satisfactory, the policy can be upscaled. The use of policy trials entails the following points for attention.

- Evaluation indicators should be formulated in advance, and the trial project should be linked to a monitoring and evaluation programme which is concerned with both the behavioural aspects and the actual effectiveness of the policy.
- The evaluation must be designed in a way which allows the effects of the policy to be ascertained in a reliable manner, with validated results. This entails:
 - *The use of a control group*
Parallel to the trial group, a comparable group of people (who are not subject to the policy intervention being tested) will be monitored to be able to control for any effects due to autonomous developments. The members of both the trial group and the control group should be representative of the target group for the policy.
 - *The determination of a baseline*
Prior to the experiment, a baseline (the starting situation) should be established. This will increase the accuracy of the effects measurement.
- All aspects of the process, methodology and tools must be carefully planned and structured. Applying a questionnaire which is imprecise or ambiguous, for example, can seriously distort the outcomes of the evaluation.

3.2 Bottom-up: society at the helm

Even without any structured government interventions, there is now a clear shift towards more environmentally responsible and sustainable behaviour within society at large. In a 2012 report, the Scientific Council for Government Policy (WRR) identifies three success factors for civil engagement. The first is the existence of ‘initiators’ – people who take up a particular cause and inspire others through their enthusiasm – and ‘connectors’ – people who form the link between social groups, or between those groups and policy-makers. The second factor is respect: people wish to be taken seriously. Lastly, policy-makers must find an appropriate balance between providing support and allowing society to exercise its own self-organising ability, i.e. between the ‘hands-on’ and the ‘hands-off’ approach (WRR, 2012).

There are numerous examples of civil initiatives which are helping to attain environmental objectives. In the energy domain, for example, sustainable ‘green’ energy collectives have been set up in various parts of the country, including those in which citizens band together to purchase and operate solar panels (e.g. *Wij Willen Zon and Zon Zoekt Dak*). A truly sustainable society can only

be achieved if all members of that society feel committed and engaged, and if enough people take an active part in this type of initiative. Changes which enjoy broad public support are demonstrably more effective and more stable than those which do not. Some civil initiatives serve to reinforce existing (top-down) policy intentions, while others diverge from those intentions to some degree. A common feature of many civil initiatives is that, at their start, they involve highly motivated people who are more than willing to change their behaviour. This forms a solid basis from which to influence and inspire others. However, not all environmental objectives can be met through civil initiatives alone. In the Council's opinion, the top-down approach whereby the government remains firmly 'at the helm' will remain necessary. The challenge will be to link societal engagement and government policy in a way that produces a mutually reinforcing effect.

The value of civil initiatives

Civil initiatives have several key strengths. They can address the very specific requirements of their participants and target groups, they are flexible enough to take account of abilities and circumstances, and they can mobilise the resources (manpower and money) available within the community (Gaskell & Joerges, 1987). Civil initiatives are a manifestation of social relationships at work, and of the self-organising ability of 'the energetic society' (Hajer, 2011). They help people to adopt more sustainable behaviour in certain domains. Because they present credible and viable alternatives to current practices, they make it easier for people to abandon their unsustainable behaviour. Civil initiatives increase self-efficacy and motivate people to become involved by virtue of the social support created by working together in pursuit of common ideals. This teamwork, in which alternatives to 'customary' behaviour are developed as a joint undertaking, can influence the habitual behaviour of participants and observers alike.

The WRR identifies three motives which prompt participants' involvement in civil initiatives:

- They want to change something.
- They do not agree with the current method of decision-making.
- They have been invited to take part.

The Council has examined the motives for involvement in civil initiatives which specifically address environmental objectives. The factors identified are as follows:

- People often begin or join a civil initiative when their customary way of life is disrupted by external circumstances.
- There is an intrinsic motivation for people to lead a more sustainable, environmentally responsible life.
- Social interaction within the initiative reassures people that what they are doing does indeed make a difference; it creates and identifies further opportunities for action.

- Participation gives people the feeling of independence; they do not need the social institutions or other organisations to make things happen.
 - Participation gives people a feeling of social unity: of 'belonging'.
 - In many cases, personal interests play a part. It may be that the civil initiative will improve the individual's (physical) circumstances or result in some other personal benefit which would be impossible to attain when acting alone.
- (Rli, 2013)

These are the motives which prompt people to set up or join a civil initiative. Whether they remain active in the longer term depends on the nature of the initiative. In general, small-scale projects and those based on co-ownership engender the greatest loyalty. The social character of a civil initiative is also an important consideration; people seek the opportunity to communicate and interact with others. Being part of a closely-knit social network encourages long-term engagement. Lastly, people are less likely to drop out if the initiative offers them the (administrative) opportunity to achieve their ideals and objectives and has a realistic prospect of doing so (Rli, 2013).

The role of government

The self-organising ability of society opens many interesting possibilities, not least in the promotion of sustainable behaviour. Social engagement and the resultant civil initiatives offer policy-makers an excellent opportunity to increase their understanding of societal problems and to learn from others' creative solutions. However, the societal dynamic is not always neatly aligned with the political decision-making processes and the top-down approach in which the government is firmly 'in charge' (see Section 3.1). Civil initiatives are extremely diverse in scale, objectives, and outreach. Precisely what they are intended to achieve is not always unequivocal, while some may serve no public interests at all. Assuming that the government is to retain overall control, it must take all interests into consideration but attach greatest weight and priority to the public interests, which must be upheld at all times. Nevertheless, the Council believes that both approaches – top-down and bottom-up – are needed in order to promote sustainable behaviour. The challenge will be to link and coordinate these two paths so that they become mutually reinforcing. The implications in terms of the government's role and the stance that policy-makers must take towards civil initiatives have been examined in several recent studies and advisory reports, including those produced by the Scientific Council for Government Policy (WRR, 2012), the Netherlands Institute for Social Research (SCP, 2012), and the Council for Public Administration (ROB, 2012). This high level of interest reflects the topicality of the subject matter. Achieving synergy between civil initiatives and government policy makes high demands on the competencies of policy-makers, as well as on the administrative and political processes and systems. Government must master the art of 'letting go'; it must know when its input is required and when it is not. It is the government which creates the preconditions for social

engagement and societal initiatives, but it cannot demand creative input. It cannot compel people to become actively involved. Government can take a democratic decision to delegate some of its traditional tasks and responsibilities to other parties, but it cannot require those parties to assume those tasks, and neither can it dictate how these tasks are to be performed (WRR, 2012).

The quest for an adequate definition of the government's role and the most appropriate attitude for policy-makers to adopt is still ongoing. In this advisory report, we will therefore confine ourselves to offering a few recommendations whereby policy-makers can exploit the strength of bottom-up initiatives in pursuit of environmental objectives.

Appreciation

Civil initiatives offer members of the public a channel through which to make a real contribution to the attainment of environmental objectives. Although the initiatives are not always entirely in keeping with formal policy, they can provide a realistic prospect of behaviour change. Moreover, civil initiatives offer practical experience from which government can draw lessons. Accordingly, they should be shown due appreciation. By doing so publicly, the government will create extra motivation for continuation, expansion, or emulation. A minister might commend an initiative in a speech or official statement, for example, or by means of a personal visit.

Acceptance

As stated above, the focus of a civil initiative is often different to that of government policy or the formal environmental objectives. There is a different balance of interests and requirements; there is no direct link with government objectives or with the way in which policy defines sustainability and how it is to be achieved. Policy-makers must learn to accept these differences in approach. It may nevertheless be useful to monitor the initiatives, periodically evaluating their contribution towards the formal environmental objectives.

Information

The societal dynamic can be boosted and strengthened by ensuring that citizens have appropriate information, such as that relating to nutrition and diet, energy consumption, mobility, etc. Information about the environmental performance of private sector organisations and the government itself is also relevant. Readily available information about a particular topic can provide a firm basis for the (further) development of civil initiatives. A growing number of examples illustrate that sharing information and (statistical) data encourages creative solutions, often with a secondary economic benefit (WRR, 2012). Government departments gather and record a large volume of statistical data and other information. All such information should be made available to civil initiatives to place them on an equal knowledge footing with policy-makers.

Facilitation

An essential precondition for the existence of civil initiatives appears to be their independence from government. Accordingly, it is appropriate for policy-makers to maintain an appropriate distance. However, government can provide support by creating a setting within which civil initiatives can thrive. This is the intention of the Green Deals programme, under which central government will create the conditions necessary to facilitate the establishment and continuity of civil initiatives, such as access to the capital market. The government will also act as coordinator where required. Government can also facilitate civil initiatives by removing unnecessary obstacles. For example, overly stringent food safety regulations constrain initiatives which address food wastage, while the 'feed-in' of surplus locally generated energy to the national grid is made difficult or unattractive.

Encouragement

A civil initiative does not always take off 'under its own steam', even where the potential exists. As noted above, government cannot compel citizens to launch or join a civil initiative. It can, however, encourage them to do so by appealing to the reasons and motives for social engagement. This may entail activating social networks or applying the 'block leaders' approach. Block leaders are people who already show consistent sustainable behaviour. They act as role models, persuading their neighbours to do likewise and offering any necessary instruction. The approach has been shown to be particularly effective when people can see similarities between themselves and the role models or other (often similar) members of the network (Cialdini, 2001; Burger *et al.*, 2004).

