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Report

Waste has the chance of a second life

Social acceptance of energy-from-waste

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For:

VVAV
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Introduction

Background

The processing of waste is extremely important for environmental policy, as the amount of waste produced has increased enormously. Also, waste incineration contributes to energy provision. However, energy-from-waste does not have a particularly positive image.

The waste industry's aim is to have energy-from-waste recognized as a sustainable form of energy generation. But this is meeting with resistance. Environmental organizations and consumer groups are not in favour of energy-from-waste being seen as sustainable energy. Energy-from-waste can very easily be seen as a dirty, unsustainable form of energy generation. Other countries have a more positive view of energy-from-waste than the Netherlands, or at least that is the impression. It seems that in our country the semantic qualification "waste" itself is associated with low quality and risks concerning emissions. This appears all the more important because the concept of waste has become relatively important; if a cascading model of use is applied, residues from one process can be the input for a subsequent process.

To give a positive boost to public support for energy-from-waste, it is important to correct errors in the image people have of that energy. That adjustment could be approached from a number of angles, such as the importance of waste disposal functions, the high-quality use of waste as an energy source, the cleanness of the process and the suitability of residues for recycling.

But before any such approaches are sought, it is important to have an understanding of the stereotype reactions among the groups involved in society. And here it is important to distinguish between reactions based on emotions and those based on substantial arguments. Opinions and judgments are often formed by association without any proper understanding of the actual facts. Thus, final disposal of waste appears to evoke a negative image, while useful deployment of secondary fuels evokes much more positive associations. That difference goes much further than words. It is therefore very important to know what public judgements are based on, since otherwise information can produce results that are quite different from what was intended.

This project is aimed at providing greater understanding of the psychological factors and social processes determining public support for energy-from-waste. The study also focuses on the interaction between public support and government policy. Effectively, the question here is whether and to what extent public support reflects political viewpoints regarding energy as waste, and to what extent public opinion influences politics.

A final aspect that has to be dealt with in this study is how energy-from-waste should be positioned in the market. Here, the reference is specifically to energy-from-waste rather than to waste incineration, as energy is the concrete product from the activity of waste incineration and should also be able to operate as an “image bearer”.

This raises questions such as: Should energy-from-waste be positioned as a form of energy from biomass, or does it deserve its own place? What can energy-from-waste derive its added value from? How does this relate to the profitability of investment in terms of energy production using waste as a fuel?

The study is subdivided into a number of parts as described above, and has been carried out in phases.

Objectives and desired result

The aim of this study is to make a contribution to increasing public support for energy-from-waste and improving the market position of energy-from-waste.

The following objectives have been formulated: to provide recommendations on

- the communication policy to be adopted to improve the image of energy-from-waste and public support for energy-from-waste, and
- the positioning of the product “energy-from-waste” in the market.

To produce these recommendations, the study will have to generate insights into Dutch people’s judgments on waste incineration plants used for generating energy. This involves people in different roles: as energy consumers, as people living near the plants, and as citizens and political players involved in decision-making at various political levels.

The nature of the input appears to be an important aspect in perceptions. The complexity of waste – for instance the more homogeneous input of industrial waste versus the more heterogeneous household waste – may be a factor here. Another relevant question seems to be how consumers view the cascading use of materials in which non-energy purposes are first in line, followed by energy generation. That information could have consequences for the type of input. In addition, uncertainties and mistaken images could be dealt with through appropriate communication based on the results of the study.

1 Internal experts: Increasing acceptance of energy-from-waste difficult but not hopeless

1.1 Energy-from-waste difficult to position to consumer, but possibilities are recognized

1.1.1 Energy-from-waste difficult to position

Energy in general is low interest

According to the internal experts, the public sees energy as a low-interest product. People are not much involved in it, it is not an issue of public interest and so the public will not go into the subject in detail. They see it as a necessity of life, like air and water. Other related matters such as price play a subordinate role. It is also something that is taken for granted, something ordinary; you have to have it, and there's no more to say about it.

However, the internal experts expect that it will become more of a live issue because the energy companies are going very public in their campaigns to win more customers for various kinds of energy. While the various energy companies are constantly increasing their publicity, this has not resulted in much of a switch among consumers so far.

Green energy not appealing

As with energy in general, public interest in green energy is low, according to the internal experts. Here again, it is not a live public issue. It is also thought that green energy is not appealing because the perception of high costs is a factor. That results in a lack of understanding among energy consumers. According to the internal experts, energy consumers do not understand why they should pay more for green energy. That energy is obtained from sun, water and wind, things that are there anyway!

Unfamiliarity and/or negative picture in respect of energy-from-waste

According to the internal experts, the public is generally not even aware that energy is obtained or can be obtained from waste. And when people are told this, they respond with surprise. The internal experts say that those who do know that energy is obtained from waste have a negative picture of it. Environmental aspects, cost aspects and the sector's image are all factors in that negative picture.

Environmental aspect

- Incineration process is polluting

While the internal experts themselves state that the processing process for energy-from-waste is a clean and hygienic process, they believe that most of the public think that the processing is a dirty process. According to the internal experts the public is actually convinced of this because it is perceptible. After all, waste processing plants always have chimneys with big plumes of smoke; and even although most people do not know what exactly that is, they are likely to think that it just can't be good for the environment. But the internal experts think that only a few of the public will realize that it is only the CO₂ emissions that damage the ozone layer and cause the change in climate, and not other substances.

Also, the internal experts believe that the public will say that the process of obtaining energy-from-waste is accompanied by odour nuisance, both inside the waste processing plant and outside it. After all, the raw material is waste and that is dirty, it smells and it contains all sorts of bacteria. So there is bound to be a bad smell in the plant and its surroundings. But according to the internal experts, that is not the case; the process does not create any odour nuisance at all, either in the plant itself or in the surrounding area.

- Energy-from-waste is harmful in itself

According to the internal experts, the public think that the energy itself is dirty because waste has been used as the raw material for the energy. That waste contains bacteria, paint residues and heavy metals; as a result, the energy from that waste is believed to be harmful to household appliances, which will break down as a result.

The public apparently also state that the energy-from-waste contains bacteria and smells bad and that, as well as polluting the environment, that could have possible consequences for the quality of the end products companies produce. For instance, one internal expert quoted the example of a function caterer who thought that his products might taste and smell of waste.

Cost aspect

Other methods of energy extraction are seen as much more efficient by energy consumers; producing energy-from-waste is seen as a very roundabout process, with the result that costs are high. First the waste is produced, it then has to be collected and then processed, and only then, after all that, do you get energy.

The lack of understanding for the higher price that applies to green energy also plays a role for energy-from-waste, according to the internal experts. Energy consumers simply do not understand why they have to pay more for energy-from-waste than for ordinary energy. After all, the waste is already there, just like the sun. But what perhaps counts even more, according to the internal experts, is that the energy consumers themselves provide the raw material for the energy. And so, the internal experts say, they feel that they should really have to pay less. The energy consumers give their waste to the waste processing plant, and it obtains the energy from it.

Without them and the waste they provide, the waste processing plan would not be able to produce any energy in the first place. And that idea will only reinforce the energy consumer's lack of understanding for the higher price.

Image of waste sector

The internal experts also think that the negative image of the waste sector in general is also a factor in the negative picture that the public has of energy-from-waste. The public has the idea that the sector is no good; it is a world with "*scenes reminiscent of the Wild West*" and "*Mafia practices*". The sector has a shady past, with the result that the public does not really believe that everything is being done by the rules now. And they see that picture confirmed every time the sector features negatively in the news, as happens fairly often.

The internal experts take the view that the public have a certain distrust of the industry, and that they also see the government's role in this area as dubious. The public do not find it very plausible for the implementing and the supervising party to be the same party. In the past, that has resulted in fraudulent practices, illegal dumping and waste being transported abroad.

1.1.2 Internal experts see possibilities

Despite this, a number of internal experts consider that it is possible to improve the negative picture that the public have of energy-from-waste. Or at least they see clear possibilities of presenting energy-from-waste in a more positive light. However, caution is indicated. According to the internal experts, the public throw away their rubbish, put it out for collection, and then want to have nothing more to do with it. They have got rid of it and no longer see it as their problem. And according to the internal experts the public certainly do not want to be reminded that they themselves are the source of the waste. People do not want any confirmation of their own guilt feelings about their contributions to the waste problem.

So it makes sense not to press this point, otherwise it will certainly create resistance in the public, they argue.

The possibilities that do exist are as follows, according to some internal experts:

Increasing involvement

As stated above (see 1.1.1) the internal experts say that energy consumers show an increasing involvement with energy. The internal experts take the view that they can take advantage of the current developments in the energy market that are creating greater involvement among energy consumers.

In addition, according to one internal expert, involvement is increased (at least temporarily) if there is an electricity cut as has happened in California. It is only then that people recognize that the supply of energy cannot just be taken for granted; they then see the consequences for their everyday lives if there is no electricity supply.

Providing the consumer with knowledge

Another possibility lies in informing the consumer. By providing consumers with more knowledge, the picture they form of energy-from-waste can be adjusted. The internal experts argue that the following aspects of energy-from-waste should be emphasized in order to achieve that aim:

- Environmentally friendly, because environmentally polluting fossil fuels are not used in the processing.
- No odour nuisance; according to the internal experts it is a clean process.
- No waste of energy;
energy is a scarce resource and has to be treated sparingly. Waste contains energy, and the internal experts argue that using that energy certainly avoids the waste of energy.
- Solutions to the waste problem;
the waste that can no longer be recycled can still be used productively to generate energy, rather than simply being dumped somewhere.

One of the internal experts even takes the view that the only answer is to let the public visit the waste processing plant, arguing that the negative picture attached to energy-from-waste would disappear completely and be replaced by a positive picture. The argument is that a visit would make the picture more tangible to the public and appeal more to the imagination. They would then be able to see how the process operates, how the plant looks inside, and also how it smells. Their misconceptions would then disappear automatically. According to a number of the experts, the building itself could also contribute to a more positive picture of energy-from-waste. It makes a positive impression, it is an attractive building that looks clean and well cared for. The internal experts state that members of the public who have visited the plant have practically all taken that view. But the majority of the experts recognize that it is impossible to get everyone to visit the plant, and that more will be needed to change the public picture.

People living near the plant

Local residents living near the plant are a specific target group. Whereas the internal experts find contact with the public in general difficult, relations with local residents are described as good. In practice, they meet with little opposition. The people living in the area are positive or indifferent towards the plant. They simply see it as a big company that provides employment to people living in the area.

1.2 Resistance to energy-from-waste in government, but opportunities at Economic Affairs

If the positioning of energy-from-waste is problematic as far as the public is concerned, it also forms a problem as regards the government. The internal experts blame this on the one-sided contacts that they have to the authorities; their contacts are mainly with the Ministry of Housing, Spatial Planning and the Environment (VROM). They state that they themselves are partly to blame for this; they have not made themselves clearly known (or perhaps known at all) to the other ministries. They comment that the sector did not take a professional approach at the time, and argue that it should have presented a stronger profile at the time so that they would have become an item on the agenda for the other ministries. And that is far from being the case now. There is little support and backing for energy-from-waste from the ministries at present. This is because of the interests that each of the ministries have. There are three ministries in particular involved: Housing, Spatial Planning and the Environment; Finance; and Economic Affairs.

1.2.1 VROM unwilling to see energy-from-waste as green energy

So far, the energy-from-waste sector has always had to negotiate with the Ministry of Housing, Spatial Planning and the Environment (VROM) because the government wants to place it in the environmental niche. Contrary to what the internal experts would like to see and the approach they support, VROM puts energy-from-waste in the sustainable energy category. In fact, VROM shows resistance to putting energy-from-waste into the green category. According to the internal experts, although the ministry does see it as a clean form of energy generation and really believes itself that it should come under green energy, VROM is unwilling to say so (at least publicly). After all, it suits them too well to regard energy-from-waste as sustainable, rather than green. Also, the ministry fears that if they regard energy-from-waste as green energy they will lose support from public organizations and the public in general. The internal experts say that VROM is actually supported in its view by the public organizations. These organisations do not regard energy-from-waste as green; unlike the internal experts, who argue that energy-from-waste in fact represents a solution to an environmental problem, the public organizations view it rather as a threat to the environment. This is because they fear an increase in waste production and a reduction in recycling. Developments that they have been combating for years now. And so this creates resistance in VROM too.

1.2.2 Energy-from-waste a threat to Finance Ministry

The Ministry of Finance has another interest, a financial interest, in refusing to view energy as green energy. After all, the ministry does not benefit if there is a reduction in waste dumping; it earns money from dumping, so it is in its interest for the dumping to continue, or at least not to be reduced. If the waste is used to generate energy, less will be dumped and so Finance will lose income.

1.2.3 Possibilities at Economic Affairs

The sector has had little contact with the Ministry of Economic Affairs so far, and the internal experts see possibilities here. So far, the Ministry of Economic Affairs is not aware that waste processing is an important sector of industry now, and particularly in future. This needs to be communicated (or communicated better) to the ministry; the internal experts state that this is still not being done sufficiently.

After all, the sector makes a substantial contribution to the economy in employment and technical development, so that the sector provides substantial economic spin-off. Additionally, the sector is a major investor, also in the more fragile regions like Kop van Noord-Holland.

On the other hand, the internal experts state that the ministries do recognize that energy-from-waste can make a contribution to solving the waste problem. And if the public were to describe energy-from-waste as green and clean energy, VROM will claim that it played its part in creating that view. But the perception of this energy as clean is very fragile, and according to the internal experts it would not take much to make that image collapse. There is then the risk that the positive picture will be lost again. It is therefore important to pay attention to this aspect.

1.3 Energy-from-waste in mid bracket for green perception

The table below shows schematically how green the various energy sources are perceived to be, according to the seven internal experts (expressed as a report figure from 0 to 10).

	Public / consumer	Government	Plant's internal experts
Solar	10	10	4, 7-10
Wind	8-10	9-10	4, 7-10
Waste	2-6	3-7	7-10
Oil	2-4	2-4,6	3-5
Gas	3, 6-9	4-7	5-7
Biomass	5-8, 10	8-10	3-8
Water	7-10	8-10	7-10
Nuclear	0-3	0-3	4-6
Coal	1-5	1-4	1-4

The internal experts put the perceptions of greenness in the following sequence:

Public / consumer	Government	Plant's internal experts
1. Solar	1. Solar	1. Solar, wind and water
2. Wind	2. Wind	
3. Gas and water	3. Biomass and water	
4. Biomass	4. Gas	4. Waste
5. Waste	5. Waste	

According to the internal experts, the public / energy consumers perceive solar energy as the most green, followed by wind and then (on the same level) gas and water.

The sequence for government is rather different, although again solar and wind energy respectively are perceived to be most green.

The sequence of green perception varies more widely among the internal experts than among the politicians and the public / consumers; for example, one gives the top place to solar energy and another to water energy. The internal experts' perception of the greenness of solar, wind and water is equally high.

A number of noteworthy results are listed below.

- Perception of greenness of energy-from-waste

There are varying views on how green the politicians perceive waste to be. One respondent states that at least the politicians are aware of energy-from-waste, unlike the public, so that politicians' perception of greenness is higher. Others argue that while politicians themselves may well see energy-from-waste as green, they will not say so publicly on grounds of political correctness. One internal expert sees that as a reason to characterize their perception of greenness as high, while another says that precisely for that reason their perception of greenness is low. Others state that the politicians do not see waste as green because they see it as sustainable energy, and therefore their perception of its greenness is low.

- Perception of wind as green

According to the internal experts, the public perceive wind energy as rather less green than the government and the internal experts. This is related to a rather more negative image; people don't want to have wind farms in their back gardens.

- Perception of biomass as green

The internal experts' views on their perception vary. Some state that the greenness is perceived as low because it does not make sense to plant woods and then cut them down again to use for energy. Others have a somewhat higher perception of the greenness of biomass. After all, it is clean energy, and not all of the energy from biomass is obtained from trees planted for the purpose. For example, compost is another raw material. The internal experts take the view that the government perceives biomass as very green. The internal experts state that the government is very positive about biomass and is proud of biomass. One even says "*The government is in league with biomass*".

- Perception of gas as green

The internal experts have varying views on how green gas is perceived to be. One says that consumers do not perceive gas as very green because gas is a fossil fuel and fossil fuels have a negative image. Accordingly, gas is not perceived as green energy. Another believes that gas is perceived as very green because natural gas is known as a clean fuel.

- Perception of nuclear energy as green

The internal experts perceive nuclear energy as greener than consumers and/or politicians do. This is because they have more knowledge of nuclear energy.

1.4 Various parties important

As the following parties will have different interests and opinions on green energy, it is suggested that they should take part in the following sessions.

- Environmental groupings
- Energy companies
- Employers
- EU, Interprovincial Consultation Committee (IPO)
- Consumers' Association
- Local residents
- National/local press
- Politicians / policy officials (Economic Affairs, VROM, Finance), particularly the advisors.

2 External experts: VVAV – there is more there than has come out so far.

2.1 Energy-from-waste positive in itself, but involves drawbacks and uncertainties

Waste is there, and always will be. Everyone agrees that incinerating waste to get energy from it is at any rate better than dumping it. At least something useful is being done with the waste.

The Environmental Federation and the press say that waste is a sort of unavoidable evil. Their view is that the creation of waste should be prevented in the first place. And then efforts should first be made to recycle the waste as far as possible before it is incinerated to produce energy from it.

Other positive aspects are also put forward, but these come mainly from the viewpoint of the employers' organization and the Sustainable Energy Consulting Group. They appear to take a more positive position on energy-from-waste than the press and the Environmental Federation. While the employers' organisation and the Sustainable Energy Consulting Group also put forward negative aspects, these are quoted mainly from the press and the Environmental Federation. They emphasize the drawbacks and uncertainties of energy-from-waste.

2.1.1 Energy-from-waste positive

Basically, they are all positive on energy-from-waste. At least it is doing something useful with the waste and offers a solution to the problem of waste. After all, it is better to incinerate the waste and recover energy from it than to dump it; dumping takes up space.

Also, it saves scarce raw materials, such as fossil fuel. If energy is produced from waste, there is no need to use up fossil resources. And everyone, including the Environmental Federation, sees it as a positive aspect that the process of generating energy-from-waste is very clean. They are aware that emissions are subject to very strict requirements, certainly by comparison with the requirements for ordinary rubbish incinerators and the emission requirements in other countries.

In addition to the above positive aspects that were also put forward at the internal session, the employers' organization states that energy-from-waste can actually provide two additional advantages for companies:

- The company can profile itself as a more environmentally friendly organization

If the waste is incinerated to extract energy from it, that can be viewed as high-quality processing. In this way, the company is making a contribution to sustainability and the economical use of energy sources. If a company has its waste processed in this way, it is something that it can boast of and be proud about.

“We don’t dump our waste, our waste goes to provide energy”. But it has to be added that this is a very fragile positive aspect. It would only take an unexpected incident at a waste incineration plant with negative consequences for the environment to wipe out the positive aspect at a stroke.

- More efficiency for company

If the waste is incinerated to extract energy from it, that can be a reason for the company not to sort the waste carefully (or to stop doing so). That could mean savings in time and money.

2.1.2 Energy-from-waste involves drawbacks and uncertainties

As well as the advantages, everyone cites drawbacks and uncertainties relating to energy-from-waste. They say that while it is a clean process, it is still seen as polluting the environment. It is also regarded as a threat to waste limitation and recycling of waste. Higher costs are expected too. These aspects are explained in more detail below.

Polluting the environment

All the parties state that energy-from-waste involves aspects of environmental pollution. As expected, the respondents state that despite the clean processing there is still an emission, in the absolute sense. Only that aspect of environmental pollution was brought forward at the internal session. But according to the respondents there are two other aspects of environmental pollution. It was stated in the interviews that the raw material required to produce energy-from-waste causes CO₂ emissions. It was also stated that there are always some waste residues to deal with. These aspects are examined below.

- Emission by waste incineration plant

Even if there are very good filters and the emissions are generally kept within the permitted limits, everyone agrees that they are still emissions. And any emission, no matter how slight it may be, is bad for the environment. Also, it is often unclear what substances the waste contains. The Environmental Federation, the press and the Sustainable Energy Office in particular state that if this is unclear, it is not clear either what substances the emission will contain. That applies particularly to industrial waste. According to the Sustainable Energy Office, waste is made up of 50% organic, sustainable materials and 50% other substances. According to the press, it is evident from statements by people living in the vicinity that the emissions are harmful or at least create a nuisance. The press believes this and therefore tends towards that opinion. So the press will write about this subject where possible. Local residents complain about odour nuisance caused by the waste incineration plant and say that they have health complaints. When local residents make statements of this kind, the press does not ask whether or not they are true. Residents say so, and so that is how it is. What’s more, the emissions can be seen in the form of large plumes of smoke, and that surely can’t be good.