Learning

The lessons which government draws from civil initiatives can help it to improve its own policy. What information formed the 'trigger' for a civil initiative? Can that information be actively communicated to others to encourage emulation? Effective monitoring and evaluation of civil initiatives is of key importance in this regard.

exQUISIT

ENERGO

енергия - energy

GB 05 A+

A+++

A++

A+

A

B

C

D

A+

WHAT CAN – AND MUST – THE GOVERNMENT DO TO PROMOTE SUSTAINABLE BEHAVIOUR?

4

Government at all levels exerts considerable influence over the behaviour of the populace, doing so in virtually every situation and at all times. Even if the government does nothing and introduces no new policy, this very fact will influence human behaviour. Often, people consider it perfectly logical and acceptable that the government influences their actions. The use of behavioural insights within policy intended to encourage more sustainable behaviour does, however, raise certain ethical and normative issues which are addressed in this chapter⁵. Those issues can be encapsulated in just one question: how far can and should the government go in using behavioural knowledge and to encourage sustainable behaviour? These issues are directly related to question 5 of the Integrated Assessment Framework (IAK): “What justifies government intervention?”

In any discussion of the ethical and normative issues, two aspects quickly become intertwined. Both relate to the legitimacy of environmental policy itself (Section 4.1) and to normative questions about how far the government can and should go in using behavioural knowledge to encourage more sustainable behaviour (Sections 4.2, 4.3 and 4.5). Section 4.4 examines the question of whether the government should be permitted to do more than the private sector, or vice versa. This chapter concludes with a consideration of the socially acceptable and democratically legitimated means by which the government can help people to change their behaviour in pursuit of environmental objectives, and of the associated conditions (Section 4.6).

4.1 The legitimacy of environmental policy

Governments develop and implement environmental policy further to their responsibility for safeguarding public environmental interests. A public environmental interest may be defined as any matter of general, societal importance for which government assumes responsibility because it is not possible to establish and safeguard that interest without some degree of government control or intervention, for instance due to market failure (such as negative external effects⁶).

⁵ The Council for Social Development (RMO) is currently preparing an advisory report which deals with the use of behavioural knowledge within policy processes. This report will devote greater attention to the normative questions relating to choice architecture, nudging, and the role of the government.

⁶ ‘Negative external effects’ will be seen if the production or consumption of goods or services results in harm or damage to third parties – or in the case of environmental policy, to the environment – where that damage cannot be reversed or compensated.

The government has been given its mandate to assume responsibility for environmental interests by the proportion of the electorate that supports those interests and the instruments chosen to safeguard them.

Legitimacy is also provided by the 'precautionary principle' established by the 1992 Rio Declaration, by European and international climate and environmental legislation, and by the various international agreements to which the Netherlands is a signatory. For example, if the Netherlands has undertaken to generate a certain proportion of its energy requirement from renewable sources by the year 2020, or to achieve a given target for recycling (as it has at the European level), the policy required to achieve these objectives enjoys full legitimacy. The actual design of that policy must rely on transparent, agreed procedures which in turn are based on democratic, legitimate processes. A discussion of the public interests established in this manner, and the resultant legitimated policy, falls outside the scope of this advisory report. It is however appropriate to state that the less contentious a policy is, the greater the democratic support it will enjoy, and hence the greater the legitimacy of government interventions further to that policy.

At first sight, there appears to be a high level of support for environmental objectives, as part of a broader sustainability policy. After all, environmentally responsible and sustainable behaviour helps to preclude any decline in economic prosperity and social welfare, not only for today's generation but for those yet to come, and not only in the Netherlands but throughout the world. However, there are diverse visions of what 'sustainability' actually entails (CBS, 2011). In the absence of any scientific consensus with regard to the 'correct' operationalisation of a policy objective (the exact definition of sustainability), policy choices can only be made on the basis of the vision prevalent at that moment (Daniels, 2000). Daniels coins the term, '*accountability for reasonableness*'. This means that the government must permit democratic control by providing full transparency with regard to the arguments on which it has based its policy decisions. Applying this approach, it is both inevitable and acceptable that most government choices will be made partly on the basis of vision. A policy choice is less socially acceptable if the underlying arguments (including the vision) are contradicted by current scientific knowledge, are illogical, or are (unnecessarily) incomplete (Wesseling, 2013).

4.2 Government strategies to influence behaviour are always normative in nature

Opinions are divided as to whether the government is entitled to influence behaviour in the interests of sustainability and, if so, how far it should be permitted to go in using insights drawn from behavioural science. The difference in opinion is due in part to divergent views with regard to the justification for government action. Many European democracies – the Netherlands included

– attach great importance to the ideal of individual freedom and autonomy. Based on that ideal, the ‘prevention of harm to others’ (or ‘external negative effects’ to use a term derived from economics) is one of the most important justifications for government intervention in citizens’ lives (Korthals, 2013; Wesseling, 2013). The government guarantees individual rights and autonomy by means of legislation which entitles people to make their own decisions based on individual considerations (Bovens, 2013). However, the same legislation must also protect people against harm inflicted by others (Korthals, 2013). Based on this interpretation of its role, the government must establish a framework of conditions to prevent external negative effects, and must provide information which enables people to make their individual choices.

Current behavioural science enables us to state that the provision of information (to enhance awareness) has relatively little effect on the quality of the choices people make. In other words, information alone will seldom bring about behaviour change. Even when armed with information and following a conscious decision-making process, people do not always arrive at the best option for them. As described in Chapters 2 and 3, people make many decisions without conscious consideration. Non-deliberate choice processes based on habitual and intuitive behaviour also play a major role. As a result, the choice processes frequently lead to outcomes which differ from expectations and, in some cases, intentions. In practice, therefore, the government’s role goes somewhat further than preventing harm to others (i.e. negative external effects).

Various public interests have been identified (including health and healthcare, environment and sustainability, education, and income distribution) in which the government has a distinct role and responsibility based on democratic legitimacy. The interpretation of its role depends on political ideals. Some people attach greater importance to the ideal of individual freedom and autonomy, while others base their thinking and actions on the collective interests. There are some who adopt a religious outlook. Regardless of perspective, the question of how far the government is entitled to go in using behavioural knowledge to render policy more effective remains relevant, as does that of how far it is entitled to go in using that knowledge to bring about actual behaviour change. It is not possible to give a definitive, objective answer to either question. However, we can apply normative considerations to determine, or at least suggest, when government strategies to influence behaviour will be socially acceptable and desirable, and when they become manipulative.

4.3 Is the government entitled to stimulate sustainable behaviour?

The question of whether the government is entitled to influence behaviour in pursuit of environmental objectives is one that must be answered with a qualified yes, regardless of one’s interpretation of the role of government. The question of how far the government should be permitted to go in doing so, and

what conditions must apply, is not straight-forward, as behavioural knowledge is constantly expanding. Much current policy is based on the traditional image of the autonomous citizen who enjoys full freedom to make well-considered choices (as in the notional *homo economicus*). However, this image must be updated because we now know that conscious decision-making processes make only a limited contribution to human behaviour (Hindriks, 2013). A government which does nothing more than provide information in the belief that the resultant awareness will enable people to make the best choices is, Hindriks contends, overlooking the complexity of human choice processes. People have divergent interests, they often underestimate the negative effects of their own unsustainable behaviour on others, and are influenced by many factors other than information. It cannot be assumed that making people aware of the effects of their behaviour will lead them to automatically adopt the most appropriate, socially desirable behaviour.

Hindriks (2013) introduces the concept of ‘the citizen as virtual author’ and offers a test to determine whether a particular form of behavioural influence may be deemed legitimate. The ‘citizen as virtual author’ is based on the principle that the citizen must endorse any attempt to change his behaviour, even after the event when he discovers how he has been influenced. In other words: interventions to change behaviour pass the ‘legitimacy test’ if, having been informed of how their behaviour has been influenced, people believe that the choice they actually made remains valid. Conversely, people are extremely unlikely to endorse an intervention if they consider themselves to have been manipulated. Even indirect or incidental behavioural influence by government will pass the legitimacy test provided people still support the intervention after being informed of how they have been influenced. The legitimacy test serves no purpose if the government has good reason to override individual choice and autonomy, which may be necessary to safeguard the established public interests. A good example is the speed limit on roads. Bovens (2013) offers four general principles which determine the acceptability of behaviour change interventions within sustainability policy:

1. A thorough assessment must be made of the costs (of any increase in risks) and benefits (in terms of improved sustainability) which the behaviour change intervention will entail. For example, the costs of efforts to reduce food wastage must be weighed against the risks in terms of food safety which may result from storing food for longer or from consuming leftovers. This is in line with Wesseling (2013), who states that the costs-benefits ratio must be positive. The assessment must also take into account long-term system modifications, or ‘transitions’. The costs of short-term system modifications (which can be high) must be weighed against their long-term benefits.
2. Policy which seeks to bring about behaviour change in pursuit of environmental objectives must take the more vulnerable groups in society into consideration, and must not result in any unfair disadvantage to those groups.

3. In many cases, behavioural policy seeks to 'reframe' a situation so that the desired behaviour is seen as that which best serves the individual's self-interest. To ensure that this reframing is credible, there must be a visible link between the desired behaviour and the reward for its adoption. Government must always make clear why it wishes to bring about the new behaviour, and what the benefits of that behaviour will be.
4. Information provided with a view to bringing about behaviour change must be accurate, factual, and credible. Failure to meet these criteria will diminish or negate its effectiveness.