- **CO₂ emissions in production of raw material for energy-from-waste**
The press, the Environmental Federation and the employers' organization state that energy is used in the production of energy-from-waste, and that this causes CO₂ emissions. The CO₂ emissions are harmful to the environment. According to the press and the environmental organization, the following aspects could cause the CO₂ emissions:
 - **Production of raw material**
It costs energy to produce the base material of the waste, and CO₂ is emitted in that process. Obviously, the waste consists of products and these first have to be produced and used; only then is the waste available. This is in contrast to wind, water and sun that are always there and do not need to be produced first.
 - **Transport is necessary to take the public's waste to the incineration plants.**
 - **In some cases, waste is first dried for high-quality incineration. So energy is first consumed to dry the waste, and then energy is extracted from it. This is seen as an unnecessary burden on the environment.**
- **Waste residues in extraction process**
The press and the Environmental Federation say that waste residues result from the extraction of energy-from-waste. These waste residues may contain environmentally polluting substances, and they have to be dumped somewhere.

Threat to waste restriction

Everyone says that there are fears that less efforts will be made to restrict waste if the waste is intended to be used for the extraction of energy. Or to put it more strongly, the Environmental Federation and the press fear that no attempt will be made to produce as little waste as possible now that there is a good use for it. The more the better! But energy-from-waste must not be used as an argument for opening up waste flows.

Threat to the recycling of waste

The Environmental Federation and the press argue that recycling should ideally take priority as it involves less CO₂ emissions than incineration. Waste should only be incinerated to extract energy from it once it is totally impossible to reuse it any more. The threat could lie in the following aspects:

- **Incineration of substances that are suitable for recycling** For example, the government has approved kitchen and garden waste for incineration even although it could be recycled. And wood fragments that could be processed into chipboard are being incinerated.
- **Stopping of initiatives for high degree of recycling**
Experience shows that new initiatives to promote recycling and ideas on how to implement this are being discontinued now that there is the possibility of incinerating waste to extract energy from it.

Higher costs

According to the employers' organization, companies and consumers have the idea that energy-from-waste will involve higher costs. This is seen as logical. After all, producing energy-from-waste is more laborious than in the case of the normal energy sources, and covers a smaller part of the total energy market.

The higher costs of energy-from-waste by comparison to regular energy sources could be a reason for both companies and consumers to be less positive about it.

2.2 VVAV members do their work well, but could still do better

2.2.1 VVAV members basically do their work well.

The respondents say that members of the Dutch Waste Processing Association (VVA V) do well as far as professional knowledge is concerned. The following aspects were cited:

- Processing very clean

All the respondents state that they regard the waste incineration plants' processing process as very clean. A great deal has been invested in optimizing processes. Of course VVAV members can scarcely do otherwise, as they have to comply with very strict emission requirements imposed by the government. VVAV members are world leaders as far as their process and filters are concerned.

- Knowledge and experience good

The respondents regard the knowledge and experience that the VVAV members have in-house as very good.

- Communication to interest group good

The Environmental Federation states that it is kept advised of any problems and is invited to take part in discussions on a range of matters such as licences. The Environmental Federation very much appreciated being involved in this way.

2.2.2 VVAV members could do better on image and efficiency

Despite the fact that VVAV members' professional knowledge and expertise is highly rated, they are not seen as the most innovative of waste-processing companies. Only those companies that have moved away from the traditional sector of waste incineration and have become large-scale professionals operating on a European scale through mergers are classified in that group. The employers' organization states that those companies call themselves multi-purpose suppliers and are largely seen as such by the market. They supply energy and collect waste, but they also supply cables, provide water supplies, supply industrial sites etc.

VVAV members are assessed as less good in the areas of image and efficiency by comparison with those companies.

VVAV members' image not ideal

It came out in the internal session that the negative image of the waste sector could be a factor in the negative perception of energy-from-waste. That problem does not seem to play a role with the respondents. They state that the waste processing companies have a good reliable reputation. But the VVAV still conjures up the picture of a traditional public enterprise for the respondents. VVAV members are regarded as big unwieldy companies that are “*under the government's thumb*”.

A single respondent stated that this picture is created because people do not know much about the VVAV members. Companies and/or the public themselves have too little knowledge of and experience with VVAV members. They generally all have to deal with an intermediary, the waste collector, rather than with the VVAV members themselves. So, it is argued, their picture is excessively determined by the general picture that people have of the government.

The Sustainable Energy Project Office also states that VVAV adopts a “*Calimero attitude*”.

VVAV is too ready to feel that it has been put at a disadvantage, the argument goes; in VVAV's eyes other companies are allowed to do much more than it is. That is not the case at all, according to the Sustainable Energy Project Office.

Efficiency could be better

There is an idea that VVAV members could work a good deal more efficiently and effectively, and therefore more cheaply. That idea appears to be related to VVAV members' image, the image of a traditional public enterprise. The press, the environmental group and the employers' organization state that VVAV members should be able to perform better as far as their returns are concerned. It is suggested that VVAV members could operate rather more selectively and process low-value waste at a low tariff or refuse to accept it at all. It is also stated that VVAV should process larger quantities of waste. These are methods that the innovative merged companies already apply. However this does not appear feasible in practice, as VVAV members are dependent on what is thrown away by the public.

2.2.3 Possibilities in privatization and external communication

Possibilities for improvement are seen in privatization and external communication. These aspects are explained in more detail below.

Privatization necessary to strengthen competitive position

According to the employers' organization, VVAV members should privatize themselves. The reasons are:

- To be better able to face up to future competition
It is expected that there will be an open European market in a few years' time and that competition will be fierce as a result, particularly from Germany, Belgium and France. The employers' organization thinks that VVAV members should therefore be given the freedom now to take their place in the market and learn to stand on their own feet. If VVAV members are the last to enter the market, there is a high risk that they will be squeezed out. Of course, it is a precondition that the privatization should be properly controlled and supervised.
- To cut costs/prices
VVAV members will have to become cheaper. On privatization, the price for companies and consumers will be lower.

External communication

According to the respondents, VVAV should make itself much more visible publicly. Other energy companies already do this, for instance through commercials on TV and radio and advertisements in newspapers. Aspects that could be emphasized include:

- Creating awareness among the public and companies
As reported in the internal session, the respondents also state that many members of the public do not know that energy can be extracted from waste and what the social relevance of this is. VVAV could draw this to their attention.
- Putting knowledge and experience on display
It is apparently not known that VVAV has a great deal of in-house knowledge and external expertise.
- Profiling as energy producer rather than waste processor
The Sustainable Energy Project Office and the employers' organization state that VVAV members do more than simply processing waste. They say that the generally-held picture of VVAV is too limited and VVAV is seen only as a waste processor.

2.3 No clear political policy on energy-from-waste, but possibilities at Economic Affairs

2.3.1 VROM focuses on environmental aspects

While the Ministry of Housing, Spatial Planning and the Environment (VROM) deals actively with energy-from-waste, the respondents say that its policy is aimed solely at the environmental aspects. As a result, it focuses on the reduction of CO₂ emissions and on waste policy. And everyone agrees that it should! But the result is that:

- decisions are taken that are subordinate to the economic interests, according to the employers' organization;
- there are very strict regulations on waste policy, according to the Sustainable Energy Project Office. And that creates a threshold to be overcome by energy-from-waste. This is seen as unfortunate, particularly given the present shortage of adequate energy sources. For example, there are only limited supplies of gas left.

It is not clear to what extent VROM views energy-from-waste as green energy. On the one hand, the respondents state that VROM does not view it as green energy because energy-from-waste is not so clean. It has negative consequences for the environment (see section 1.2.1). On the other hand, the Environmental Federation states that, as was also brought out in the internal session, VROM "sells" it as green energy.

Energy-from-waste is regarded as sustainable energy rather than green energy.

Sustainable energy is a more general concept. Also, energy-from-waste is made partly from sustainable waste and can be regarded as a form of recycling.

Energy-from-waste is not viewed as really green, because green energy is a vague concept in the first place. It is a fashionable term that is used purely and simply as a marketing tool. No-one knows precisely how it is perceived or how it should be defined, but one thing is certain. Because of the drawbacks mentioned above, energy-from-waste is definitely not classified as green energy. It is and remains a polluting form of energy generation. In the case of water, wind and sun, the raw materials are pure and clean and no raw materials are lost. As a result, those energy sources can be classified as green. Partly for the above reasons, it is felt that VVAV members will not be able to sell energy-from-waste as green energy.

"VVAV won't manage to sell energy-from-waste as green energy either to public opinion or to the politicians".

2.3.2 Economic Affairs not sufficiently interested in energy-from-waste, but there are possibilities.

Neither the press nor the Environmental Federation really know whether, how and to what extent the Ministry of Economic Affairs is involved with energy-from-waste. The respondents state that they are not able to judge that question properly from their positions.

The employers' organization and the Sustainable Energy Project Office have more knowledge and experience on that aspect. Like the external experts in the internal session, they state that the Ministry of Economic Affairs should take a more active interest in energy-from-waste. The Sustainable Energy Project Office states that the Ministry of Economic Affairs only concerns itself with energy-from-waste as far as the issue of sustainable energy is concerned. And even then, the ministry does not play any obvious active role. The employers' organization takes the view that the Ministry of Economic Affairs should take a greater interest in energy-from-waste in order to look after the economic interests, since VROM is already looking after the environmental aspect of energy-from-waste. But the Ministry of Economic Affairs does not do so nearly enough, in the view of the employers' organization.

Energy-from-waste is not a particularly popular subject at Economic Affairs, as the ministry wants to focus on innovation and technology. It sees energy-from-waste as something belonging to the old economy and therefore as not of much interest to it. According to the employers' organization, the Ministry of Economic Affairs is a difficult body to gain contacts to in any case; people there are hiding away, particularly after the recent reorganization, and so it will be very difficult to get Economic Affairs more involved in the discussion on energy-from-waste. However, they state that it is a body that should really involve itself more with the subject, for the following three reasons:

- Global climate change

Energy-from-waste can make a positive contribution to the discussion on global climate change. Less fossil fuels would be needed if energy-from-waste is used. And that would be good for the climate.