Wesseling (2013) has developed a neutral assessment model to rationalise decision-making with regard to lifestyle interventions in the domain of health and healthcare based on pressure or coercion. The model can also be applied in the environmental domain, as Wesseling demonstrates in two case studies, 'Difter in Hengelo' and 'Proposed legislation on the disclosure of the energy efficiency of buildings'.

The model attempts to falsify (disprove) the justification for the use of an intervention. If it is not possible to do so, the intervention may be deemed justified and legitimate. The model attaches significant weight to scientific analysis and consensus. If science provides no conclusive answer, the 'accountability for reasonableness' principle is then applied. Korthals (2013) contends that all government interventions intended to prevent one party's actions from causing harm or damage to another party – the external negative effects – are justified and legitimate. In such cases, the government has a duty to act as regulator. Korthals goes on to state that government interventions based on the concept of 'positive freedom' – such as equal opportunity legislation (which provides universal access to education and healthcare services) and measures seeking to promote social creativity – are fully legitimate. Government interventions to influence behaviour must be open to, and draw upon, the creative initiatives which are developed

within civil society in order to maximise their effect and to encourage emulation. Korthals lists five types of behaviour which the government is entitled to influence (and which show a marked similarity with the behavioural aspects identified in Chapter 2):

1. Deliberate malfeasance (e.g. using harmful pesticides, even when aware of the hazards, because they work more quickly)
2. Inertia (making routine or standard choices based on habit)
3. Low assessment of self-efficacy (“I am not able to make a difference so I will do nothing”)
4. Lack of willpower (too difficult to resist temptation)
5. Individual advantages, but against social costs (negative external effects)

Even in such cases, government must assess the proportionality of planned interventions. In other words, the effect of the behavioural intervention (the harm or restrictions imposed on an individual or company) must be proportional to the damage that would otherwise be inflicted on others. In the context of these behaviours, Korthals (2013) offers three important conditions for government control:

1. The creative input of civil society must not be discounted or marginalised (Hajer (2011) considers this point in detail).
2. Government must ensure that behaviour change mechanisms do not exacerbate existing inequalities or create new ones.
3. There must be a balanced consideration of both informal and formal control mechanisms to arrive at an appropriate choice.

In all cases, the government must maintain full transparency, providing relevant information. The measures themselves must be effective and proportional.

Behaviour change interventions are often seen to have low legitimacy because environmental issues such as climate change involve a relatively large distance (in both time and space) between cause and effect (Hoogervorst *et al.*, 2013). Reducing energy consumption, for instance, will not visibly slow the rate of climate change in the short term. The public generally finds it easier to accept government measures in the domains of health and safety, which can show almost immediate effects, than those in the environmental domain, where the adverse consequences of inaction will become apparent only many years later and perhaps in other parts of the world. People attach greater importance to short-term advantage than to long-term disadvantage, which is why the two are not always given the ‘appropriate’ weight within the decision-making processes. This bias (see also Section 2.2) leads to behaviour which has negative external effects for the environment, a fact which would fully justify government intervention. In practice, people will accept an intervention with a positive slant more readily than one which is corrective or restrictive. They will be more willing to change their behaviour if there is some immediate or short-term advantage, such as a better

personal image among their peers, greater social respect, or other social benefits. People will be far more accepting of an energy policy which provides a direct benefit (reward) for the desired behaviour than one which imposes penalties for non-compliance. In general, doing nothing about the environment is not seen as a great problem because people believe that there is plenty of time before any change in their own behaviour becomes absolutely necessary.

4.4 Is the private sector allowed to exert greater influence than the government?

As noted above, government interventions to influence behaviour are subject to a number of restrictions and conditions. In effect, it is often claimed that the government is entitled to do far less than the private sector in influencing behaviour. Is this true?

Companies already engage in strategies to influence behaviour as part of their marketing. They attempt to persuade people to purchase their products or services by drawing attention to the advantages of doing so. However, companies sometimes go even further, drawing upon insights gained through behavioural science. The advantages are then overstated, while the disadvantages are understated (or not stated at all). Marketing techniques also make use of unconscious choice processes, creating or evoking fictive associations (real men smoke; a particular ice cream bar is eaten by beautiful people). To prevent this practice, the government has developed policy and legislation which protects consumers against unacceptable damage as a result of misleading advertising and against the deleterious effects of harmful products. Private sector companies are therefore subject to the restrictions of the existing legislative frameworks⁷.

Companies are also accountable to their customers and shareholders. This accountability is one of the principles underpinning the concept of Corporate Social Responsibility (CSR), which itself is embedded in European policy and legislation. Other stakeholders, including environmental advocacy groups and consumer organisations, are entitled to require companies to justify their sales arguments, as indeed they do. The private sector must therefore ask itself just how far it is entitled to go in influencing consumer behaviour. As consumers and the government learn more about the behavioural techniques used by companies, and how those techniques (might) work, the government will be better able to fulfil its responsibility to preclude any undesired societal effects as the result of a company's actions. It is, for example, appropriate to ban any form of advertising which links tobacco products to sports events, since the association suggests that smoking is healthy. Advertising which encourages children to consume (excessive amounts of) fast food or confectionery might be considered another

⁷ Whether the private sector should be subject to even closer regulation is a question which will not be considered in this advisory report.

legitimate target. When restricting the degree to which companies may attempt to influence consumer behaviour, one possible criterion may be whether people would consider themselves to have been misled once they have been apprised of all behavioural change factors at work, including those deployed by a particular company (Bovens, 2013). In practice, companies do (attempt to) 'mislead' customers by presenting information in a more positive light than the facts can support.

In the Netherlands, advertising practice is regulated by the Dutch Advertising Code Authority (*Stichting Reclame Code*). When a complaint is received, the advertisement concerned is assessed by a committee which applies a number of criteria (the Advertising Code). At present, the committee does not consider whether there has been any deliberate or non-deliberate attempt to influence behaviour, merely whether the advertisement is 'legal, honest, decent, and truthful', i.e. whether the information it contains is factual.

The government also protects consumers by means of various legislative instruments. The *Wet koop op afstand* (Distance Buying Act), for example, allows consumers seven working days in which to return a product purchased online, by telephone, or by mail order. This is intended as a reflection period for those who have (unconsciously) been persuaded to purchase a product which does not meet their (conscious) requirements.

Companies frequently attempt to persuade consumers to purchase a particular item or adopt a certain behaviour. The government, by contrast, usually tries to dissuade them from certain behaviour or actions. It is possible that government interventions to influence behaviour which are based more on positive persuasion will attract greater public support (Korthals, 2013). It goes without saying that the government of a democratic country must not attempt to mislead its citizens. However, a government has responsibilities (such as upholding public interests and safeguarding rights) which are legitimated by means of the democratic processes and judged on the basis thereof. Companies' actions are assessed through different mechanisms, including consumer choice, and they are accountable to their shareholders, the media, and other stakeholders such as consumer organisations and environmental advocacy groups. It is therefore not appropriate to draw a direct comparison between government and the private sector, since each is subject to a different set of rules.

4.5 Should the government attempt to change behaviour in the interests of sustainability

Based on the Dutch constitution, it is possible to contend that, to a certain degree, the government has a formal duty to help the public show more environmentally responsible behaviour. Chapter 1, Article 21 (Environment) of the constitution

states (here in translation), “The care of the government shall be directed towards the liveability of the country and the protection and improvement of the human environment.” Here, ‘care for the human environment’ should be interpreted as including all measures intended to protect and conserve the environment in the broadest sense of the word. The government’s duty of care is implemented by means of various legislative instruments, including the Environmental Management Act (WM), the Soil Quality (Protection) Act (WBB), the Surface Water (Pollution) Act (WVOW), and the Spatial Planning Act (WRO).

Hindriks (2013) contends that some environmental issues are now so urgent that the government has no option other than to introduce far-reaching measures. Bovens (2013) cites statistics which suggest that the Netherlands must address and solve a number of pressing environmental issues. In the case of major public interests which are subject to broad support and consensus, the government does indeed have a duty to intervene. For example, where water defences are at imminent risk of failure, the government must offer an appropriate response, which may include the deployment of troops and the compulsory evacuation of local residents. The question then becomes whether environmental objectives represent a public interest of similar magnitude.

The answer differs according to the environmental issue concerned. Pesticides which have been shown to be harmful to human health and the environment (such as DDT) have been banned, and no one objects. But how much weight should be given to issues such as animal welfare? Or to the environment of the future: the world in which our children and grandchildren will live? Is this a ‘pressing’ public interest today? It is perhaps a far greater public interest than we have hitherto assumed. In the light of such questions and the potentially high stakes involved, there must always be a thorough assessment of whether government interventions to influence behaviour are acceptable and legitimate. Bovens (2013) argues that the government must make (greater) use of behavioural knowledge within policy in order to ensure that the policy instruments are as effective as possible. Moreover, insights drawn from behavioural science will allow policy to take account of local and personal circumstances to a far greater degree. The astute use of behavioural knowledge will not undermine the individual’s freedom of choice; it will respect that freedom and put it to better use. Korthals (2013) believes that government action must be informed by the creative input of society itself, taking account of the obstacles which people may encounter and the restrictions which govern their choice processes (as described in Chapter 3.) Based on this perspective, the government must ensure that civil initiatives expressing the creative input by citizens are given the room to flourish. They must be facilitated and encouraged.

There may be situations in which the government defines certain environmental objectives as the result of political or legislative stipulations which will not be achieved without further concerted action. Or there may be situations in which the government wishes to avoid potential adverse effects. In all such cases, the government has a duty to intervene and to apply instruments which will advance

the attainment of the objectives. This seems only logical. It is also logical that effective and legitimate behaviour change mechanisms should be applied by the government as policy instrument. In broader terms, if behavioural knowledge proves an effective resource in the pursuit of environmental objectives, the government has a moral duty to make full use of that knowledge.

4.6 Behavioural knowledge in policy: promoting (more) sustainable behaviour without manipulation

How far can and should the government go in influencing behaviour to promote sustainability? The answer to this question depends in part on the normative or political interpretation of the government's role and the extent to which government interventions are deemed justified and legitimate. Nevertheless, the Council has formulated some general insights, based on which it becomes possible to assess the degree to which the design and implementation of policy strategies designed to promote sustainable behaviour will be viewed as acceptable.



The Council concludes that, subject to conditions (see below), the government is fully entitled to exert an influence on both conscious and unconscious behaviour, and in doing so may draw upon the full body of current knowledge about the mechanisms and determinants of behaviour. The Council reaches this conclusion for the following reasons:

- People often behave in a way which is not further to any conscious, careful decision-making process, and hence not always in keeping with either their own personal interests or the democratically legitimated collective interests.

- There are a number of complex and pressing environmental issues which cannot be resolved – nor can certain environmental objectives be achieved – unless behaviour is changed.
- The use of behavioural knowledge in the design of environmental policy enhances its effectiveness and creates broader societal support.

The Council assumes a situation in which there are clear public environmental interests which have been legitimated by the usual democratic processes. Accordingly, the government has a responsibility to safeguard those interests and to achieve the objectives which derive from them. Hence, the question of whether they are the 'right' public interests and the 'right' objectives is irrelevant here.

Acceptance of the deliberate use of behavioural knowledge within government policy processes will depend on the observance of the following conditions:

- The government must provide scientific justification (the evidence base) for the implementation of the policy, stating the intended result and how the intervention will work.
- The policy intervention must be based on a thorough weighing of all considerations. In the interests of accountability, this process must be fully transparent to the people whose behaviour is being, or has been, influenced, either beforehand or after the fact.
- All underlying information must be factually accurate and credible.
- If the desired behaviour falls within the sphere of personal interests, acceptance of policy intended to encourage that behaviour will be greater if there is a direct and visible link between the desired behaviour and the reward for its adoption.
- The individual's freedom of choice must be respected to the greatest extent possible. If it becomes necessary to restrict that freedom, the reasons for doing so must be clearly explained and justified. (In practice, there are many situations in which the individual does not have freedom of choice. There are countless laws and regulations which are undisputed but which are extremely restrictive, such as the prohibition on dumping garbage on the street.)
- The government must always clearly explain why it wishes to encourage the desired behaviour, and what the effects of that behaviour will be.

LITERATURE AND REFERENCES



Aarts, H., Dijksterhuis, A. & Midden, C. (1999). Behaviours, To plan or not to plan? Goal achievement or interrupting the performance of mundane. *European Journal of Social Psychology*, 29, pp. 971-9

Aarts, H., Verplanken, B. & Van Knippenberg, A. (1998). Predicting behavior from actions in the past: repeated decision making or a matter of habit? *Journal of Applied Psychology*, 28, pp. 1355-74

Abrahamse, W. & Steg, L. (2013). Social Influence Approaches to Encourage Resource Conservation: A Meta-analysis. *Global Environmental Change*, 23, pp. 1773-85

Abrahamse, W., Steg, L., Vlek, C. & Rothengatter, T. (2007). The effect of tailored information, goal setting and tailored feedback on household energy use, energy-related behaviors and behavioral antecedents. *Journal of Environmental Psychology*, 27, pp. 265-76

Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: J. Kuhl, *Action-control: From Cognition to Behavior* (pp. 11-39). Heidelberg: Springer

Antonides, G. (2011). Behavioral economics Applied: Suggestions for policy making. In: Martin, P.R., Cheung, F.M., Kyros, M., Littlefield, L., Knowles, M., Overmier, J.B. & Prieto, J.M. (eds.). *The IAAP Handbook of Applied Psychology* (pp. 55-524). Wiley-Blackwell

Baca-Motes, K., Brown, A., Gneezy, A., Elizabeth, A. & Nelson, L. (2013). Commitment and behavior change: Evidence from the field. *Journal of Consumer Research*, 39, pp. 1070-84

Bamberg, S. (2002). Effects of implementation intentions on the actual performance of new environmentally friendly behaviours - results of two field experiments. *Journal of Environmental Psychology*, 22, pp. 399-411

Bamberg, S., Ajzen, I. & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology*, 25, pp. 175-88

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, Vol. 84 (2), pp. 191-215

Baumeister, R. & Leary, M. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, pp. 497-529

Baumeister, R. & Tierney, J. (2011). *Willpower: Rediscovering the Greatest Human Strength*. Penguin Press

Baumeister, R., Bratslavsky, E. Finkenauer, C. & Vohs, K. (2001). Bad is stronger than good. *Review of General Psychology*, 5, pp. 323-70

Bazerman, M. & Moore, D. (2009). *Judgment in Managerial Decision Making*. New York: Wiley

Beaman, A.L., Klentz, B., Diener, E. & Svanum, S. (1979). Self-awareness and transgression in children: Two field studies. *Journal of Personality and Social Psychology*, 37 (10), pp. 1835-46

Bechara, A. & Damasio, A. (2005). The somatic marker hypothesis: a neural theory of economic decision. *Games and Economic Behaviors*, 52 (2), pp. 336-72

Bolderdijk, J. Steg, L., Geller, E., Lehman, P. & Postmes, T. (2012). Comparing the effectiveness of monetary versus moral motives in environmental campaigning. *Nature Climate Change*, 3, pp. 413-6

Bolderdijk, J.W., Gorsira, M., Steg, L. & Keizer, K.E. (2013). Values Determine the (In)Effectiveness of Informational Interventions in Promoting Pro-Environmental. *PLoS ONE* 8 (12): e83911. doi:10.1371/journal.pone.0083911

Bovens, L. (2013). *De verantwoordelijkheid van de overheid ten aanzien van gedragssturende beleidsinstrumenten voor verduurzaming*. Essay written for the Council for the Environment and Infrastructure (Rli)

Bressers, J.T.A. (1994). Beleidsinstrumenten in het beleidsproces. In: Glasbergen, P. (ed.), *Milieubeleid: een beleidswetenschappelijke inleiding* (pp. 125-41). The Hague: VUGA

Breukers, S., Mourik, R., Backhaus J., Mathijssen, T. Brunsting, S., Uytterlinde, M. & Pol, M. (2013). *Effectief beleid voor duurzaam gedrag: een internationale vergelijking*. ECN & Duneworks

Broeders, R., Lakens, D., Midden, C.J.H. & Ham, J.R.C. (2011). *An embodied cognition approach to litter reduction: the grounding of clean in shininess*. Oral presentation at the Environment 2.0: the 9th Biennial Conference on Environmental Psychology, September 26-8, 2011, Eindhoven, the Netherlands. Eindhoven: Eindhoven University of Technology

- Brunsting, S., Uyterlinde, M., Tigchelaar, C., Pol, M., Breukers, S., Mourik, R., Backhaus, J. & Mathijssen, T. (2013). *Effectief beleid voor duurzaam gedrag: een thematische vergelijking*. Petten: ECN & Duneworks
- Burger, J.M., Messian, N., Patel, S., Del Prado, A. & Anderson, A. (2004). What a confidence! The effects of incidental similarity on compliance. *Personality and Social Psychology Bulletin*, 30 (1), pp. 35-43
- Camerer, C., Issacharof, S., Loewenstein, G., O'Donoghue, T. & Rabin, M. (2003). Regulation for conservatives: behavioral economics and the case for "asymmetric paternalism". *University of Pennsylvania Law Review*, 151 (3), pp. 1211-54
- Carrus, G., Passafaro, P. & Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation. *Journal of Environmental Psychology*, Vol. 28 (1), pp. 51-62
- CBF (Central Bureau on Fundraising) (2013). *Overzicht baten en lasten*. Retrieved on 12 August 2013 via <http://www.cbf.nl/Cijfers/overzicht-baten-lasten.php>
- CBS (Statistics Netherlands) (2011). *Monitor duurzaam Nederland 2011*. The Hague
- Cialdini, R.B. (2001). *Influence: Science and Practice*. Boston: Allyn & Bacon.
- Cialdini, R.B. (2009). *Invloed: de zes geheimen van het overtuigen*. The Hague: SDU Uitgevers
- Cialdini, R.B., Reno, R.R. & Kallgren, C.A. (1990). A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58 (6), pp. 1015-26
- Daniels, N. (2000). Accountability for reasonableness: establishing a fair process for priority setting is easier than agreeing on principles. *BMJ*, 321 (7272), pp. 1300-1
- De Groot, J.I.M. & Steg, L. (2010). Morality and nuclear energy: perceptions of risks and benefits, personal norms, and willingness to take action related to nuclear energy. *Risk Analysis*, 30 (9), pp. 1363-73
- De Kort, Y., McCalley, L. & Midden, C. (2004). *Effecten van normactiverende afvalbakken op vermindering van zwerfafval: literatuurverkenning en twee experimenten*. Eindhoven University of Technology

De Kort, Y., McCalley, L. & Midden, C. (2008). Persuasive trash cans: activation of littering norms by design. *Environment and Behavior*, 40 (6), pp. 870-91

Deci, E.L., Koestner, R. & Ryan, R.M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125 (6), pp. 627-68