- "Old" economy necessary

Energy and fuels and their availability are important, even in today's modern world, says the employers' organization Society does not run on technology alone, and in any case (they point out) technology does not always come up to economic and other expectations. "WorldOnLine" is a good example; it all went wrong for that organization.

- Economic importance

The sector is a major employer and carries out substantial investment. Its economic importance will become even greater when the European market is opened up. It appears that there are great opportunities to the East in particular (Germany, Poland).

Despite the rather difficult attitude adopted by Economic Affairs, the respondents consider that it may be possible to involve that body more in the discussion by:

- Setting up a proper lobby
- Actively inviting individuals from the Ministry of Economic Affairs.

2.4 No role for Ministry of Finance

There is little to be said about the Ministry of Finance. It is simply stated that the Ministry itself does not advance any opinion on the subject of energy-from-waste itself. The Ministry is said to be interested only in the figures. *“As long as the bottom line is all right”*.

3 Government: Mainly positive perception of energy-from-waste, but drawbacks and discussion present

3.1 Range of perceptions of energy-from-waste; positive points appear to predominate, but negative points present too.

Energy-from-waste appears to be an item on the agenda at Economic Affairs. This is contrary to what was argued in the internal session. While it is not mentioned separately as a specific point, it is on the agenda alongside the other forms of energy generation. It is also stated that the fact that a covenant has been entered into with the sector already shows that energy-from-waste is an item on the agenda for Economic Affairs.

Since energy has been extracted from waste, some people at VROM are taking a more positive and more interested view of waste processing than previously, when waste was only incinerated or used as landfill. VROM uses Lansink's Ladder of waste management priorities. When waste was incinerated, it was on the lowest (fourth) rung of the ladder: landfill/incineration. But obtaining energy-from-waste is seen as a form of recycling, the second rung on Lansink's Ladder.

All the respondents are overwhelmingly positive towards energy-from-waste, provided that the waste is unavoidable and is incinerated with the highest possible yield of energy. In what follows, the positive aspects are treated first and then the negative aspects of energy-from-waste are dealt with.

3.1.1 Positive aspects of energy-from-waste

Energy-from-waste contributes to reduction of CO₂ emissions

Using energy-from-waste means that less demand has to be made on fossil fuels. That contributes to the reduction of CO₂ emissions, one of the government's objectives. This point is mentioned by practically all the respondents. Fossil fuels are long-cycle materials that need a long time to grow. Coal, for example, took a very long time to reach the quantities that are now present. Accordingly, coal absorbed CO₂ long ago. When that coal is burnt now, it releases CO₂. Short-cycle material, which according to most of the respondents makes up 50% of the waste from which energy is reclaimed, only takes a short time to grow and has absorbed CO₂ in a much more recent time period than coal. So the net CO₂ contribution from burning that material is zero, which is not the case when burning fossil fuels. Therefore, assuming that half of the waste from which energy is reclaimed consists of short-cycle material, that half is making a contribution to reducing CO₂ emissions.

Energy-from-waste saves fossil fuels

Using alternative forms of energy generation such as energy-from-waste helps to diminish stocks of fossil energy less rapidly, the respondent from Economic Affairs states. Fossil fuels are scarce, and stocks will eventually run out. Since according to most of the respondents half of the waste from which energy is reclaimed consists of short-cycle (non-fossil) material, this means that the Netherlands is less dependent on fossil fuels, since less use has to be made of them.

Energy-from-waste contributes to 10% target for sustainable energy

By 2020, 10% of the energy supply in the Netherlands has to consist of sustainable energy. Economic Affairs, and practically all the other respondents, view energy derived from the short-cycle part of waste as sustainable energy because fossil fuels are saved and a contribution is made to CO₂ reduction. In this way, energy-from-waste contributes to the 10% target, which Economic Affairs sees as positive.

Waste incineration offers solution to problems of illegal waste dumping and landfill

The Economic Affairs respondent states that disposing of waste as landfill is very expensive; certain environmental levies have to be paid. That encourages the dumping of waste abroad, or illegal dumping within the Netherlands, to avoid the levies. Obtaining energy-from-waste could provide a solution to this problem, since the waste is incinerated and therefore no longer needs to be dumped.

Respondents from VROM are also positive about the reduction in the quantity of waste that has to be dumped. This reduces the amount of rotting waste, which can mean that certain substances could end up in the soil or in the groundwater in 20 years' time or even later.

Useful application for residual materials from energy-from-waste

Residual materials remaining after the waste has been incinerated can be used as a sublayer for roads, noise barriers and dykes. This provides a useful application for material that could not otherwise be used.

3.1.2 But negative aspects too

Lack of knowledge results in emotional resistance to waste

Although practically all the respondents view energy-from-waste positively, they state that there is also resistance to waste itself within the ministries of Economic Affairs and VROM. Waste is dirty, nothing good can be produced from waste; these are views that are found within the ministries. Some respondents state that people with these views are led by emotional considerations rather than rational arguments. "Politics is emotion", as they comment in this context.

According to the respondent from VROM, these people are influenced by what the environmental groups say. That is in line with the picture that came out in the internal session with the experts.

The respondent from VROM says that there is a negative attitude on waste not only among people within the ministries, but also among the public. Environmental considerations also affect their feelings and emotions. As a result, members of the public “who do not think for themselves but follow environmental groups” have a negative attitude towards waste.

Respondents state that if people were open to rational arguments they would be less negative towards energy-from-waste. So from that viewpoint, a negative attitude towards energy-from-waste appears to be mainly a lack of knowledge.

Fear of increase in waste generation

Respondents state that some people within VROM and environmental movements are afraid of an increase in waste collection and a drop in efforts to prevent waste. So despite the fact that the respondents themselves state that waste prevention will always take priority and there will never be additional collection of waste in order to recover energy from it, some people appear convinced that this will happen. Respondents state that the only option for obtaining more energy-from-waste is to achieve a higher energy yield. According to the respondents, this would mean that the above fears would be removed and public acceptance would be increased.

Resistance to emissions released on incineration

Despite the fact that energy-from-waste is stated to contribute to a reduction in CO₂ emissions, some people still see emissions as objectionable for the environment. That conviction is found both in respondents and in some people at Economic Affairs and VROM. On the other hand, some argue that it is a necessary evil. Emissions can be reduced, but then the waste would have to be cleaned using water, and that results in pollution of the groundwater. In the waste processing process, the total output of environmental pollution must be restricted as much as possible. Although it is recognized that this is being done through energy-from-waste, the CO₂ emissions are still there and therefore damaging.

Others within both Economic Affairs and the environmental movements state that they prefer to see waste used as landfill until a method is developed to reduce or remove the emissions that are now released during incineration. However, no-one at VROM is in favour of this; dumping is always the last option. They talk about “*everlasting problems in one place*” when they talk about dumping.

3.2 Lack of agreement within and between ministries

3.2.1 No agreement on green and sustainable nature of energy-from-waste at VROM and Economic Affairs

Lack of agreement on energy-from-waste as sustainable energy

As stated above, practically all the respondents regard the energy derived from the short-cycle part of the waste as sustainable energy. However, two respondents from VROM think that energy-from-waste is not sustainable. They argue that energy-from-waste must not be compared with sustainable energy at all as long as CO₂ is released. Energy-from-waste is a better alternative to fossil fuels, but is still in the same class. By contrast, they see energy from windmills and solar energy as sustainable energy. They consider the argument that energy-from-waste saves fossil fuels to be weak, arguing that it will be thousands of years before these fossil fuels run out.

However, they do say that energy-from-waste is in fact sustainable energy when it is derived from biomass or short-cycle materials. Whereas practically all the respondents state that half of the energy-from-waste is derived from biomass, two respondents from VROM appear to be confused on this point as they state categorically that energy-from-waste is not sustainable. Another reason why they do not see it as sustainable might be that they attach a great deal of importance to the CO₂ emissions that still remain. *“Energy-from-waste has to be treated just the same as fossil fuels; but it would be a different story if something was done about the CO₂ emissions.”*

Lack of agreement on energy-from-waste as green energy

All the respondents state that, as far as they are concerned, the energy from the short-cycle part of the waste from which energy is recovered can be described as green, for the same reasons as energy-from-waste can be described as sustainable.

The preference at Economic Affairs would be to let the market, the consumers themselves, decide what is or is not green energy. If the producer wants to sell it as green and the consumer is prepared to buy it as green energy, Economic Affairs will be quite happy. So on the one hand it looks as if Economic Affairs is not adopting any clear position itself. On the other hand, it appears from the assumption that Economic Affairs will not give energy-from-waste a green certificate that it is not formally seen as green. The respondent from Economic Affairs says that the sector only wants the certificate because it will then get tax money, and argues that the government should not have to put up money automatically as soon as something is defined as green. The focus should be on the question *“Will additional money here result in more green energy?”*

All the respondents state that there is resistance within the ministries to designating energy-from-waste as green. There are fears that if energy-from-waste (or part of it) is designated as green, the demand for energy-from-waste, and therefore the quantity of waste in the Netherlands, will increase.

3.2.2 Discussions over degree of fiscal stimulus within Economic Affairs and between Economic Affairs and VROM

Economic Affairs wonders to what extent fiscal stimulus will result in more energy-from-waste

Some people within Economic Affairs wonder to what extent energy-from-waste should be given fiscal stimulus. Economic Affairs has the formal role of providing fiscal stimulus to ensure that the waste incineration plans can generate energy-from-waste. Fiscal stimulus is provided only where necessary, for instance where additional costs are involved.

The discussion is on the extent to which the production of energy-from-waste by the incineration plants should still receive fiscal stimulus, as the plants' capacity has been frozen and the plants now have a limited capacity. It is therefore doubtful to what extent fiscal stimulus for waste will result in more energy-from-waste. *"You can stimulate as much as you like, but that won't result in more energy, so you won't stimulate demand – and how much does the sector still need the money?"*, the argument goes.

So the question is whether there should be any further stimulus at all, or whether the waste should go to other plants with a higher yield, where a greater amount of sustainable energy can be generated. However, the respondent states that the basis of this argument is the limited capacity; if that changed, for instance if the restriction on capacity was removed, the discussion might be different.

Public organizations such as environmental movements also play a role. According to the respondent, the government is called to account on all the public issues it is working on. There is already a discussion on the tax money received by waste incineration plants. Environmental groups are asking why the government is subsidizing waste processing plants, because the environmental groups do not agree with the principles behind this. It then becomes a live public issue, so that the public and members of Parliament start asking questions. That is something that Economic Affairs has to take account of.

VROM afraid of oversubsidizing through green certificates

A respondent from VROM states that if green certificates are issued there is the possibility that waste from which green energy can be obtained will be brought in from abroad. Green certificates could be obtained in that way. The danger then is that instead of promoting green energy, energy will in fact be destroyed in transporting the waste. The respondent from VROM argues that there is perhaps excessive subsidization in cases of this kind.

3.2.3 Economic Affairs discussion on market forces: Economic Affairs wants more of a free market, VROM and the incineration plants do not

At Economic Affairs there is a desire to see market forces operating more in the waste sector, whereas according to Economic Affairs the waste incineration plants prefer a government-regulated market. Economic Affairs says that the incineration plants do not want to operate in a free market, they want to remain under government protection because the government covers the plants' risks and the costs can be recovered from the taxpayer. VROM is not totally in favour of a free market either.

According to Economic Affairs, the sector is subject to too many government rules partly because of VROM's waste policy. In other words, the market is not liberalized at the moment; there is no free interaction of demand and supply. Economic Affairs would like to see that happen. Strong competition among the waste incineration plans would be a good thing, Economic Affairs thinks; the waste would then go where processing costs are lowest. Of course, there would then have to be a level playing field in Europe, since there would not be fair competition if the waste incineration plants in the Netherlands were liberalized while plans in other countries were still protected. The plants in the Netherlands would come off worst in that case.

However both Economic Affairs and respondents from VROM itself state that VROM takes a different view on less government control. It is not clear exactly how and in what way, as the respondent from VROM said that this would have to be discussed internally first.

3.3 VVAV a professional group; suggestions aimed primarily at public and operational management

3.3.1 VVAV a professional group

All the respondents state that they view VVAV as a professional group that is good to work with. Contacts are generally good. According to the respondents, VVAV cooperates well, is open to discussion and does what has to be done.

Despite this, a number of suggestions were made that VVAV could work on in future.

3.3.2 Communication to the public needed for more understanding

Waste in itself, and energy-from-waste too, have a poor public image. That is the first point made by practically all the respondents. This is due both to environmental groups and to negative incidents in the past, such as the dioxin scandal. Negative incidents stay in the public's memory for a long time and are difficult to clear up. The media are also a factor in this; they emphasize everything that goes wrong and don't mention all the things that go right. The result of all this is that the public has an image of the waste sector as a rather dubious sector. Accordingly, there is a role here for VVAV to provide information in which the positive aspects of energy-from-waste mentioned above could be emphasized. That will also make the public familiar with the term energy-from-waste. "Sun, sea and wind" sounds nice and clean; "energy-from-waste" does not. That picture could be changed by public education.

The respondent from Novem states that if waste processing is regionalized it could become more obvious to the public what happens to their waste and how they themselves can benefit from it, for instance by getting the heat and electricity back from the waste incineration plants themselves. The image of the waste incineration plants could be improved by explaining to the public that their own waste is used to heat their homes and provide electricity.

Another point mentioned is to give guided tours to the public, so that they can see with their own eyes that it is all done cleanly.

3.3.3 VVAV members must act innovatively and creatively

The respondents put forward various suggestions:

- The respondent from VROM recommends building up links to other waste processors. Sharing ideas on the possibilities of processing waste, the technologies that can be used etc. could be good for the market and technological developments in the long term.
- The waste incineration plants could work to develop creative methods of waste processing. One example of a waste incineration plant taking this kind of initiative is the plant in Amsterdam, which is looking at technologies and solutions to deal with sludge etc. VVAV and the plants could work on initiatives of this kind and ensure that appropriate developed technologies are applied in various plants.
- As stated above, the view of the waste sector is also based on matters that relate to waste but are not really the responsibility of the incineration plants. An example is the transport of waste; whenever anything goes wrong the media pick up on it. That has an influence on the image the public gains of the waste sector, and therefore of the waste incineration plants and energy-from-waste. VVAV could possibly engage more in the whole waste supply chain, since all aspects of it affect the image of waste processing.

4 Consumers: Lack of knowledge no reason for rejection

This chapter brings together the outcomes of the qualitative and quantitative consumer surveys.

4.1 Lack of knowledge but rather more interest

4.1.1 Little thirst for knowledge about energy

As expected, energy consumers are not much interested in energy. Energy is simply an ordinary product that people do not think about. People do not get interested in energy, let alone energy-from-waste. Nevertheless, though, energy is important for energy consumers. They say that they are dependent on energy. But because of a lack of interest in energy in general, they are not interested in the energy market either. It is not something they think about, and as a result knowledge about it is also likely to be slight. For instance, respondents state that a number of things are unclear in the energy market. Another consequence of the lack of interest in energy is that people do not know much about government policy.

The quantitative part of the survey looked in more detail at the knowledge consumers have of the different forms of energy. Respondents were also asked to what extent they would like to have more knowledge. Combining the outcomes gives the following “knowledge ladder”.

It shows clearly that the respondents themselves said that they did not have much knowledge, but also that they do not feel the need for additional knowledge. As for the existing knowledge, there is a clear gap in knowledge about energy-from-waste (and biomass). However, there is some interest in additional knowledge on these forms of energy.

1 | Greatest need for knowledge on “new” energy sources

Knowledge ladder	Existing / needed				Total existing	Total needed
	-/-	-/+	+/-	+/+		
	%	%	%	%	%	%
Wind/water/solar	57	16	17	11	28	27
Gas/oil/coal	77	3	19	2	21	5
Biomass/waste	74	18	5	3	8	21

Explanation:

- means less than average knowledge of or need for.

+ means more than average knowledge of or need for

-/- therefore means less than average knowledge of and less than average need for

4.1.2 Choice of energy type not unimportant

As expected, consumers see energy in general as something to be taken for granted. Energy is simply there, and they do not consciously think about it. But even although it is an ordinary product, the respondents do think that energy is very important. They say that they are dependent on energy. Society could not function without energy, and the world would come to a standstill. After all, the whole economy operates through computers etc. and these machines depend on electricity. People only become aware of this when energy is no longer so normal, when it is no longer there – for instance if there is a power cut. That is when people realize what it would be like to have to live without electricity.

The respondents say that the source of the energy is not important. It is not something they are concerned about or that they consciously think about. Apparently, the link between electricity and the source of the energy is not made. And so it is not a basis for consumers' actions. The respondents have not opted for a different form of energy or energy company and are not thinking of doing so; after all, the product remains the same whatever source of energy it comes from. "So why should you change?"

This does not correspond to the picture that came out of the internal session. There, it was suggested that consumers have the idea that the energy produced from waste is different from the usual energy, that energy-from-waste was of lower quality.

Even although the energy source is not felt to be important, some individuals say that raw materials should be used frugally because they are scarce. They feel that raw materials should be left over for the coming generations. A single respondent says that the energy source could perhaps be important for people who are somewhat more environmentally aware, and that they might opt for an energy source causing less environmental pollution.

The importance of the choice of type of energy source was also measured in the quantitative part. 8% state that the choice is very important, and 20% say that it is important.

But here again, there are more respondents who consider the choice of type of energy unimportant than those who find it important.

2 / Majority of respondents considering choice of energy type unimportant

	%	%
Very important	8	
Important	20	
<i>Important: subtotal</i>		28
Neither important nor unimportant	36	
Unimportant	22	
Very unimportant	13	
<i>Unimportant: subtotal</i>		35

4.1.3 Thinking about energy consciously (to some extent)

Respondents were also asked how consciously they think about electricity. Only 16% say that they do not consciously think about energy at all. 9% think about it very consciously. So three-quarters of consumers think about energy to some extent. It may therefore be concluded that on average energy is there in the background, but not something that people are conscious of all day.

3 | 75% think about energy consciously (to some extent)

	%
Very consciously	9
Fairly consciously	41
Consciously to some extent	34
Not at all	16

The fact that people are conscious of energy to some extent is also shown from the answers to the questions on how aware they are of the quantity of energy they consume and the costs involved in that consumption. Approximately one-third state that they are well aware or very well aware.

4 | One-third well aware or very well aware of energy consumption

How aware	Quantity	Cost
	%	%
Very well aware	7	6
Well aware	29	26
Neither well aware nor unaware	41	41
Unaware	15	22
Completely unaware	7	6

4.2 Waste: what are we talking about?

Within the parameters of the study, it is naturally extremely important to know what we are talking about. What do respondents understand by waste? It is evident that people look for waste “close to home”. Practically all the spontaneous replies relate to household waste. Generally, waste is described as what we can no longer use. More negative connotations are mentioned much less frequently.

4.2.1 Waste is what we do not need

5 / Waste thought of primarily as household waste

What first comes to mind for waste:	%
What is thrown away / is unusable	35
Household waste / packaging	30
Kitchen and garden waste	11
Landfill sites, rubbish tips, waste heaps	9
Industrial waste, building waste, durable waste	8
Smell, filth, dirt	8
Incineration, processing, recycling	6
Others	11
Don't know	5
<i>Total</i>	<i>123</i>
For me, waste is:	
What cannot be used / recycled	30
Household waste	28
What is thrown away / superfluous	22
Residues / packaging	15
Industrial waste (rubble, wood)	4
Gas emissions, discharges, residues	4
Others	9
Don't know	3
<i>Total</i>	<i>115</i>

4.2.2 And that is a lot

What we do not use or can no longer use is quite a lot. And respondents make an interesting distinction by stating that we also throw away a lot of things that someone else could perhaps use.

6 / Waste consists mainly of materials and residues

Waste consists of:	%
Materials (plastic, wood, paper etc.)	24
Residues / packaging	20
Kitchen and garden waste; organic waste	14
Food residues	13
What cannot be used/recycled	13
Household waste	10
What is superfluous	9
Industrial and chemical waste	7
Others	30
Don't know	5
<i>Total</i>	<i>145</i>

4.2.3 We make all sorts of things from it

People do have the idea that all sorts of useful things are done with waste. But this relates mainly to that part of the waste that is collected separately. However, 7% think that energy is generated from it.