Duurzame dinsdag (2013). Retrieved on 12 August 2013 via <http://www.duurzamedinsdag.nl>

Edelman (2012). *2012 Edelman Trustbarometer*. Retrieved on 31 October 2013 via www.edelmantrust.com

Epstein, L.H., Dearing, K.K., Roba, L.G. & Finkelstein, E. (2010). The influence of taxes and subsidies on energy purchased in an experimental purchasing study. *Psychological Science*, 21 (3), pp. 406-14

Feather, N.T. (1995). Values, valences and choice: the influences of values on perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology*, 68 (6), pp. 1135-51

Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley

Frey, B.S. (1992). Tertium datur: Pricing, regulating and intrinsic motivation. *Kyklos*, 45 (2), pp. 161-84

Gardner, G.T. & Stern, P.C. (2002). *Environmental Problems and Human Behavior* (2nd ed.). Boston, MA: Pearson Custom Publishing

Gaskell, G. & Joerges, B. (1987). *Public Policies and Private Actions: A Multinational Study of Local Energy Conservation Schemes*. Aldershot: Avebury WZB

Gately, D. (1980). Individual discount rates and the purchase and utilization of energy-using durables: Comment. *Bell Journal of Economics*, 11 (1), pp. 373-4

Gattig, A.L.W. (2002). *Intertemporal Decision Making: Studies on the Working of Myopia* (dissertation). Groningen: University of Groningen

Geller, E.S. (2002a). The challenge of increasing proenvironmental behavior. In: Bechtel, R.B. & Churchman, A. (eds.), *Handbook of Environmental Psychology* (pp. 525-40). New York: John Wiley & Sons Inc.

Geller, E.S. (2002b). *The Participation Factor: How to Increase Involvement in Occupational Safety*. Des Plaines, IL: American Society of Safety Engineers

Geller, E.S., Winett, R.A. & Everett, P.B. (1982). *Preserving the Environment: New Strategies for Behavior Change*. New York: Pergamon

Gonzales, M.H., Aronson, E. & Costanzo, M.A. (1988). Using social cognition and persuasion to promote energy conservation: a quasi-experiment. *Journal of Applied Social Psychology*, 18 (12), pp. 1049-66

Gov.uk (2013), *Behavioral Insights Team*. Retrieved on 4 September 2013 via <https://www.gov.uk/government/organisations/behavioral-insights-team>

Gregory, R., Lichtenstein, S. & MacGregor, D. (1993). The role of past states in determining reference points for policy decisions. *Organizational Behavior and Human Decision Processes*, 55, pp. 195-206

Haidt, J. (2001). The emotional dog and its rational tail: a social intuitionist approach to moral judgement. *Psychological Review*, 108 (4), pp. 814-33

Hajer, M. (2011). *De energieke samenleving: op zoek naar een sturingsfilosofie voor een schone economie*. The Hague: PBL Netherlands Environmental Assessment Agency

Hajer, M., Hoen, A. & Huitzing, H. (2012). Shifting Gear: beyond classical mobility policies and urban planning. In: Van Wee, B. (ed.), *Keep Moving. Towards Sustainable Mobility*. The Hague: Boom Eleven

Handgraaf, M.J.J., Van Lidth de Jeude, M.A. & Appelt, K.C. (2013). Public praise vs. private pay: effects of rewards on energy conservation in the workplace. *Ecological Economics*, 86, pp. 86-92

Hardin, G. (1968). The tragedy of the commons. *Science*, 162, pp. 1243-48

Hardisty, D.J., Johnson, E.J. & Weber, E.U. (2010). A dirty word or a dirty world? Attribute framing, political affiliation, and query theory. *Psychological Science*, 21 (1), pp. 86-92

Harland, P., Staats, H. & Wilke, H.A. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology*, 29 (12), pp. 2505-28

Hausman, J. A. (1979). Individual discount rates and the purchase and utilization of energy-using durables. *The Bell Journal of Economics*, 10 (1), pp. 33-54

Heyman, J. & Ariely, D. (2004). Effort for payment: a tale of two markets. *Psychological Science*, 15 (11), pp. 787-93

Hindriks, F. (2013). *De burger als virtuele auteur: wanneer wordt beïnvloeding manipulatie*. Essay written for the Council for the Environment and Infrastructure (Rli). The Hague

Hoogervorst, N., Hajer, M., Dietz, F., Timmerhuis, J. & Kruitwagen, S. (2013). *Wissels omzetten: bouwstenen voor een robuust milieubeleid voor de 21e eeuw*. The Hague: PBL Netherlands Environmental Assessment Agency

Hoogerwerf, A. & Herweijer, M. (eds.) (2008). *Overheidsbeleid: een inleiding in de beleidswetenschap*. Alphen aan den Rijn: Kluwer

House of Representatives (2011). *Kabinetsplan aanpak administratieve lasten*. Letter from the Minister of Security and Justice to the House of Representatives, dated 27 October 2011. Parliamentary Year 2011-2, 29 515, No. 330

House of Representatives (2013). *Goed geregeld, een verantwoorde vermindering van regeldruk 2012-2017*. Letter from the Minister of Economic Affairs, the Minister of the Interior and Kingdom Relations, and the Minister for Housing and the Central Government Sector. Parliamentary Year 2012- 3, 29 362, No. 212

Jenny, A., Mosler, H. & Díaz López, J. (2004). Towards understanding consumption in multi-user solar energy systems: the cases of villages in Argentina and Cuba. *Progress in Photovoltaics: Research and Applications*, 12 (7), pp. 559-68

Joachims, T., Granka, L., Pan, B., Hembrooke, H. & Gay, G. (2005). Accurately interpreting clickthrough data as implicit feedback. *Proceedings of the conference on research and development in information retrieval*, pp. 154-61

Johnson, E.J. & Goldstein, D. (2003). *Do defaults save lives?* *Science*, 302, pp. 1338-9

Johnson, E.J., Bellman, S. & Lose, G.L. (2002). Defaults, framing and privacy: why opting in-opting out. *Marketing Letters*, 13 (1), pp.5-15

Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux

Kahneman, D. & Tversky, A. (1979). Prospect theory: an analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47 (2), pp. 263-91

Keizer, K., Lindenberg, S. & Steg, L. (2011). The reversal effect of prohibition signs. *Group Processes & Intergroup Relations*, 14 (5), pp. 681-8

Knijnenburg, B. & Willemsen, M. (2009). *Understanding the effect of adaptive preference elicitation methods on user satisfaction of a recommender system*. 3rd ACM Conference on Recommender Systems, RecSys'09. New York

Korthals, M. (2013). *De overheid: ethische vragen rond gedragsbeïnvloeding door de overheid ten gunste van duurzamere gedragspatronen en leefstijlen*. Essay written for the Council for the Environment and Infrastructure (Rli). The Hague

Kreijveld, M. (2013). *De intelligente omgeving: gevaar of kans?* Retrieved on 23 August 2013 via http://wisdomofthecrowd.files.wordpress.com/2013/08/d66_idee_2013_4_de_intelligente_omgeving_mk.pdf

Kuhl, J. (1982). Action vs. state orientation as a mediator between motivation and action. In: Hacker, W., Volpert, W. & Von Cranach, M. (eds.), *Cognitive and motivational aspects of action: XXIIInd international congress of psychology, Leipzig, GDR* (pp. 67-85). Amsterdam: North Holland Pub. Co.

Lehman, P.K. & Geller, E.S. (2008). Applications of social psychology to increase the impact of behaviour-focused intervention. In: Steg, L., Buunk, A.P. & Rothengatter, T. (eds.), *Applied Social Psychology* (pp. 57-86). Cambridge: Cambridge University Press

Li, X. (2008). The effects of appetitive stimuli on out-of-domain consumption impatience. *Journal of Consumer Research*, 34 (5), pp. 649-56

Loewenstein, G. (2005). Hot-cold empathy gaps and medical decision making. *Health Psychology*, 24 (4), pp. 49-56

Loewenstein, G., O'Donoghue, T. & Rabin, M. (2003). Projection bias in predicting future utility. *The Quarterly Journal of Economics*, 118 (4), pp. 1209-48

Lokhorst, A.M., Werner, C., Staats, H., Van Dijk, E. & Gale, J.L. (2013). Commitment and behavior change: a meta-analysis and critical review of commitment-making strategies in environmental research. *Environment and Behavior*, 45, pp. 3-34

Maan, S., Merkus, B., Ham, J. & Midden, C. (2010). Making it not too obvious: the effect of ambient light feedback on space heating energy consumption. *Energy Efficiency*, 4, pp. 175-83

Manfredo, M., Teel, T. & Henry, K. (2009). Linking society and environment: A multilevel model of shifting wildlife value orientation in the Western United States. *Social Sciences Quarterly*, 90 (2), pp. 407-27

Meer met Minder. (2010). *Kansrijke aanpakken in gebouwgebonden energiebesparing: de particuliere eigenaar*. Commissioned by NL Agency (Energy & Climate division), Sittard/Utrecht, for the Meer Met Minder initiative (with the cooperation of Motivaction). Retrieved on 31 October 2013 via <http://www.spaarhetklimaat.nl/Nieuws/documents/EindrapportMMMkansrijkeaanpakken.pdf>

Meijnders, A.L., Midden, C.J. & Wilke, H.A. (2001). Role of negative emotion in communication about CO₂ risks. *Risk Analysis*, 21 (5), pp. 955-66