7 | 7% think that energy is produced from waste

We use waste to make:	%
Paper and paper goods	40
Plastic, synthetics	33
Compost, artificial fertilizer	20
Glass, bottles	19
Recycled materials	14
Energy, biogas, recovered heat	7
Asphalt, stone chippings for road surface	7
Others	13
Don't know	29
<i>Total</i>	<i>182</i>

4.2.4 And we want to go on doing so

We want to see useful things being done with waste. Recycling; 7% now mention energy too. And otherwise it should be “disposed of” (ecologically). A large group think that waste should be incinerated or destroyed.

8 | More than half want to recycle waste; 7% expressly mention recycling to energy

What should be done with it:	%
Reuse (recycling, composting)	50
Recycling to energy	7
	0
Incinerate/destroy	34
Process (ecologically)	9
Remove/clear/dispose of	6
Others	16
No idea	9
<i>Total</i>	<i>131</i>

4.2.5 We get energy from incineration

What comes to mind when you think of generating energy-from-waste?

To that question, one-third answered “the process” or “incineration”. 4% have negative pictures of the generation of energy-from-waste.

9 / 10% think that generating energy-from-waste is a good solution for the environment

	%
The process, incineration	34
Good solution, good for the environment	10
Biogas, biomass, bioenergy	6
(Green) electricity, energy	2
Smell, harmful gases, environmental pollution	4
Others	9
Nothing	38
<i>Total</i>	<i>103</i>

4.3 Clear difference in perception of energy sources

The respondents mention clear differences between the sources from which energy is obtained. For example, solar energy, wind energy and energy from water power are seen as green energy. Nuclear energy and energy from oil, gas, coal, biomass and waste are definitely not. Solar energy, wind energy and energy from water power, waste and biomass are felt to be sustainable energy sources. Oil, gas and coal are not.

The respondents are familiar with nuclear energy and energy from oil, gas and coal; these sources are mentioned spontaneously. Energy-from-waste and biomass is less familiar or unfamiliar.

Energy-from-waste and energy from bio mass are mentioned as the energy sources of the future together with water, wind and solar energy. Oil, gas, coal and nuclear energy are not seen as energy sources of the future. According to the respondents, the energy sources could be placed on a timeline. Coal is the oldest energy source, followed by oil, gas and nuclear energy in that order. Solar, wind and water power all come next. Finally, biomass and energy-from-waste are seen as the most recent energy sources.

The above and other aspects mentioned are shown in table form below. Note that these are aspects that were mentioned spontaneously.

10 | Energy-from-waste has many positive aspects but is not green

	Solar	Wind	Water	Oil	Gas	Coal	Nuclear	Biomass	Waste
Positive									
Ecological	X	X	X					X	X
Inexhaustible	X	X	X					X	X
Not difficult to extract	X	X	X						X
Cheap for consumer				X	X	X	X		X
Many jobs						X			
Sourceable in the Netherlands	X	X			X	X		X	X
Green	X	X	X						
Energy of the future	X	X	X					X	X

11 | *Energy-from-waste scores low on environment but is not well-known*

	Solar	Wind	Water	Oil	Gas	Coal	Nuclear	Biomass	Waste
Negative									
Bad for environment									
• Emissions/CO ₂				X	X	X	X		X
• Odour nuisance								X	X
• Pollution of horizon		X							X
• Damage to soil and water				X	X				
Exhaustible				X	X	X			
Not people-friendly				X		X			
Laborious process				X	X	X			
Not sourceable in the Netherlands				X					
Expensive for consumers	X	X	X						
Hazardous							X		
Not familiar								X	X

4.3.1 Sun, water and wind: green, sustainable and for the future

As expected, the respondents see water energy, solar energy and wind energy as “green energy”. They say that the raw materials of these energy sources are clean and pure, and that obtaining power from these energy sources does not harm the environment; the soil, air and water are not polluted. They also view these sources as sustainable. The respondents state that these energy sources are “*inexhaustible*”; they will never run out. The sources are topped up by nature itself. And finally, they see these energy sources as the sources of energy for the future; sun, wind and water could be possible replacements for the fossil energy sources. According to the respondents, most of the energy being extracted at present comes from these fossil energy sources. But the sources are scarce and stocks will be exhausted at some point.

4.3.2 Oil, gas, coal, and nuclear energy: environmentally unfriendly, non-sustainable and cheap

The energy sources oil, gas, coal and nuclear are seen as bad for the environment; these sources cause emissions (of CO₂) and can cause harm to the soil and water. The processing of all these sources involves (CO₂) emissions, causing air pollution. And the soil and water can be polluted by oil, since oil can leak from pipelines and tankers. Gas can also harm the soil; according to some respondents, it can lead to collapses and earthquakes. All the respondents see nuclear energy as dangerous: if there is a mishap in a nuclear power plant it can have major negative consequences. *“If something goes wrong, it really goes wrong”*.

Energy from oil, gas, coal and nuclear power is felt to be non-sustainable, because the respondents say that oil, gas and coal are *“exhaustible”*. It will eventually become impossible to obtain energy from these sources because there will be no oil, gas and coal left. Stocks of oil, gas and coal will eventually run out and cannot be replaced.

Respondents say that energy from oil, gas and nuclear power is relatively cheap for consumers. The major part of the energy supply is derived from these sources, and there is the idea that exploiting these sources makes the energy cheap. In the respondents' view, it is not expensive to extract large quantities of these energy sources.

4.3.3 Biomass: not green but sustainable, and for the future

The respondents are not very familiar with biomass. They state that it is a new kind of energy source, but they do not know exactly what it involves. Most of them seem to think that it refers to energy from biological waste, i.e. energy from collected vegetable, fruit and garden waste. In any case, the respondents say that it is not green energy because the raw materials are not clean and pure. The respondents' view is that energy from biomass is obtained by burning kitchen and garden waste, and that this material smells and contains bacteria. As a result, they say, the incinerators smell too. But it is seen as sustainable; there will always be biological waste. This also ties in to the idea that energy from biomass can be seen as an energy source for the future. It is a new kind of energy source and could possibly be a replacement for energy from fossil fuels.

4.4 Energy-from-waste: generally unfamiliar, and causes problems as well as solving them

The study shows that the respondents are not familiar with energy-from-waste. They have the idea that it could be a solution to the waste problem, the shortage of (fossil) energy sources, and problems of poor working conditions when extracting energy sources. But they see energy-from-waste primarily as a cause of problems; they see it as harmful to the environment. These aspects are further explained in the following subsections.

4.4.1 Energy-from-waste generally unfamiliar

As predicted in the internal session, the respondents are quite unfamiliar with energy-from-waste. In fact, it is the least familiar of the energy sources. The respondents do not name energy-from-waste spontaneously. And practically all the respondents say that they have little knowledge of energy-from-waste. For instance, they are not clear on the following aspects:

- Things that are incinerated

They are uncertain whether it is only sorted waste or all the waste that is incinerated. Some of them appear to confuse energy-from-waste with energy from biomass. They state that only biological material is incinerated, because after all incineration of nonbiological material would release too many harmful substances. They mention for instance the incineration of plastic. Others say that everything is incinerated. Including plastic, because that forms part of ordinary household rubbish. *“Milk cartons have plastic in them, and they just get thrown out as usual”*.

One respondent even thinks that the waste is in fact sorted and that different kinds of energy are obtained in this way.

- Consumer sorting of waste

The consumers wonder whether they will have to go on sorting the waste themselves if it is going to be incinerated to give energy. If the separated waste is all incinerated together they do not see any reason to go on sorting it. For example they would stop separating kitchen and garden waste and paper from the rest of the household waste if it is all going into one pile for incineration. So why should we go on sorting the waste?

- Filtering emissions

There is a lack of clarity on whether the emissions from the waste incineration plant are filtered or not. Some respondents say that this probably is done.

4.4.2 Energy-from-waste as a problem solver

Even although energy-from-waste is quite unfamiliar, people still have certain ideas about it. Energy-from-waste is regarded as a new form of energy. Respondents see it as an energy form of the future. Also, consumers see energy-from-waste as a form of energy that is inexhaustible. They think that there will always be waste from companies and consumers, so it will always be possible to obtain energy-from-waste. And a single respondent sees it as a form of recycling. The waste is used usefully again, not just dumped. *“The circle is complete again”*.

There is the idea that energy-from-waste can be a problem solution. It is seen as a solution to the waste problem, to the shortage of raw materials, and to working condition problems in extracting energy services. These aspects are examined below.

- Solution to waste problem

If energy is obtained from waste, this is seen to be a solution to the waste problem. There is then no need to worry about what to do with all the waste. Companies and consumers will go on producing waste in future, and it piles up. The waste has to go somewhere. Incinerating it is better than dumping it, because in the respondents' view dumping pollutes the environment.

12 | Two-thirds see incineration of waste as good or very good solution to problem of waste

Incinerating waste is:	%
very good/good solution to waste problem	67
very bad/bad solution to waste problem	14
No opinion	19

- Solution to problem of shortage of raw materials

Energy-from-waste does not use up any scarce raw materials – resources that should be used frugally.

- Solution to problems of poor working conditions in extraction of energy sources

The respondents see energy-from-waste as a people-friendly form of energy extraction. In their view, little human effort is involved, by contrast to raw materials that have to be extracted. These involve a great deal of human effort, often in unpleasant working conditions, for instance in the extraction of gas, oil and coal.

4.4.3 Energy-from-waste as a cause of problems

While the respondents have the idea that energy-from-waste can be a problem solution, it is seen mainly as a cause of problems. The respondents see it as a polluting energy source.

As predicted in the internal session, consumers say that energy-from-waste has environmentally polluting aspects. However, the prediction made in the internal session that consumers would think that energy-from-waste was harmful in itself was not confirmed in the group discussions. No possible harmful effects of the energy itself were mentioned. Other negative aspects mentioned in the internal session, the cost aspect and the image of the waste sector, were not confirmed in the group discussion either. Consumers do not think that energy-from-waste is more expensive, unlike the price of green energy. Green energy is expected to be more expensive than normal energy. The respondents do not say anything about the waste sector having a negative image.

13 | *More than half think incinerating waste is bad or very bad for the environment*

Incinerating waste is:	%
very bad/bad for the environment	56
very good/good for the environment	15
No opinion	29

The negative aspects of energy-from-waste mentioned by the group relate to the pollution of the environment.

The aspects relating to environmental pollution are further explained in the following subsections.

Air pollution and odour nuisance

As expected, it is stated that the emissions from the waste incineration plans will pollute the environment. The respondents state that this causes air pollution and smell. Odour nuisance is also caused by the incineration plant's storage area.