Midden, C.J.H., Daamen, D.D.L. & Verplanken, B. (1984). *De beleving van energierisico's*. Leidschendam: Ministry of Housing, Spatial Planning and the Environment

Midden, C.J.H., Ham, J.R.C., Kleppe, M., Kimura, H. & Nakajima, T. (2011). Persuasive power in groups: the influence of group feedback and individual comparison feedback on energy consumption behavior. *PERSUASIVE 2011*, p. 1

Midden, C.J.H. & Weenig, W.H. (1982). *Energiebesparing door gedragsbeïnvloeding*. The Hague: Uitgeverij VUGA

Ministry of EZ (Ministry of Economic Affairs) (2013). *Brief betreffende een verzoek tot opstellen rapport over relevantie en mogelijkheden gedragswetenschappelijke kennis voor beleidsvorming*. The Hague

Ministry of I&M (Ministry of Infrastructure and the Environment) (2012). *IenM maakt ruimte: strategische kennis- en innovatieagenda Infrastructuur en Milieu 2012-2016*. The Hague

Ministry of V&J (Ministry of Security and Justice) (2012a). Wat is het beste instrument? *Integraal afwegingskader beleid en regelgeving van het Kenniscentrum Wetgeving en Juridische zaken*. Retrieved on 12 August 2013 via <http://www.kc-wetgeving.nl/kennisbank/integraal-afwegingskader-beleid-en-regelgeving/6-wat-is-het-beste-instrument/>

Ministry of V&J (Ministry of Security and Justice) (2012b). *Wat is het probleem. Integraal afwegingskader beleid en regelgeving van het Kenniscentrum Wetgeving en Juridische zaken*. Retrieved on 12 August 2013 via <http://www.kc-wetgeving.nl/kennisbank/integraal-afwegingskader-beleid-en-regelgeving/3-wat-is-het-probleem/>

- Ministry of V&J (Ministry of Security and Justice) (2012c). *Integraal Afwegingskader beleid en regelgeving*. Retrieved on 12 August 2013 via <http://www.kc-wetgeving.nl/kennisbank/integraal-afwegingskader-beleid-en-regelgeving/>
- Movisie (2013). *Minder Nederlanders doen meer vrijwilligerswerk*. Retrieved on 12 August 2013 via <http://www.movisie.nl/artikel/minder-nederlanders-doen-meer-vrijwilligerswerk>
- Mulder, L.B. (2008). The difference between punishments and rewards in fostering moral concerns in social decision making. *Journal of Experimental Social Psychology*, 44 (6), pp. 1436-43
- Nordlund, A.M. & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior*, 34 (6), pp. 740-56
- Ölander, F., & Thøgersen, J. (1995). Understanding of consumer behaviour as a prerequisite for environmental protection. *Journal of Consumer Policy*, 18 (4), pp. 345-85
- Onwezen, M.C., Bartels, J. & Antonides, G. (2014). The self-regulatory function of anticipated pride and guilt in a sustainable and healthy consumption context. *European Journal of Social Psychology*, 44, pp. 53-68
- Ostrom, E., Burger, J., Field, C.B., Norgaard, R.B. & Policansky, D. (1999). Revisiting the commons: local lessons, global challenges. *Science*, 284 (5412), pp. 278-82
- Park, C.W., Sung, Y.J. & Macinnis, D.J. (2000). Choosing what I want versus rejecting what I do not want: an application of decision framing to product option choice decisions. *Journal of Marketing Research*, 37 (2), pp. 187-202
- Rli (Council for the Environment and Infrastructure) (2013). *Verslag expertmeeting Maatschappelijke initiatieven en duurzame gedragspatronen*. The Hague
- RMO (Council for Social Development) (2008). *De ontkokering voorbij. Slim organiseren voor meer regelruimte*. The Hague
- ROB (Council for Public Administration) (2012). *Loslaten in vertrouwen: Naar een nieuwe verhouding tussen overheid, markt én samenleving*. The Hague

- Roorda, C., Buiter, M., Rotmans, J., Bentvelzen, M., Tillie, N. & Keeton, R. (2011). *Urban development: the state of the sustainable art. An international benchmark of sustainable urban development*. Commissioned by Almere municipality, the City Manifest 2.01, Flevoland province, and the Ministry of Infrastructure and the Environment. Rotterdam: DRIFT/Erasmus University Rotterdam
- Samuelson, W. & Zeckhauser, R. (1988). Status Quo bias in decision making. *Journal of Risk and Uncertainty*, 1, pp. 7-59
- Schneider, H. & Jharap, R. (2010). *Signed, sealed, delivered? Evaluatie van drie convenanten energiebesparing in de gebouwde omgeving: meer met minder, Lente-akkoord, energiebesparing corporatiesector*. Delft
- Schultz, P. (1998). Changing behavior with normative feedback interventions: A field experiment on curbside recycling. *Basic and Applied Psychology*, 21, pp. 25-36
- Schultz, P.W. (2010). Making energy conservation the norm. In: Ehrhardt-Martinez, K. & Laitner, J.A. (eds.), *People-Centered Initiatives for Increasing Energy Savings* (pp. 251-62). Washington, D.C.: ACEEE
- Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J. & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychology Science*, 18 (5), pp. 429-34
- Schwartz, S.H. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, 25, pp. 1-65
- SCP (Netherlands Institute for Social Research) (2012). *Een beroep op de burger: Minder verzorgingsstaat, meer eigen verantwoordelijkheid? Sociaal en Cultureel Rapport 2012*
- Shampanier, K., Mazar, N. & Ariely, D. (2007). Zero as a special price: the true value of free products. *Marketing Science*, 26 (6), pp. 742-57
- Skinner, B.F. (1969). *Contingencies of Reinforcement: A Theoretical Analysis*. New York: Appleton-Century-Crofts
- Sloman, S. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, 119 (1), pp. 3-22

- Slovic, P., Finurance, M.L., Peters, E. & MacGregor, D.G. (2004). Risk as analysis and risk as feelings: some thoughts about affect, reason, risk and rationality. *Risk Analysis*, 24 (2), pp. 311-22
- Stanovich, K.E. & West, R.F. (2000). Individual difference in reasoning: implications for the rationality debate? *Behavioural and Brain Sciences*, 23 (5), pp. 645-65
- Steg, L. (2005). Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research A: Policy and Practice*, 39 (2-3), pp. 147-62
- Steg, L. & De Groot, J. (2010). Explaining prosocial intentions: testing causal relationships in the norm activation model. *British Journal of Social Psychology*, 49 (4), pp. 725-43
- Steg, L. & Vlek, C. (2008). Encouraging pro-environmental behaviour: an integrative review and research agenda. *Journal of Environmental Psychology*, 29 (3), pp. 309-17
- Steg, L., Perlaviciute, G., Van der Werff, E. & Lurvink, J. (2012). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment & Behavior*, 46 (2), pp. 163-92: DOI: 10.1177/0013916512454730
- Stern, P.C. (1999). Information, incentives, and proenvironmental consumer behavior. *Journal of Consumer Policy*, 22, pp. 461-78
- Taylor, S. & Thompson, S. (1982). Stalking the elusive 'vividness' effect. *Psychological Review*, 89, pp. 155-81
- Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. Yale University Press
- Tversky, A. & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5 (1), pp. 207-32
- Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211 (4481), pp. 453-8
- Vakratsas, D. & Ambler, T. (1999). How advertising works: What do we really know? *Journal of Marketing*, 63 (1), pp. 26-43

Van Raaij, W.F. (2002). Stages of behavioural change: motivation, ability and opportunity. In: Bartels, G.C. & Nelissen, W.J.A. (eds.), *Marketing for Sustainability: Towards Transactional Policy-Making* (pp. 321-33). Amsterdam: IOS Press

Veltman, M. & Van Welzen, A. (2012). *Doelgroepsegmentatie energiebesparings-projecten*. The Hague: NL Agency

VROM Council (2009). *Acupunctuur in de Hoofdstructuur: naar een betere verknoping van verstedelijking en mobiliteit*. The Hague

Weenig, M.W. & Midden, C.J. (1991). Communication network influences on information diffusion and persuasion. *Journal of Personality and Social Psychology*, 61 (5), pp. 734-42

Weenig, M. & Midden, C. (1997). Mass media information campaigns and knowledge-gap effects. *Journal of Applied Social Psychology*, 27 (11), pp. 945-58

Werner, C.M., Rhodes, M.U. & Partain, K.K. (1998). Designing effective instructional signs with schema theory: case studies of polystyrene recycling. *Environment and Behavior*, 30 (5), pp. 709-35

Wesseling, M. (2013). *Gedragbeïnvloeding door de overheid ter bevordering van duurzaamheid: rationalisatie van besluitvorming bij toepassing van pressie of dwang*. Essay written for the Council for the Environment and Infrastructure (Rli). The Hague: Rli

Witte, K. (1992). Putting the fear back into fear appeals: the extended parallel process model. *Communication Monographs*, 59 (4), pp. 329-49

WRR (Scientific Council for Government Policy) (2009). *De menselijke beslisser: over de psychologie van keuze en gedrag*. Amsterdam: Amsterdam University Press

WRR (Scientific Council for Government Policy) (2012). *Vertrouwen in burgers*. Amsterdam: Amsterdam University Press

Zaalberg, R., Midden, C.J.H., Meijnders, A.L. & McCalley, L.T. (2009). Prevention, adaptation, and threat denial: flooding experiences in the Netherlands. *Risk Analysis*, 29 (12), pp. 1759-78

Zaalberg, R. & Midden, C.J.H. (2010). Human responses to climate change: flooding experiences in the Netherlands. In: Martens, P. & Chang, C.T. (eds.), *The Social and Behavioural Aspects of Climate Change: Linking Vulnerability, Adaption and Mitigation* (pp. 157-76). Sheffield (UK): Greenleaf Publishing

Zaalberg, R. & Midden, C.J.H. (2013). Living behind dikes: mimicking flooding experiences. *Risk Analysis*, 33 (5), pp. 866-76

Zajonc, R.B. (1980). Feeling and thinking: preferences need no inferences. *American Psychologist*, 35 (2), pp. 151-75

APPENDIX



GLOSSARY

Abilities The degree to which people are able to understand the problem and their behaviour options, and to which they are able to adopt a certain behaviour.