According to the respondents, emissions from the incineration plant contain CO₂ and polluting substances because the waste contains dirty, polluting substances. Big plumes of smoke that are sometimes even coloured can be seen, and that simply cannot be good. And even if the emissions are perhaps filtered, there are doubts whether the filters are actually strong enough to filter all the polluting substances out of the emissions. In their view, some substances cannot be filtered out because they are too small. Campaigns by an environmental organization also appear to confirm the idea that emissions pollute the environment. If an environmental group runs a campaign, people are convinced that there is environmental pollution. *"They're not doing that for nothing, there must be some truth in it!"* For instance, one respondent says that Greenpeace carried out a campaign at a rubbish incinerator by climbing the chimney.

According to the respondents, bad smells are produced not only by the emissions but also by the storage area for waste at the incineration plant. The waste contains all kinds of filthy materials and bacteria, and that is bound to smell. *"After all, a dustbin doesn't smell particularly good either!"*

Pollution of horizon

The respondents are of the opinion that a waste incineration plant spoils the view; it is not an attractive feature of the landscape. They think the building is ugly: a big massive building with a chimney belching smoke. This is contrary to what was mentioned in the internal session, where it was stated that the incineration plant can be an attractive feature.

4.5 Reasonably positive overall picture of energy-from-waste

Even taking account of all the reservations expressed in the previous sections, energy-from-waste does not have a negative image, but actually a reasonably positive one.

14 / 48% see waste as suitable for energy generation by incineration, 15% do not

How suitable is waste for generating energy by incineration?	%
Very suitable	10
Suitable	38
Neither suitable nor unsuitable	20
Unsuitable	6
Very unsuitable	9
No opinion	25

Respondents were asked to assess a number of aspects of energy-from-waste on a five-point scale. The results are shown in two ways below. The first table shows the arithmetic averages. That gives a fairly flat picture. This is largely because the respondents chose the middle position, probably because they have little knowledge available. The second table leaves out the “neutral” responses and the index is calculated using the “positives” and the “negatives”. While the overall picture produced is comparable with the first method, the profile is much sharper.

This results in a reasonably positive picture; the extremes are particularly striking. In particular, energy-from-waste is energy of the future, but there is (particularly) little known about it. And that is also the pitfall. The present picture is based on little knowledge. Care is needed to ensure that additional knowledge does not result in a more negative picture.

15 / *Energy-from-waste has a reasonably positive image*

Energy -from-waste is	Ave.*	Index**	Energy -from-waste is	Ave.*	Index**
Energy of the future	3.7	983	Cheap to generate	3.1	146
Inexhaustible	3.6	347	Cheap to buy	3.0	101
Easy to extract	3.4	251	High quality	3.0	97
Natural	3.2	178	Clean	3.0	89
Non-hazardous	3.3	227	Healthy	2.8	57
Ecological	3.1	117	Very familiar	2.2	16

* (5 = "high", 3 = average, 1 = "low")

** (100 = "balance")

As far as the cost is concerned, consumers do not think that it will be much more expensive. In general, they think that its price will compare with the other types of energy.

16 / *But it will not be cheap(er)*

By comparison with other types:	%
Much cheaper	2
Cheaper	15
About the same	35
More expensive	19
Much more expensive	2
No idea	27

More advantages than disadvantages are mentioned in respect of generating energy-from-waste. The emphasis with the advantages is rather more rational; with the disadvantages it is rather more emotional.

17 / Respondents see more (rational) advantages than (emotional) disadvantages

Energy -from-waste has:	%	%
No advantages	44	
Advantages, namely:	56	
Reuse, useful use		18
Reduces/solves problem of waste		16
No/fewer waste mountains		15
Always available		9
Cheaply available		5
Others		3
<i>Total advantages cited</i>		<i>66</i>
No disadvantages	65	
Disadvantages, namely.	35	
Harmful side-effects/products		11
Bad for environment		10
Expensive, work intensive, laborious		9
Air pollution		5
Valuable raw materials lost		2
Smell		2
Others		3
<i>Total disadvantages cited</i>		<i>40</i>

A number of names were submitted to the respondents and they were asked to say what name best fitted energy-from-waste. While a number of names perhaps have a green association, the clear choice is not for green energy but for recycled energy.

18 / We call it recycled energy

	Named first	Named second
	%	%
Recycled energy	48	21
Inexhaustible energy	18	17
Renewable energy	8	25
Eco energy	7	11
Green energy	7	5
Sustainable energy	2	6
None of the above	10	6

4.6 What are we moving to?

We are going for sustainable energy forms, and here energy-from-waste is not expressly rejected. Concepts such as environment and sustainability are important in the choice.

There is insufficient knowledge for the choice of energy-from-waste. Ultimately, far more people are in favour of generating energy-from-waste than are against it.

For consumers, energy-from-waste appears to come in fourth place in the types of energy used.

And not just by choice, but also by its perception as a future provider of energy.

4.6.1 Wind, sun, water ... and then waste

If the respondents had their way, fossil fuels would be abolished. We are going for wind, sun, water ... and then waste. Although the number of respondents that would choose energy-from-waste is quite small, only 1% say expressly that they would NOT choose energy-from-waste.

19 / People much more opposed to nuclear energy and coal than to energy-from-waste

Would choose energy from:	First place %	Second place %	Third place %	NO %
Wind	36	31	9	0
Solar	30	28	16	0
Water	8	15	39	0
Waste	4	3	7	1
Gas	2	1	3	1
Biomass	1	2	5	1
Oil	0	0	1	3
Coal	0	1	0	20
Nuclear	0	2	1	61
Don't know (any longer)	18	18	20	11

4.6.2 We choose for the environment

Respondents were asked to give reasons for their first choice. The most important reason always had an environmental component. The concept “sustainable” came second. Understandably, as wind, solar and water power mainly came in the first place.

20 | Environmental component and sustainability determine choice for wind, solar and water power

Reason for first choice:

Environmental component	58
Availability, sustainability	40
Pricing, yield	15
Easily extracted	6
Aesthetic	5
Safe	2

4.6.3 And unfamiliar means unpopular

People do not know much about energy-from-waste, as is clear again here. And the lack of knowledge is a reason for not specifically choosing energy-from-waste. There is also the impression that the incineration makes it less clean than energy derived from wind, sun and water. Energy-from-waste may be good, but less so. It is also seen as a minus point that it costs energy to extract energy-from-waste.

21 | One-third do not think incineration of waste is clean

No energy -from-waste:	%
Don't know it (so well)	31
Less clean due to incineration	32
Good, but less so (2nd/3rd choice)	10
Costs too much (energy)	8
Others	9
Don't know	12

4.6.4 All in all, should it happen?

Finally, at the end of the questionnaire respondents were asked whether they were for or against generating energy-from-waste. The number of those in favour far exceeds the number of those against. Just over half are neither for nor against.

22 / Far more in favour of generating energy-from-waste than against it

Generating energy -from-waste	%
Very much for	4
For	38
Neither for nor against	52
Against	4
Very much against	1

4.6.5 Situation now and wishes for the future

The respondents were also asked about where energy comes from at the moment and what situation they would like to see in future. Fossil fuels are top of the list (now) but that situation has to change (desired). Looking at the energy sources with the relatively greatest growth (index), biomass comes first, with waste in third place.

23 / Desired shift in energy sources on energy market

Now		%	Desired		%	Index		
1	Gas	29	1	Wind	22	1	Biomass	266
2	Oil	15	2	Solar	21	2	Solar	262
3	Coal	12	3	Water	15	3	Waste	240
4	Nuclear	11	4	Waste	12	4	Wind	220
5	Wind	10		Gas	12	5	Water	214
6	Solar	8	6	Biomass	8	6	Gas	41
7	Water	7	7	Oil	4	7	Oil	27
8	Waste	5	8	Nuclear	3	8	Nuclear	27
9	Biomass	3		Coal	3	9	Coal	25

4.7 And the government has a role

It is felt that the government has a clear role to play in the energy market. This is probably because the picture of that market is fairly vague. And it is not particularly encouraging at the moment that people know little about government policy in this area.

24 / Over three-quarters think that the government should play an active role in the energy market

Role desired for government in energy market	%
Very active	28
Active	41
Neither active nor passive	12
Passive	3
Very passive	1
No opinion	15

4.7.1 Energy market not clear

It was stated spontaneously in the group that the energy market is going through changes at the moment. As a result of the intensive campaigns by energy companies, most people are aware that things are changing. Most people have seen advertisements on television. But although most of them know that things are changing, they are not clear about everything. Because people are not interested in energy, they do not follow everything that is going on in the energy market; it does not attract their attention. The following questions were asked on the energy market:

- When is the free energy market being introduced?

The respondents are not clear on whether the energy market is going to be free, and if so when. Some of them state that the energy market is free already. They say that people can already decide what energy company to buy energy from and what kind of energy they want, either ordinary energy or eco-electricity. A few respondents do not know when the energy market is to be opened up, but have heard that this is going to happen. One single respondent knows nothing about any changes in the energy market.

- How will the free energy market work in practice?

Most do not know how the free energy market will work in practice. They ask what companies will operate on the energy market and what they will offer, at what prices.

4.7.2 Government policy not familiar

The lack of interest in energy in general evidently contributes to the fact that respondents know little about the government's policy in this area. They say they do not know much about what exactly the government's energy policy is. And they know nothing whatever about its policy on energy-from-waste. The respondents have the idea that the government is withdrawing more and more from the energy area. As well as saying that the government used to be more active in the energy market, they also say that the government is taking less of a role as far as (national) energy policy is concerned. The respondents say that the government used to be more involved with energy companies, and that it formerly involved itself more in the operational management of energy companies. They have the idea that it no longer does so. They say that they do not notice much evidence of national policy. For example, the government does not do enough to promote green energy, in the view of respondents. And it is seen as the government's job to do this.

Although the respondents state that they have little knowledge of government policy, they consider that the government has the following roles as regards energy:

- Policy role

The government should direct companies and the public to use energy more consciously. The respondents assume that the government lays down rules and guidelines on energy. They say for example that the government sets up subsidy programmes and makes laws. They quote the examples of subsidies for energy-efficient refrigerators and laws laying down maximum limits for emissions.

- Public education role

Through public education, the government tries to encourage consumers to use energy sparingly and consciously. The "Postbus 51" television spots are quoted as an example.