Accountability for reasonableness A concept whereby the government allows democratic control by providing full transparency with regard to the arguments underpinning its policy decisions.

Affective heuristics The process whereby people do not make decisions further to any rational analysis of costs and benefits, but based on purely subjective considerations: 'how it feels'.

Altruistic value: A type of value that reflects the individual's concern for society and for other people.

Analytical system See System 2.

Anchoring effects The tendency to compare the (likely) outcome of a choice to a standard or 'baseline'.

Associative system See System 1.

Attitude A (subjective) view of the negative or positive nature of certain behaviour, based on beliefs and influenced by the importance which the individual attaches to the behaviour or its intended outcome. The overall attitude is shaped by interactions, experiences, observations, and information.

Availability heuristic The process in which assessments (e.g. the likelihood of an event occurring) are based on the ease with which relevant information about comparable situations can be retrieved from the memory.

Behaviour The manner in which a person acts and responds.

Behaviour change The use of interventions to encourage different behaviour.

Behavioural determinants Factors which, in combination, describe and delineate behaviour.

Behavioural knowledge Knowledge about the mechanisms of human behaviour, drawn from scientific disciplines such as psychology, behavioural economics, neurology, and sociology.

Biases Systematic errors in decision-making often due to the use of heuristics.

BIT Behavioural Insights Team: a team of people with a background in the social sciences, policy development and marketing, who apply insights gained from academic research in behavioural economics and psychology to enhance government policy.

Beliefs The prior assessment that an individual makes of problems, situations and behaviour, often without conscious thought and without any factual evidence.

Biospheric values A type of value which reflects the individual's concern for the quality of the environment.

Block Leaders People showing exemplary behaviour, convincing their neighbours to emulate them and helping them to do so.

Choice processes The mechanism by which a behaviour option is selected. Choice processes (and the resultant behaviour) can be intuitive, reasoned, or habitual.

Circumstances The contexts in which the individual functions and which can determine or influence his or her behaviour. Circumstances can encourage or discourage certain behaviour, making it easier or more difficult, more attractive or less attractive to adopt.

Commitment A verbal or written statement in which people promise to engage in a particular behaviour. 'Requesting commitment' is an intervention technique whereby people are asked to state their intention to display a certain behaviour. The statement may be made orally or in writing, in public or in private.

Conscious (deliberate) behaviour Behaviour which is subject to prior thought and consideration. It is behaviour which was planned in advance, further to a balanced consideration of the advantages and disadvantages of each behavioural option.

Crowding out (of intrinsic motivation) A decrease in intrinsic motivation due to an increase in external motivating stimuli.

Cues Elements within the (physical) environment which activate certain goals or affective responses in the observer.

Default The standard choice or course of action; that which is most obvious.

Descriptive norms The individual's perception of the degree to which others in his social setting display the behaviour in question.

Discounted utility Model which describes people's tendency to overvalue short-term outcomes, at the expense of long-term consequences.

Economic circumstances Financial and material status at both individual and societal level. Economic circumstances can determine the affordability of adopting (more) sustainable behaviour.

Egoistic values A type of value that reflects primary concern for personal interests.

Emotional response The positive or negative subjective value that people attach to the things and situations they experience, often doing so before engaging in any objective assessment.

Feedback strategy An intervention technique in which people are given information about their own behaviour or performance. This information may relate to their performance in comparison to a target or objective (i.e. the degree to which they have successfully changed their behaviour and achieved the desired effects) or to their behaviour compared to that of others or their own previous performance.

Framing The formulation of a communications message. The various ways in which a problem can be presented can result in differing responses, and hence prompt a variety of possible choice behaviour ('framing effect').

Habitual behaviour The pattern of stable behaviours which are automatically prompted by specific situations and cues. People need this type of behavioural pattern in order to do things without expending too much energy.

Hedonic values A type of value which reflects people's concern for reducing effort or enhancing pleasure.

Heuristics Simple decision rules that do not involve conscious and extensive decision-making processes, often based on general 'rules of thumb'.

IAK Integrated Assessment Framework for Policy and Legislation: system adopted by the government to safeguard the quality of policy.

Implementation intention A formal declaration setting out how, when and where the individual intends to take action in order to achieve a predetermined objective.

Inertia The inability or unwillingness to consider alternatives to the routine, habitual behaviour.

Injunctive norms The individual's assessment of the degree to which others in his or her social setting (will) approve or disapprove of his or her behaviour.

Institutional circumstances The manner in which society is structured, including (the consistency of) legislation, the administrative and governmental organisation, and the behaviour shown by (representatives of) government organisations.

Intuitive behaviour Behaviour which is based on rapid problem-solving strategies applied to simplify choices. Intuitive behaviour can be consciously or unconsciously determined by past experience.

Knowledge The degree to which a person possesses and understands objective information about problems, risks, and solutions.

Loss aversion The tendency to attach greater importance to the avoidance of losses than to the generation of equal benefits.

Moral intuition An immediate assessment of whether a (type of) behaviour can be deemed good or bad, based not on reasoned consideration but on personal convictions.

Motives The reasons people have for adopting, or failing to adopt, a certain (type of) behaviour.

Nudge A 'gentle push' in the direction of the desired behaviour. A nudge does not restrict freedom of choice but creates conditions in which the desired behaviour becomes a more attractive (or the most attractive) option.

Peer trust Trust in others of equal or comparable (social) status or beliefs.

Personal effectiveness The degree to which an individual feels confident that he or she is able to display or adopt a certain (type of) behaviour.

Personal norm A perceived feeling of moral obligation to display a certain (type of) behaviour.

Persuasive technology Technological resources used to encourage certain behaviours.

Physical circumstances The design, quality and ambiance of the (immediate) human environment.

Problem awareness The degree to which people (believe that they) understand problems and risks, and the value that they attach to those problems and risks.

Prompt An intervention technique which uses brief messages or symbols to draw attention to a specific (type of) behaviour which is either encouraged or discouraged.

Prosocial behaviour Behaviour intended to create the greatest possible advantage for others.

Reasoned behaviour Behaviour as a result of conscious choice and attention, in which a series of decision-making processes have been systematically undertaken further to a predetermined objective, with an express consideration of the advantages and disadvantages of each behavioural option.

Recommender system A computer-based system which filters information in order to predict the user's preferences and to suggest appropriate options.

Response effectiveness The individual's assessment of whether the choices he or she makes will indeed help to solve a specific problem.

Role models People who are able to influence other people's behaviour by setting an example. Role models can be peers (as in the 'Block Leaders' approach) or people in the public eye, as in the 'Twitterbike' project.

SKIA Strategic Knowledge and Innovation Agenda: a form of work plan used by most government ministries.

Skills The degree to which a person is able to display the desired behaviour.

Social and cultural circumstances The cohesion of groups, the engagement people show in the social setting, and the influence of cultural background.

Social network A social structure made up of individuals and/or organisations; the interactive relationships between them.

Social norms The individual's perception of what others expect of him or her, or of what others would do in a similar situation (cf. descriptive and injunctive norms).

Social proof The observable behaviour of others. There is a tendency for people to emulate the behaviour they see others in their social setting adopt.

Social support The individual's perception that assistance and support is available should he need it, and that he himself forms part of a mutually supportive social network.

System 1 The rapid decision-making process which is entirely associative, intuitive, and emotional.

System 2 The analytical decision-making process which relies on a careful, deliberate and rational weighing of all considerations.

Technological circumstances The possibilities (and restrictions) created by technological resources to influence and support the choices people make.

Theory of Planned Behaviour A model (Ajzen, 1985) which postulates that individuals make reasoned choices based on weighing the costs and benefits of options, and that all behaviour is the result of the intention to display a specific (type of) behaviour.

Unconscious (subconscious) behaviour Behaviour which is not subject to any deliberate thought or decision-making process.

Values General goals which serve as the guiding principles in a person's life.

Willpower The ability to take the appropriate steps in order to achieve long-term objectives, for instance with regard to health or sustainability.

RESPONSIBILITY AND ACKNOWLEDGEMENTS

Composition of the advisory committee and chairman of the project team

M. Demmers, member of the Rli

Members of the committee

Prof. Dr G. Antonides, Professor of Economics of Consumers and Households,
Wageningen University

Dr J.W. Bolderdijk, researcher – social and organisation psychology,
University of Groningen

L.J.P.M. Frissen, member of the Rli

Prof. Dr C.J.H. Midden, Professor of Human Technology Interaction,
Eindhoven University of Technology

Prof. Dr L. Steg, Professor of Environmental Psychology, University of Groningen

Composition of the project team

Dr E.C. Schmieman, project leader

Dr L.M. Doeswijk, member of the project team (from April until November 2012)

M.L. van Gameren, project assistant (from February 2013)

I.D. Haime, project assistant (until January 2013)

M.R.P. Ooms, member of the project team (from June 2013)

B.N.S.M. Swanenvleugel, member of the project team (from December 2012)

Experts and authorities consulted

In preparation of this advisory report, an expert meeting as well as a meeting with three departments were held, with the following people attending:

Expert meeting of 28 March 2013 on societal initiatives

P.P.A. Basset, Kracht in NL

Dr S. Brunsting, ECN

S.A. Ceha, Urgenda

V. Dalm, Milieu Centraal

A.J.P. Heideveld, NL Agency

P.J. Hendriksen, Transition Towns

W.M. de Jong, ODE

S.M. Kluit, Energie-U

M. Messing, SETnI

Dr R. Mourik, Duneworks

R.J. van Noortwijk, Greenwish
 J.A.W.A. Reus, InnovationNetwork
 M.M. Romme LI.M., Wij Krijgen Kippen
 P. van Schijndel, NCDO / Foodguerilla
 Prof. Dr F. Stokman, Grunneger Power / University of Groningen
 A.P. Swijnenburg, Amersfoort municipality
 Dr E. Van der Werff PhD., University of Groningen

Departmental meeting of 6 June 2013

P.J. Aubert, Ministry of Economic Affairs
 Dr J. Berveling, Ministry of Infrastructure and the Environment
 E.I. Blaauw, Ministry of Infrastructure and the Environment
 K.E.J. Christiaans, Ministry of Infrastructure and the Environment
 B.J. Cino, Ministry of Infrastructure and the Environment
 V.C. Dekker, Ministry of Infrastructure and the Environment
 R. van Dorp, Human Environment and Transport Inspectorate
 G.J. Eshuis, Ministry of Infrastructure and the Environment
 B.M.E. Geurts, Ministry of the Interior and Kingdom Relations
 M.J. Jongman, Ministry of Infrastructure and the Environment
 A.J.F. Kapteijns, Ministry of Infrastructure and the Environment
 C.J. Kooij, Ministry of Infrastructure and the Environment
 E. Lakerveld, Human Environment and Transport Inspectorate
 R.M. Linssen, Department of Transport, Public Works and Water Management
 W.G.J. van der Mei, Ministry of Infrastructure and the Environment
 M. Mian, Msc. Ministry of Infrastructure and the Environment
 A. Raghoobar, Ministry of the Interior and Kingdom Relations
 Dr O.A.W.T. van de Riet, Ministry of Infrastructure and the Environment
 D.J.C. Slood, Ministry of Infrastructure and the Environment
 C.G. Stoker MCC, Ministry of Infrastructure and the Environment
 R.S. Verheule, Department of Transport, Public Works and Water Management
 Dr E.J. Visser, Ministry of Economic Affairs
 Dr C.R. Vringer, PBL Netherlands Environmental Assessment Agency
 H. van der Wal, Ministry of Infrastructure and the Environment
 A. Weenk, Department of Transport, Public Works and Water Management
 B.A. Wilbrink, Ministry of Economic Affairs

Further consultations were held with

W.C.A.M. van den Boogaard, Department of Transport,
 Public Works and Water Management
 L.E. van Brederode, Ministry of Infrastructure and the Environment
 Dr R. Brouwer, Ministry of Economic Affairs
 R.A. de Bruin, Ministry of Infrastructure and the Environment
 F. Burmeister, Ministry of Infrastructure and the Environment

V.C. Dekker, Ministry of Infrastructure and the Environment
A. Dekkers, Ministry of Economic Affairs
Dr F.J. Dietz, PBL Netherlands Environmental Assessment Agency
R. van Dorp, Human Environment and Transport Inspectorate
Dr B. Elzen, University of Twente
R. van der Ent, Ministry of the Interior and Kingdom Relations
V.A. Fructuoso van der Veen, Ministry of the Interior and Kingdom Relations
O. van Gerwen, PBL Netherlands Environmental Assessment Agency
B.M.E. Geurts, Ministry of General Affairs
A.C. Huibers-Kessen, Ministry of Economic Affairs
L. Hulspas, Ministry of the Interior and Kingdom Relations
Dr R. Janssens, Council for Social Development
Dr A.P. Jonkers, Scientific Council for Government Policy
D.P. Kamps, Ministry of the Interior and Kingdom Relations
J.C. Kliet, Ministry of Infrastructure and the Environment
Y.J. Koorengevel, Ministry of Economic Affairs
Dr S. Kruitwagen, PBL Netherlands Environmental Assessment Agency
Dr H.M. Londo, ECN
E.J.R. Maathuis, Ministry of Economic Affairs
W.G.J. van der Mei, Ministry of Infrastructure and the Environment
I.M. Nieuwenhuis Msc., Ministry of Infrastructure and the Environment
I.R.J. van de Pas, Ministry of Health, Welfare and Sport
O. Poerbodipoero, Ministry of Security and Justice
Prof. Dr H.M. Prast, Tilburg University
M.F. Pruijn, Ministry of Infrastructure and the Environment
R.M. van Raaij, Ministry of Economic Affairs
S.L. Ras, Ministry of Infrastructure and the Environment
Dr O.A.W.T. van de Riet, Ministry of Infrastructure and the Environment
Dr W.A. Ruiterkamp, Ministry of Economic Affairs
I.J. Smits, Ministry of Infrastructure and the Environment
Prof. Dr G. Spaargaren, Wageningen University
S.J.J.C. Spapen, Ministry of the Interior and Kingdom Relations
M.G.A. Storm, Ministry of Infrastructure and the Environment
J.A. Stremmer, Ministry of Economic Affairs
T.H.M. ten Napel, Ministry of Economic Affairs
A. Weenk, Department of Transport, Public Works and Water Management
M.M.H. Wobben, NL Agency
G.G.A. Zuurbier, Ministry of Infrastructure and the Environment
J. Zuure Msc., Council for Social Development

Essays on sustainable behaviour patterns: normative issues surrounding strategies to influence behaviour in order to achieve sustainable behavioural patterns

Prof. Dr L. Bovens (London School of Economics and Political Science): *De verantwoordelijkheid van de overheid* ('The Responsibility of Government')

Dr F.A. Hindriks (University of Groningen): *De burger als virtuele auteur* ('The Citizen as Virtual Author')

Prof. Dr M. Korthals (Wageningen University): *De overheid als verleidster* ('The Government as Temptress')

Dr M.F. Wesseling (Royal Dutch Medical Association): *Gedragbeïnvloeding door de overheid ter bevordering van duurzaamheid* ('Government Strategies to Influence Behaviour to Promote Sustainability')

External reviewers

Dr S. Brunsting, ECN

Dr F.J. Dietz, PBL Netherlands Environmental Assessment Agency

J.P. van Soest, Jan Paul van Soest Sustainability Consulting

Dr W.L. Tiemeijer, Scientific Council for Government Policy

Dr C.R. Vringer, PBL Netherlands Environmental Assessment Agency

OVERVIEW OF PUBLICATIONS

2014

Living independently for longer – a shared responsibility of the housing, health and welfare policy domains [*Langer zelfstandig, een gedeelde opgave van wonen, zorg en welzijn*]. January 2014 (Rli 2014/01)

2013

Sustainable choices in the implementation of the common agricultural policy in the Netherlands [*Duurzame keuzes bij de toepassing van het Europees landbouwbeleid in Nederland*]. October 2013 (Rli 2013/06)

Pulling together. Governance in the Schiphol/Amsterdam Metropolitan Region [*Sturen op samenhang, governance in de metropolitane regio Schiphol/Amsterdam*]. September 2013 (Rli 2013/05)

Safety at companies subject to the Major Accidents Risks Decree: responsibility and effective action [*Veiligheid bij Brzo-bedrijven, verantwoordelijkheid en daadkracht*]. June 2013 (Rli 2013/04)

Dutch Logistics 2040: Designed to last [*Nederlandse logistiek 2040, designed to last*]. June 2013 (Rli 2013/03)

Nature's Imperative. Towards a robust nature policy [*Onbeperkt houdbaar, naar een robuust natuurbeleid*]. May 2013 (Rli 2013/02)

Room for Sustainable Agriculture [*Ruimte voor duurzame landbouw*]. March 2013 (Rli 2013/01)

2012

Keep Moving, Towards Sustainable Mobility. Edited by Bert van Wee. October 2012 (Rli/EEAC)

Original title

Influencing behaviour: more effective environmental through insight into human behaviour

Photo credits

Page 16: Hollandse Hoogte, Co de Kruijf

Page 20: Hollandse Hoogte, Bert Spiertz

Page 26: Hollandse Hoogte, Mariette Carstens

Page 32: Hollandse Hoogte/Corbis

Page 48: 2D3D Design

Page 56: Hollandse Hoogte, Flip Franssen

Page 78: Hollandse Hoogte, Reyer Boxem

Page 110: Nationale Beeldbank

Illustrations

Monkeybizniz, Utrecht, The Netherlands

Graphic design

2D3D Design, The Hague, The Netherlands

Rli publication 2014/02

March 2014

This advisory report is accompanied by Influencing Behaviour: a Behaviour Analysis Framework for the development of more effective environmental policy and the Behaviour Quick Scan (available in Dutch only)

Translation

DBF communicatie B.V., Alphen aan den Rijn, The Netherlands

ISBN 978-90-75445-00-8

NUR 740