- Exemplary role

According to the respondents, the government also shows that it is using energy consciously itself. The respondents see it as quite natural for the government to do this, as the government should set a good example. The government does this for instance by installing energy-saving lighting on motorways.

4.7.3 And confidence in its opinion?

Given the fact that the respondents know little about government policy, it is perhaps not surprising that they do not have all that much confidence in that government's opinion in the area of electricity. They have the most confidence in the opinion of consumer and environmental groups. So communication through these routes could be a useful point of entry. What is important is that it should not just be the energy producers themselves who are involved in public education. Their opinion does not create much confidence.

25 / *Most confidence in the opinion of consumer and environmental groups*

Most confidence in opinion of:	first	second	third	Ave.
	%	%	%	%
Consumer groups	17	22	16	18
Environment groups	16	13	13	14
Own opinion	22	10	9	14
Government	16	12	14	14
Energy producers	4	6	9	6
Family	3	9	4	5
Political party	2	2	5	3
Colleagues	0	1	3	2

4.8 Results from people living near plants no different

Part of the questionnaire was submitted both to a sample of people living near the waste incineration plants and to "average" members of the public. That part of the study (which was carried out by telephone) did not show any significant differences.

5 Conclusions

The expectations of VVAV's internal experts were compared with the outcomes of the other parts of the study. This produced the following conclusions:

Expectation of Internal Experts

- Energy in general is low interest:
- As a result, green energy is not particularly appealing.
- Energy-from-waste is unfamiliar and has a negative image
- In particular, the processing process pollutes the environment

Outcomes of study

That agrees with the picture obtained from the consumer studies. People expect energy always to be there, don't worry much about it and have little interest and knowledge.

Actually, green energy is appealing at the present level of knowledge. There is a clear preference for energy from natural sources such as wind, water and sun. That assessment is more emotion-based – as a responsible citizen rather than as a price-conscious consumer. Of course, ultimately people will weigh the expense against “environmental interest”. This could perhaps be described as the environmental elasticity.

The unfamiliarity should be divided into two parts:

- Unfamiliar with the existence of energy-from-waste. That is true; not many people know about this.
- Unfamiliar with the process. That is also true. Knowledge is low in general, and knowledge about the process in particular. But the image is not as negative as expected. People see negative aspects for the environment, but because of their lack of knowledge that image is based on perception.

But at the same time waste from energy is seen as a good solution to the waste problem.

The fear that more waste will be produced because energy can be recovered from it is not confirmed by consumers.

Expectation of Internal Experts

- Energy-from-waste is harmful for the environment and of lower quality:

- Energy-from-waste is expected to be cheaper:

- Waste sector's image contributes to negative image for energy-from-waste:

- Growing consumer involvement with energy:

Outcomes of study

Whenever doubts are expressed, these relate to how the extraction process affects the environment. The idea that the energy is of a lower quality is not found in the outcomes.

The idea that people will expect to have to pay less because they provide the raw materials themselves has not been confirmed. People expect energy-from-waste to cost roughly the same as energy obtained from traditional (fossil) sources.

If energy-from-waste has to be substantially more expensive, there should be an advance study of how much extra people are prepared to pay. Naturally, a good argument why will also have to be presented.

As we have said above, the image of energy-from-waste is less negative than expected. And there was little evidence of a negative picture of the industry either. In fact, it is felt that the Netherlands is really not doing so badly in the area of the environment and energy.

Involvement will certainly increase as a result of privatization and the free market. The extent to which it does so will depend in part on what happens in that market and will also depend on Macro Environment Components. Crassly simplified, consumers currently distinguish two sorts of energy:

- Bad: Fossil
- Good: Green, sustainable

Energy-from-waste has not yet found its place in that scheme, but at present it is tending towards good (although less green than wind, water and solar energy). The existing picture should be promoted and developed further.

Expectation of Internal Experts

- Consumers should be provided with knowledge:

- People living close to incineration plans have an indifferent or positive picture:

- VROM is unwilling to see energy-from-waste as green energy:

Outcomes of study

In the light of the above, this is a conclusion that can only be confirmed by the outcomes of the study. However, more knowledge does not always produced the desired results. It will be necessary to decide carefully in advance what exactly is to be communicated. An honest, complete picture must be provided. It is difficult or impossible to undo damage caused by bad communications or failure to communicate.

People living close to plants are no more and no less positive about energy-from-waste than the average member of the public. So their attitude can be described as indifferent rather than positive.

The public ascribes a role to government in the area of energy, but government policy is not felt to be very clear.

When consumers are asked at present, they characterize energy-from-waste as recycled energy; they do not actually see it as green. But the connotations of “green” (and the associated terms) are so vague – particularly in the view of consumers – that a clear definition of it has to be given first.

VROM generally sits around the table with public organizations and sees those groups as representatives of the general public’s position. Given the outcomes of this study, it may be asked how correct that point of view is, as only one side of the issue is dealt with in these consultation situations.

Expectation of Internal Experts

- Energy-from-waste is a threat for the Ministry of Finance:

- Economic Affairs sees possibilities:

Outcomes of study

That conclusion is (naturally) based mainly on financial motives, in particular loss of income due to a reduction in landfill. While the study does not provide any answer to the question, it seems logical to suppose that reallocation of the levy should be a possibility. That is in line with one of the quotes from an external expert:

“Finance has no view on the subject of energy-from-waste itself, as long as the bottom line is all right”.

The contacts since made confirm that these possibilities exist.

Summary

Energy-from-waste has not yet found its place. Neither with the public nor with the government. The public lacks knowledge. So that will have to be provided. And an important aspect here is the type of knowledge that has to be reinforced. What should be avoided is simply providing technical knowledge. At the same time, it must not be forgotten that people have to be interested before they will take up knowledge.

In government, policy is determined partly by financial considerations and partly on the basis of perceptions of “public attitudes”. And the latter aspect is determined above all by discussions with public organizations. It may be cautiously concluded that it is doubtful whether these discussions accurately reflect “public attitudes”, or whether they rather present the participants’ own attitudes to the public without checking those attitudes carefully.

It is also important to note that consumers’ relatively positive picture at present is based on their current knowledge, and with the reservation that they are picturing mainly household waste when they think of waste. The picture could change as soon as the concept of waste is broadened to include industrial waste and building waste, for instance. This again clearly shows the importance of proper, clear and open communication.

This section can appropriately close with the final conclusion from the study of external experts: “VVAV: there is more there than has come out so far”. An image that invokes comparison with waste, in that there is more (energy) in it than comes out of it.

6 Recommendations

In summary, we now put forward a number of recommendation that have also emerged from the study.

Communication to the public needed for more understanding

Consumers should be provided with knowledge. But knowledge alone is not enough; a climate has to be created in which people are prepared to take in that knowledge. It is not enough to be able to say “we told you so” afterwards.

VVAV members must act innovatively and creatively

The picture that the government and business have of VVAV has to be modified. And if that is done successfully VVAV will more readily be seen as a partner in discussions.

In short, the association has to start profiling itself more positively. Saying what it is and what advantages it offers society and individual members of the public. That means having faith in its own abilities and adopting an extrovert attitude.

Consequences for strategy

- Draw up a communication plan, with the government, politicians and interest groups as the target groups.
The study shows that the government, politicians and interest groups form more of a threshold to be overcome than consumers do. It is therefore important to focus on the first three groups initially. In the event, the negative image that consumers were expected to have is only latent, at most. A clear communications, PR and lobbying plan appears to be the indicated way forward.
- This communication should build on the relatively positive picture among the public. Emphasizing that there is a reasonable amount of public support could make interest groups and politicians more convinced of the importance of energy-from-waste. It will force the politicians to stop listening only to interest groups, which after all have their own agendas.
- As for the direction of policy, it should aim to link up with biomass, as the current campaigns are already pointing in that direction. Of course, energy-from-waste can occupy its own position within the biomass category. Developments on the labelling of energy should also be taken into account.
- It seems advisable to lay claim to a name. “Recycled energy” appears to be a name that is still available.
While consumers do not really see energy-from-waste as green, they do see it as an element of recycling. And that has a positive connotation. It is important to exploit that further. This does not conflict with the adopted route of a link with Biomass.

- Communicate the following information to consumers/public: the fact that energy is actually being produced (that energy-from-waste “exists”), the industry as an economic factor (employment, high tech etc.), and the name recycled energy;
- Develop a strategy for communications to government, politicians and interest groups, and set it out in a public affairs plan.

Background to the study

Waste processing is extremely important from the viewpoint of environmental policy, particularly as the volume of waste produced has increased enormously. One method of processing waste is waste incineration, which can contribute to the supply of energy. The waste industry is pursuing that method of processing as a sustainable form of energy generation. However, the industry is meeting with resistance. In the Netherlands, groups such as environmental and consumer organizations associate even the semantic description “waste” with low quality and risks from emissions.

It is important to removed inaccuracies in the image conveyed of energy-from-waste in order to build public support for this source of energy.

On behalf of VVAV, NIPO carried out a study into the images that various groups within society have of energy-from-waste. The study consists of a qualitative and a quantitative part. The ultimate aim of the study is to make a contribution to increasing public support for energy-from-waste and improving the market position of energy-from-waste, in the interests of:

- the communication policy to be followed to improve the image of energy-from-waste and public support for energy-from-waste, and
- the positioning of the product energy-from-waste in the market.

The qualitative part of the study consisted of the following phases:

- Internal session with VVAV members (referred to as internal experts in this report)
- Interviews with external experts from the media, interest groups and environmental scientists (referred to as external experts in this report)
- Group discussion with energy consumers
- Interviews with external experts from local and national government (referred to as external experts in this report)
- Feedback session with VVAV members to coordinate the consequences for strategy.

Interpretation of study data

It should be noted (possibly superfluously) that qualitative research deals with the occurrence of particular comments, and not the frequency with which the comments are made.

The purpose of qualitative research is to map the underlying motivations of the target group. The method is used mainly where some depth of analysis is required in the information. Qualitative research enables us to gain insight into the barriers (emotional and other), problem areas, attitudes, perceptions, wishes and needs of the target group.

The quantitative part of the study consisted of the following phases:

- Survey of 482 general energy consumers, conducted in the NIPO Telepanel over the period 2 to 9 December 2001
- Survey of 99 general energy consumers, conducted by telephone interview over the period 10 to 14 December 2001, for comparison with
- Survey of 100 residents living near waste incineration plants, conducted by telephone interview over the period 10 to 14 December 2001.

